

## INSA Guidelines on Ethical Conduct in the Practice of Science

### Guideline Drafting Committee:

1. Amit Ghosh FNA	Chairman
2. Chitra Sarkar FNA	Member
3. Madhu Dikshit FNA	Member
4. Manohar L. Munjal FNA	Member
5. Narayanasami Sathyamurthy FNA	Member
6. Satish R. Shetye FNA	Member
7. Srinivasan Chandrasekaran FNA	Member
8. Sriram R. Ramaswamy FNA	Member

### Preamble

The mission of Indian National Science Academy (INSA), which draws its fellowship from diverse fields of science, is to promote science in India and harness scientific knowledge for national welfare. As scientific integrity and ethics are of paramount importance for the advancement of science, the Academy expects that all associated with it in various capacities would do their best to uphold the dignity and reputation of the organization by adhering to the highest professional and ethical standards in their research and other activities.

To help the Fellowship and others associated with INSA, Guidelines on ethical conduct, which should act as a point of reference in the practice of science and other activities, have been created.

These Guidelines are in two parts. Part 1 describes the ethical norms expected to be adhered to by all who are associated with INSA in various capacities (Fellows, Associates, Employees). Part 2 lays down the procedures that the Academy will follow in the case of suspected infringement of the norms detailed in Part 1.

## **Part 1:**

### **Essential Standards of Ethical Behaviour**

#### **Honesty and Integrity**

All people associated with INSA are expected to adhere to certain standards of ethical behaviour which include, but are not limited to, honesty, integrity, and professionalism. Integrity in the context of scientific research means trustworthiness of the data collected and presented, their interpretation, and the soundness of methodology and protocol followed in carrying out the research.

#### **Conduct Towards Colleagues and Others Encountered in Professional Life**

Fellows and all others connected with INSA must treat their colleagues and others they come in contact with courtesy and respect regardless of their ethnicity, religion, gender, caste, sexual orientation and disability. They will refrain from indulging in unacceptable behaviour which includes (but is not limited to) harassment in any form, bullying, etc.

#### **Harassment and Bullying**

Harassment can be categorized into three classes, verbal, non-verbal and physical. Verbal harassment includes unwelcome / abusive comments, derogatory remarks, teasing, stereotyping, etc., Non-verbal harassment encompasses obscene gestures, display of hostility, distribution of derogatory material targeting an individual or group. Physical harassment involves unwelcome or unwanted physical contact, invasion of one's private space, assault, etc.

Sexual harassment is undesirable conduct in which any of the categories of harassment described above are involved, with sexual undertones.

Bullying refers to repeated unreasonable and unwelcome behaviours, including those listed above, but more generally intimidation, exclusion, coercion, and humiliation, typically resulting in a lowered standing and a loss of self-esteem. It is usually directed against an individual but could take place against a group as well.

## **Performing Scientific Research**

### **Data Collection and Maintenance of Laboratory Records**

In the case of sciences that require experimental work or collection of observational data, it is obligatory to make sure that the data collected are reliable and unbiased. The source from which the sample has been obtained or the location from which the sample has been collected for investigation, particularly in geophysics/geology should be mentioned. It is also necessary to maintain laboratory records properly. Proper documentation of the experimental protocols followed, details of the materials used in carrying out the experiments, correct information about the software used, if any, for the analysis of the data, are of absolute necessity as the quality and reliability of the research results hinge on these. Use of biased or unreliable data, improper or faulty protocols lead to biased or unreliable results which are of little value in the progress of science. Data obtained from public data bases should be properly acknowledged. Data collected in unprocessed form and the corresponding laboratory records should be properly maintained and stored, so that they are easily accessible for review and examination, if necessary. Falsification, which is the creation of data (or results), or the modification of existing data, not on the basis of a measurement or observation, to support any claims made, constitutes serious scientific misconduct.

### **Experiments Involving Humans and/or Biological Materials of Human Origin**

For experiments involving humans or biological materials of human origin, guidelines issued by the Indian Council of Medical Research should be followed. For clinical trials, methodology developed by the Central Drugs Control Organization, Directorate General of Health Sciences, Ministry of Health and Family Welfare, Government of India is to be strictly adhered to.

### **Research Using Animals**

Research that requires the use of animals should be carried out scrupulously in accordance with the rules laid down by the Committee for the Purpose of Control and Supervision of

Experiments on Animals, Ministry of Environment, Forest, and Climate Changes, Government of India.

### Safe Laboratory Practices and Safety of the Environment

It is important for scientific workers to ensure that their work does not cause harm to society and/or the environment. Due care should be taken in proper handling and disposal of hazardous materials and animal carcasses. For these, Guidelines prescribed by different agencies of the government should be scrupulously followed. For example, for handling and disposal of radioactive materials, 'UGC guidelines for universities, Research Institutes, and Colleges for procurement, storage, usage, and disposal of Radioactive, Hazardous materials / chemicals could be used.

### Publications

#### General Principles

Basic standards of professional ethics in publication stipulate that authors should present their research results in an unprejudiced manner and provide accurate descriptions of the experimental protocols used and/or their proper literature reference so that others are able to replicate their work if required. Biased selection of data to support claims falls under the category of scientific misconduct. Research results or data from other peoples' work if required, should be used only after obtaining prior permission. Results of experiments which are at variance from the conclusions drawn should not be suppressed. Duplicate publications-communicating the same or similar results more than once must be avoided. In scientific communication, falsification, fabrication and plagiarism are considered serious infringements of ethical norms. However, if reproducing text from other's publications or one's own publications is found to be absolutely essential then the reproduced material should be shown under inverted commas (that is, quotation marks) and the source clearly mentioned.

Falsification: It is the manipulation, alteration, and/or deliberate omission of results and/or data to strengthen the claims made.

Fabrication: Is making up results or data in support of the conclusions drawn.

Plagiarism: It is the act of incorporating ideas, research results textual materials from other sources into one's own publications, research proposals, reports etc. without proper attribution. Verbatim copying of textual materials or results from one's own work and Incorporating them into separate publications/research proposals / documents etc. constitutes self-plagiarism which is also an ethical violation.

### Authorship

Only those who have made significant contributions in inception, design, execution, and interpretation of the results obtained should be included as authors. All prospective authors must agree to authorship. This is necessary because, as has been stated in the US National Academy of Sciences document 'On Being a Scientist'—"an author who is willing to take credit for a paper must also bear responsibility for its errors or explain why he or she has no professional responsibility for the material in question". (\*)Contributions of all others who might have helped in various ways but not as significantly as those who are considered for authorship should also be acknowledged. People who have not made any significant contribution in the work reported, must not be considered for authorship. However, denying authorship to someone who deserves to be an author is unethical.

\*Chapter on "Authorship and Allocation of Credit" p37

### Peer Review

Peer review is a service that INSA Fellows are often called upon to provide to evaluate the suitability of a manuscript for publication or a research proposal for funding. It is essential to perform this task fairly and objectively. Further the information contained in the document must be treated as confidential and should not be shared or made use of in anyway.

### Conflict of Interest

Many activities in which the Fellows get involved have the potential for a conflict of interest. In all such cases, Fellows should disclose it and recuse themselves from the decision-making process.

### Training and Education

#### Ethical Obligations of a Teacher

Selection and assessment of students must be done in a just and fair manner. Care must be taken not to let subjective impressions unrelated to academic merit, cloud one's judgment. Care must be taken not to lower the dignity of the classroom while teaching. The teacher must strive to uphold before the students the best scholastic and ethical standards. Any kind of discriminatory or exploitative behaviour is unethical and should never be indulged in.

#### Research Scholar-Advisor Relationships

This is a special kind of relationship which involves one-on-one interaction between the scholar and the guide. Because of the power imbalance in the relationship guides should be particularly careful in their behaviour vis-à-vis the student and must try to be encouraging, supportive, and equitable. He-/ She must try his / her best to instil in the students the norms of professionalism and ethical conduct.

#### Science Administration

Many Fellows occupy important positions in science administration. It is expected that while in such positions, they will conduct themselves in a manner which is consistent with the highest standards of professionalism and ethical behaviour. They must ensure that their conduct does not allow questions to be raised about their integrity and sense of fairness. For example, if a Fellow happens to occupy the highest position in an institution, then, while constituting a committee for selection of candidates for any positions, he/she should do it in such a way that no one can harbor any doubt about the competence and sense of fairness of the committee members.

## **Part 2**

### **Rules to be followed by a Complainant for Lodging Complaints to INSA regarding Ethics Violations and the Procedure for Handling such complaints Received at INSA.**

1. Complaints should be addressed to the President of INSA and must bear the Complainant's name, address including email, and signature. They must be accompanied by documents supporting the allegations.
2. Confidentiality of complaints will be maintained but anonymous complaints will not be entertained.
3. After a complaint, duly signed by the complainant and accompanied by supporting documents, is received, the President at his / her discretion may decide to have it examined initially (after masking the name of the complainant) by the 'Ethics Scrutiny Committee' of INSA to see whether it fulfils the conditions laid down in points 1 and 2 above. If it does not, then the complaint will not be processed further, and a letter will be sent to the Complainant explaining why it was not taken forward. If, however, the complaint fulfils all the conditions, then depending upon the case the 'Ethics Scrutiny Committee' based on its judgement may recommend, with adequate justifications, any of the following to the President:
  - A. If the Fellow is working or is attached to an organization/ Institute then the President may decide to send the 'Complaint' and the supporting documents to the Head of the organization to which the Fellow is attached, requesting him/her to conduct a thorough investigation regarding the allegations, obtain the Fellow's response to the allegations, and then send the 'Investigation Report' along with the Fellow's response to the President within 60 days of receiving the President's letter. Upon receipt of the 'Investigation Report' the President may refer it to the 'Main Ethics Panel' (henceforth

called the 'Ethics Panel') of INSA for its opinion.

**B.** If the Fellow is not attached to any organization the President may refer the complaint to the 'Ethics Panel' for necessary action, keeping the name of the Complainant confidential OR

**C.** Dismiss it.

In case of both **B** and **C**, the 'Ethics Scrutiny Committee' will provide full justification for the recommendation made.

4. If the President finds the recommendation of the 'Ethics Scrutiny Committee' acceptable, then, depending upon the recommendation received, he/she may act accordingly and either send a letter to the Head of the organization to which the Fellow is attached as detailed in **A** above or send the complaint along with the supporting documents to the Chair of the 'Ethics Panel' of INSA keeping the name of the Complainant confidential. In the case where the 'Ethics Scrutiny Committee' recommends dismissal, the President might decide to instruct the Chair, 'Ethics Scrutiny Committee' to write to the Complainant why his/her complaint could not be taken forward. At this stage the Complainant's name has to be disclosed to the chair 'Ethics Scrutiny Committee' for obvious reasons.

5. After receiving the complaint and the supporting documents in the case of a Fellow who is not attached to any organization OR the 'Investigation Report' from the organization to which the Fellow is attached from the President, the Chair, 'Ethics Panel' will share these (keeping the name of the Complainant confidential) with the other members of the panel and also send out a copy of the complaint (but not the supporting documents) to the Fellow against whom the allegations have been made, seeking his/her response, within 15 days of receipt of the letter. **However**, in the case of a Fellow who is attached to an organization and who has already been investigated by the concerned organization this step will not be necessary as an 'Investigation Report' from the organization would contain this.

6. Once the response from the respondent is received the Chair will share it with all members

of the 'Ethics Panel' and seek their opinion, whether the misconduct was committed inadvertently, mistakenly or willfully. (In case of divergence of opinion, it may be necessary for the panel to meet.). The Chair will also seek Panel members' opinion on the Investigation report for the Fellow (attached to an organization) if it has been forwarded to it by the President. (In this case also it may be necessary for the Panel to meet in case of divergence of opinion).

7. Based on the consensus/majority view, the panel will prepare a report for submission to the President, INSA, in which it will also recommend the action to be taken and penalty, if any, to be imposed.

8. If the misconduct was due to inadvertency or negligence, the penalty could be a private reprimand, cautioning the fellow to be careful in future. If the misconduct involved a publication / report etc. then the Fellow would be advised to publish an erratum or retract the paper, if necessary.

9. In case of willful misconduct or repeated negligence the penalty, depending upon the severity of the offence, could be debarment from participation in any event sponsored by or connected with INSA, exclusion from any INSA committee (including local chapter committees) for varying periods, denial of recognition, awards etc. (e.g. INSA distinguished lectureship) and, in the most serious cases, revocation of fellowship.

10. After receiving the report from the 'Ethics Panel', the President, INSA, at his/her discretion, may present it to the Council as a reporting item or have it discussed there before the final decision is conveyed to the Fellow. In any case, the Fellowship must be informed if a Fellow is found to have committed an ethical lapse with details including the nature of the lapse and the action taken by INSA.

11. If it is discovered at any stage that the complaint sent to INSA was made in bad faith or out of malice, and without substantive grounds, then the Ethics Panel' must bring this fact to the notice of the President and recommend suitable disciplinary action which may include

disclosure of the complainant's name in the Council.

## **Acknowledgement**

In preparing the Guidelines primarily the following books, articles and documents were consulted and used.

1. The Ethics in science – An Introduction by David B. Resnik 1998, Routledge, London.
2. On Being a Scientist – A Guide to Responsible conduct in Research. 3<sup>rd</sup> Edition  
Committee on Science, Engineering and Public Policy. The National Academies press,  
Washington D.C.  
<https://nap.nationalacademies.org/catalog/12192/on-being-a-scientist-a-guide-to-responsible-conduct-in>
3. Ethics in Science Education, Research and Governance Eds. K. Muralidhar, A. Ghosh  
and A.K. Singhvi, Indian National Science Academy, New Delhi 2019.
4. Science and Ethics : Maurizio Iaccarino, EMBO reports **2** (2001) 747-750  
[doi.1093/embo-reports/kve191](https://doi.org/10.1093/embo-reports/kve191)
5. What is Ethics in Research and Why Is It Important : David B. Resnik 2020  
<https://www.niehs.nih.gov/research/resources/bioethics/whatis>
6. Philosophy and Ethics in Research : S.C. Lakhotia, Ch. 2 in ‘Academic Integrity and  
Research Quality’, Univ. Grants Commission, New Delhi  
[https://www.researchgate.net/publication/361738196\\_Ethics\\_in\\_Research\\_Publications  
\\_Fabrication\\_Falsification\\_and\\_Plagiarism\\_in\\_Science\\_Chapter\\_3\\_in\\_Book\\_titled\\_Aca  
demic\\_Integrity\\_and\\_Research\\_Quality\\_published\\_by\\_UGC\\_Dec\\_2021](https://www.researchgate.net/publication/361738196_Ethics_in_Research_Publications_Fabrication_Falsification_and_Plagiarism_in_Science_Chapter_3_in_Book_titled_Academic_Integrity_and_Research_Quality_published_by_UGC_Dec_2021)
7. Code of Conduct, National Academy of Sciences, USA 2021.  
<https://www.nasonline.org/wp-content/uploads/2024/02/nas-code-of-conduct.pdf>
8. Responsible and Ethical Conduct of Research, National Science Foundation, USA

<https://new.nsf.gov/policies/responsible-research-conduct>

9. The European Code of Conduct for Research Integrity ALLEA, 2023.

<https://allea.org/code-of-conduct>

10. ASM Code of Ethics and Conduct 2021

[http://www.asm.org/articles/ethics/coes/asm\\_code-of-ethics-and-conduct](http://www.asm.org/articles/ethics/coes/asm_code-of-ethics-and-conduct)

11. The Singapore Statement on Research Integrity 2011, David A. Resnik and A.E. Shamooi.

[doi.org/10.1080/08989621.2011.557296](https://doi.org/10.1080/08989621.2011.557296)

12. Fostering Integrity in Research – National Academic of Science, Engineering and Medicine, The National Academies Press, Washington D.C. 2017

[doi.org/10.17226/21896](https://doi.org/10.17226/21896)

13. MRC Ethics Series : The Medical Research Council, UK

<http://www.ukri.org/who-we-are/mrc/our-policies-and-standards/ethics>

14. Draft National Policy on Academic Ethics, office of the principal scientific Advisor, Govt. of India.

<https://psa.gov.in/CMS/web/sites/default/files/publication/Draft%20National%20Policy%20on%20Academic%20Ethics%202.pdf>

15. Guidelines for Ethics in Research and in Governance Council of Scientific and Industrial Research, India 2019.

[https://www.ccmb.res.in/newsfiles/year-2020/csir\\_ethics\\_2020.pdf](https://www.ccmb.res.in/newsfiles/year-2020/csir_ethics_2020.pdf)

16. Scientific Misconduct and its Prevention, Science Council of Japan.

[https://www.scj.go.jp/ja/scj/print/pdf/taigai\\_reefe.pdf](https://www.scj.go.jp/ja/scj/print/pdf/taigai_reefe.pdf)

17. Guideline for Safeguarding Good Research Practice DFG German Research Foundation, 1998

<https://www.dfg.de/resource/blob/174052/1a235cb138c77e353789263b8730b1df/kodex-gwp-en-data.pdf>

18. Scientific Values: Ethical Guidelines and Procedures India Academy of Science

[https://www.ias.ac.in/About\\_IASc/Scientific\\_Values:\\_Ethical\\_Guidelines\\_And\\_Procedures/](https://www.ias.ac.in/About_IASc/Scientific_Values:_Ethical_Guidelines_And_Procedures/)

19. Guidelines on Academic Ethics – Tata Institute of Fundamental Research

<https://www.tifr.res.in/docs/TIFR-Guidelines-Academic-Ethics.pdf>

20. Guidelines on Ethics – American Physical Society

<https://www.aps.org/governance/policies-procedures>

21. Guidance Document: Good academic research practices B. Patwardhan, A. Desai, A. Chourasia, S. Nag & R. Bhatnagar University Grants Commission, New Delhi 2020

<https://ugc.ac.in/e-book/UGC-GARP-2020Good-Academic-Research-Practices.pdf>

22. Doing Global Science: A Guide to Responsible Conduct in the Global Research Enterprise. Princeton Universities Press, 2016

<https://www.interacademies.org/33345/Doing-Global-Science-A-Guide-to-Responsible-conduct-in-the-global-research-Enterprise>

23. Sexual Harassment of Women : Climate, Culture and Consequence in Academic Sciences, Engineering and Medicine, The national Academics Press 2018, Washington D.C.

[doi.org/10.17226/24994](https://doi.org/10.17226/24994)

24. Ethics in Research in Publications, Fabrication, Falsification and Plagiarism: P. Chaddah, Ch. 3 in Academic Integrity and Research Quality” Univ. Grants Commission, New Delhi.

[https://www.researchgate.net/publication/361738196\\_Ethics\\_in\\_Research\\_Publications\\_Fabrication\\_Falsification\\_and\\_Plagiarism\\_in\\_Science\\_Chapter\\_3\\_in\\_Book\\_titled\\_Aca](https://www.researchgate.net/publication/361738196_Ethics_in_Research_Publications_Fabrication_Falsification_and_Plagiarism_in_Science_Chapter_3_in_Book_titled_Aca)

ademic Integrity and Research Quality published by UGC Dec 2021

25. Guidelines on good publication practices: Committee on Publication Ethics (COPE)

<https://publicationethics.org/files/u7141/1999pdf13.pdf>

<https://publicationethics.org/core-practices>

Sincere thanks are also due to Prof. Anil Gupta, Prof. S.C. Lakhotia, Dr. Ashok Singhvi, Prof. G. Parthasarathy, Dr. Praveen Chaddah, Dr. Mahtab Bamji, Dr. Arnab Mukhopadhyay, Dr. Girdhari Lal and Dr. Rishitosh For their comments.