

वैज्ञानिक तथा औद्योगिक अनुसन्धान परिषद्
Council of Scientific and Industrial Research
२, रफ़ी मार्ग, नयी दिल्ली-११०००१
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(नवाचार प्रबंधन निदेशालय)
(Innovation Management Directorate)

कार्यालय ज्ञापन

No. 30/GB-SciEthics/2021-CSIR

जून 28, 2021

विषय : विज्ञान और शासन में नैतिकता के लिए सीएसआईआर दिशानिर्देश CSIR Guidelines for Ethics in Science and Governance - पांच सीएसआईआर क्लस्टरों (CSIR Clusters) के लिए लोकपाल (ombudsman) का नामांकन – reg.

1. In order to ensure strict compliance and implementation of the CSIR Guidelines for Ethics in Science and Governance at CSIR, DG CSIR is pleased to approve the nomination of ombudsman for five CSIR Clusters as below:

सीएसआईआर में विज्ञान और शासन में नैतिकता के लिए सीएसआईआर दिशानिर्देशों का कड़ाई से अनुपालन और कार्यान्वयन सुनिश्चित करने के लिए, महानिदेशक, सीएसआईआर ने नीचे दिए गए पांच सीएसआईआर क्लस्टरों के लिए लोकपाल के नामांकन को मंजूरी दी है:

सी एस आई आर क्लस्टर CSIR Cluster	क्लस्टर में सी एस आई आर प्रयोगशालाएं Laboratories in the Cluster	नामांकित लोकपाल Ombudsman Nominated
Biological Sciences जीव विज्ञान (11 CSIR laboratories) (११ सी एस आई आर प्रयोगशालाएं)	CSIR-CCMB CSIR-CDRI CSIR-CFTRI CSIR-CIMAP CSIR-IGIB CSIR-IHBT CSIR-IICB CSIR-IIIM CSIR-IITR CSIR-IMT CSIR-NBRI	Dr Shobhona Sharma, Retd. Senior Professor, Tata Institute of Fundamental Research (TIFR), Mumbai डॉ शोभोना शर्मा (सेवानिवृत्त) वरिष्ठ प्रोफेसर, टी आई एफ आर, मुम्बई
Chemical Sciences रसायन विज्ञान (9 CSIR laboratories) (९ सी एस आई आर प्रयोगशालाएं)	CSIR-CECRI CSIR-CIMFR CSIR-CLRI CSIR-CSMCRI CSIR-IICT CSIR-IIP CSIR-NCL CSIR-NEIST CSIR-NIIST	Prof. Uday Maitra, Indian Institute of Science (IISc), Bengaluru प्रोफेसर उदय मैत्रा आई आई एस सी बेंगलुरु
Engineering Sciences अभियांत्रिकी विज्ञान (10 CSIR Laboratories) (१० सी एस आई आर प्रयोगशालाएं)	CSIR-AMPRI CSIR-CBRI CSIR-CGCRI CSIR-CMERI CSIR-CRRI	Dr. Rama Govindarajan, International Centre for Theoretical Sciences (ICTS), Bengaluru डॉ रमा गोविंदराजन

	CSIR-IMMT CSIR-NAL CSIR-NEERI CSIR-NML CSIR-SERC	आए सी टी एस बेंगलुरु
Physical Sciences भौतिक विज्ञान (5 CSIR laboratories) (५ सी एस आई आर प्रयोगशालाएं)	CSIR-CEERI CSIR-CSIO CSIR-NGRI CSIR-NIO CSIR-NPL	Prof. Dhananjai Pandey, Indian Institute of Technology (IIT-BHU), Varanasi प्रोफेसर धनञ्जय पाण्डेय आई आई टी-बी एच यू बनारस
Information Sciences सूचना विज्ञान (4 CSIR laboratories) (४ सी एस आई आर प्रयोगशालाएं)	CSIR-NIScPR CSIR-4PI CSIR-URDIP CSIR-TKDL Unit	Prof. Manindra Agrawal, Indian Institute of Technology (IIT), Kanpur प्रोफेसर मनिन्द्रा अग्रवाल आई आई टी कानपुर

2. The suggested terms of reference for the Ombudsman are:

२. लोकपाल के अधिकार क्षेत्र में निम्नलिखित सुझाए गए विचारार्थ विषय होंगे :

क) लोकपाल उन शिकायतों की वृद्धि की जांच करेगा जिनका या तो समाधान नहीं किया गया है या संबंधित सीएसआईआर प्रयोगशाला द्वारा अनुपयुक्त रूप से निपटाया गया है जिसके खिलाफ शिकायत दर्ज की गई है, या सीएसआईआर के महानिदेशक द्वारा संदर्भित कोई विशिष्ट मामला ।

– वैज्ञानिक कदाचार की जांच प्रयोगशाला स्तर पर वैज्ञानिक जांच बोर्ड (एसआईबी) द्वारा की जाएगी । प्रयोगशाला स्तर पर केवल अनसुलझे मामलों, सहायक साक्ष्यों के साथ आधार योग्यता, सीएसआईआर के महानिदेशक द्वारा सिफारिश के लिए संबंधित विषय समूह के लोकपाल को भेजा जाएगा ।

a) The Ombudsmen would investigate escalations of complaints that have either not been solved or appear to have been poorly or inappropriately handled by the concerned CSIR constituent against which the complaint has been lodged, or any specific cases referred by DG, CSIR.

---The scientific misconduct would be investigated by Scientific Investigation Board (SIB) at the laboratory level. Only unresolved cases at the laboratory level, basis merit with supporting evidences, would be referred by Director General, CSIR to an Ombudsman of concerned subject group for recommendation.

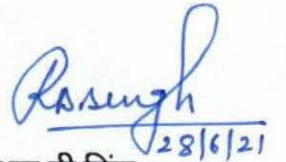
ख) लोकपाल को स्थायी प्रकाशन, नैतिकता और वैज्ञानिक सतर्कता समिति (एसईसी) और सीएसआईआर प्रयोगशाला/सीएसआईआर मुख्यालयों के नैतिकता अधिकारी द्वारा आवश्यक सहायता प्रदान की जाएगी । आवश्यकता पड़ने पर लोकपाल को संबंधित सीएसआईआर प्रयोगशाला/सीएसआईआर मुख्यालयों द्वारा मामलों पर सचिवाला के साथ-साथ तकनीकी सहायता प्रदान की जाएगी।

b) The Ombudsman would be provided necessary support by Standing Publications, Ethics and Scientific Vigilance Committee (SEC) and Ethics Officer of the CSIR laboratory/CSIR Hqs. When required, the Ombudsman would be provided secretarial as well as technical assistance on the cases by the concerned CSIR laboratory/CSIR Hqs.

ग) यदि आवश्यक हो तो लोकपाल किसी भी तकनीकी विशेषज्ञ का समर्थन ले सकता है ।

c) The Ombudsman may take the support of any technical expert, if so required.

- घ) लोकपाल सीएसआईआर प्रणाली के भीतर नियमों के आवेदन के समग्र सामंजस्य के लिए घनिष्ठ तालमेल और एक समूह के रूप में काम कर सकता है।
- d) The Ombudsmen may work in close synergy and as a group, for an overall coherence of application of rules, within the CSIR system.
- ड) लोकपाल का कार्यकाल 3 साल की अवधि के लिए होगा।
- e) The term of the Ombudsman will be for a period of 3 years.
३. सीएसआईआर नियमों के अनुसार बैठकों के लिए लोकपाल को मानदेय और टीए/डीए का भुगतान किया जाएगा और इससे संबंधित खर्च सीएसआईआर मुख्यालय वहन करेगा।
3. The Ombudsman will be paid honorarium and TA/DA for the meetings, as per CSIR Rules, and the expenditure related to the same will be borne by CSIR Hqs.


28/6/21

(आर पी सिंह)
प्रमुख, नवाचार प्रबंधन निदेशालय
(R.P. Singh)
Head, Innovation Management Directorate

प्रति:

Copy to:

1. उपरिलिखित लोकपाल- सी एस आई आर क्लस्टर्स Ombudsman-CSIR clusters as above निदेशक, सी एस आई आर प्रयोगशालाएं; Directors of CSIR Laboratories
2. निजी सचिव-महानिदेशक, सी एस आई आर ; संयुक्त सचिव, वित्तीय सलाहकार एवं केंद्रीय सतर्कता अधिकारी PS to DG, CSIR; JS, CSIR; FA, CSIR; and CVO, CSIR
3. सी एस आई आर हेडक्वार्टर--विभागों के प्रमुख; All HODs of CSIR Hq
4. कार्यालय प्रति office copy

COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH
(MISSION DIRECTORATE)
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New Delhi – 110001

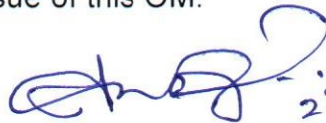
No. 30/GB/2019-MD

February 28, 2020

OFFICE MEMORANDUM

Sub: CSIR Guidelines for Ethics in Research and in Governance

1. Governing Body (GB), CSIR in its 193rd meeting held on December 19, 2019 has approved '**CSIR Guidelines for Ethics in Research and in Governance**' drafted by Prof. D. Balasubramanian Committee appended herewith.
2. These guidelines shall be implemented pan CSIR including all CSIR Laboratories/Institutes, Units and CSIR HQs.
3. The guidelines shall also apply to Research Students (viz. JRF, SRF, RA, PhD Students, AcSIR Students in CSIR etc.) and to researchers availing of CSIR extramural grants, as well as to CSIR Fellows including the Distinguished and Bhatnagar Fellows.
4. GB, CSIR has empowered DG, CSIR for interpretation / operational changes / modifications / amendments / expansion of the Guidelines, if necessary, based on the experience gained and feedback received while implementing the guidelines.
5. These guidelines shall come into effect from the date of issue of this OM.


28/02/2020
(Anoj Kumar Chadar)
Principal Scientist

Copy to:

1. Directors of all CSIR Laboratories/Institutes
2. Sr.CoA/CoA/AO of all CSIR Laboratories/Institutes
3. Heads of CSIR Units
4. Heads/In-charge of all Divisions/Directorates/Units of CSIR HQs/Complex/RAB /HRDG/HRDC/TKDL/IPU
5. Director, AcSIR
6. US to DG, CSIR
7. PS to JS (A), CSIR
8. PS to FA, CSIR
9. PA to CVO, CSIR
10. LA, CSIR
11. IT Division, CSIR for uploading the OM and Guidelines on CSIR Website
12. Office Copy

CSIR

Guidelines for Ethics in Research and in Governance



Mission Directorate (MD)
COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH (CSIR)
Anusandhan Bhawan, 2 Rafi Marg,
New Delhi

2019

Guidelines Drafting Committee:

- i. Prof. D. Balasubramanian - Chairman
Former President, Indian Academy of Sciences and
Director of Research Emeritus, LV Prasad Eye Institute,
Hyderabad
- ii. Prof. AK Singhvi, Vice-President, INSA and Honorary - Member
Scientist, Physical Research Laboratory, Ahmedabad
- iii. Prof. K. Muralidhar, University of Hyderabad - Special invitee Member
- iv. Dr. S. Chandrasekhar, Director, CSIR-IICT - Member
- v. Dr. A. Ajayaghosh, Director, CSIR-NIIST - Member
- vi. Dr. Anurag Agarwal, Director, CSIR-IGIB - Member
- vii. Dr. Rakesh K Mishra, Director, CSIR-CCMB - Special Invitee Member

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1. Preamble

1.1 Need for these guidelines:

Maintaining ethics in research and governance is of paramount importance in organizations like CSIR. This calls for the development of appropriate guidelines in the practice of science, publication of scientific/technical/biomedical data and results, making them available in the public domain and, in the administration of scientific establishments at all levels.

Guidelines on responsible conduct in research institution have now been laid out by various agencies. These include Govt. of India Gazette notification by the University Grants Commission (1), the Policy document by ICMR (2), Draft National Policy on Academic Ethics by Office of PSA (3), a book on Ethics in Science- Education, Research and Governance by the Indian National Science Academy (4), The Ethics in Science by Resnick (5), The Australian Code for the Responsible Conduct of Research (6), the ICSU Strategic Review (7), Policy Report by the Inter Academy Council (8), Best Practice Guidelines on Publishing Ethics by Wiley (9), Policy statement by INSA on Dissemination and Evaluation of Research Output (10), Recommendations by the ICMJE (11); COPE Guidelines for Good Publication Practice (12), Williams *et al* in JCI 2019 (13), Clinical Trial Guidelines by CDCSCO (14), Compendium of CPCSEA (15), Handbook on Sexual Harassment of Women (16), as well as a relevant compilation on the levels of misconduct and suggested advice on action (17).

Some of the root causes that tempt one for attempting short cuts for success in scientific pursuits, and in particular publications, are:

- a. Increased reliance on ‘quantification’ of the value of a publication/report, (and of the authors who produced them), e.g., impact factor, H index and related numbers which are used in various places for ‘recognition’ of an author for career advancement, awards and honours and the like;
- b. Overemphasis on the ‘*scientometric*’ reputation of the journal where the paper is published in contrast to an evaluation of what new science is published;
- c. Demand from institutions that a researcher must publish a minimum number of papers for obtaining PhD degrees, and promotions; and
- d. The resultant ‘explosion’, in recent years, of a number of fake and predatory journals.

1.2 Guidelines suggested by several agencies, authors and groups (Ref. 1-16) have provided a basis for the preparation of the guidelines for the CSIR institutions. It must be clarified that the value of any such guidelines will lie exclusively with the sincerity of their application. Thus, the guidelines enunciated below may not perhaps deal with every individual case that can or will arise, but it is expected that these will provide broad contours and trajectories within which appropriate decision making processes could proceed.

- 1.3 Beyond academic and publication guidelines, emphasis has been (and needs to be) given to honesty, scientific validity of the work being published, aspects of freedom to pursue new ideas and criticize old ones, apportioning due credit to others, mutual respect, conflict of interest, education and mentorship, social responsibility and the law.

2. What is scientific misconduct

Scientific misconduct is the violation of the codes of scholarly conduct and ethical behaviour in the publication of professional scientific research. These include all acts from the initiation of an idea, its experimental verification, accuracy of results, accurate reporting without resorting to any malpractice in the presentation of data/images, due acknowledgement of all sources of information and people. It is against this background that this document provides CSIR institutions and individuals working in them, an explicit list of acts that constitute scientific misconduct. These are given below. Scientific misconduct(s) can be of various types and can occur at various stages-from the initiation of the scientific study to publications and/or patent generation. While these involve violation of generally accepted research practices, inadvertent errors or genuine differences in interpretation or judgement in assessment of the results may not constitute scientific misconduct. Scientific misconduct may be categorized into the following:

2.1 Embezzlement of ideas:

Claiming an idea to be one's own while it was obtained from privileged access while reviewing manuscripts, grant proposals or through participation in lectures and personal discussions and earlier publications (but not citing them). This also includes acts wherein ideas of others are presented as one's own through slight changes of words, phrases and illustrations.

2.2 Plagiarism:

Using other's words, results, or published work without appropriate citation. This includes using one's own published work (self-plagiarism) without appropriate disclosure/citations.

2.3 Falsification:

Misrepresentation or suppression/ addition of a part of data to generate cherry-picked results or improper reporting of results in order to present a misleading outcome.

2.4 Fabrication:

Reporting 'results' of experiments which were never done. This also includes images/ photographs being morphed to reach a particular interpretation.

2.5 Fraud:

Deliberate suppression of previous work in publications and inappropriately claim originality and/or avoiding quoting previous publications which are contrary to present results.

2.6 Non-compliance of Regulatory Guidelines:

Deliberate violation of ethical guidelines accepted for human and animal research, non-adherence to bio-safety regulations or inappropriate use of research funds.

2.7 Inappropriate Authorship:

Excluding genuine contributors from authorship, including non-contributors, or claiming authorship for oneself without having made any meaningful contribution is inappropriate. In cases of publication of work carried out during a Ph.D. thesis, due care should be taken by the thesis Supervisor to ensure that the scientific contributions of a student are neither diluted nor exaggerated.

2.8 Withholding data from Validation:

Not providing data or research material to the institute/journal for verification/validation purpose.

2.9 Wrong *versus* Fraudulent paper:

It occasionally happens that a conclusion drawn in an earlier publication is negated, modified or shown where it went wrong- either by the same author or others. This is how science progresses. The earlier paper is thus not fraudulent.

3. Good Science Practices

3.1 Laboratory Records:

It is vital to keep proper records of each experiment, details of materials obtained from varied sources and how they were used, procedures, analysis and other related material. Graphs and printouts from instruments should be numbered and filed appropriately. If any software is used for handling and analysing the data, its name, version and other details should be recorded. The laboratory records of experiments carried out using a publicly funded institution should carry every single detail of the experiment. Such records are the property of the laboratory and are to be kept for archival and later retrieval purposes; a copy will of course be that of the researcher and can be used by anyone till after a defined moratorium period of 18 months. Due permission and acknowledgement of the researchers who carried out the experiments is essential at all times.

3.2 Consultancy work:

External consultation should be done with explicit permission from the Institutional Head where the scientist/technologist works. At the same time, permissions, if denied, should be justified and the reasons thereof be formally recorded. If the facilities of the institution are used, the details should be declared and recorded with due confidentiality in terms of the interest of the client. A clear statement on the resources to be used and finances that would accrue to the consultant and the institution should be recorded *ab initio*.

3.3 Collaborative studies:

The role played by each collaborator, and the benefit (both material and intellectual) which accrues to each collaborator should be decided ahead of time, should be accepted by each participant, and formally recorded. Given the uncertain nature of scientific research, the collaborators should be flexible in apportioning benefits in case there is a significant change in the actual contributions by participants as compared to those agreed to earlier.

The benefit that accrues to each of the researcher's institutions, if any, should also be agreed upon ahead of time. Patent rights of each collaborator (and of his/her institution, if any) should be decided and be recorded ahead of time. Institutions need to agree upon the operating procedures for such Memoranda of Understanding (MoUs) and for the exchange of materials and samples.

3.4 Authorship:

In a multi-authored paper, authorship should accurately reflect the contribution of each author and these be pointed out in the acknowledgment section of the manuscript. There should be no 'honorary' or 'ghost' authorship. Both, namely the offer of such authorship, or demand for the same, are scientific misconducts and unethical practice. Each publication must provide details on each author's contribution in the paper and the explicit consent of each author should be obtained. Acknowledgment should also be made about the funding source, and of any research material received as a goodwill gesture from other scientist groups or institutions. **Appendix-A** provides some general guidelines for authorships.

3.5 Plagiarism:

As mentioned in 2.2, plagiarism involves using other's words, results or published work without appropriate citation. This includes using one's own published work without disclosure. An internal check by the authors using software must be done before a paper/report is submitted for publication or distribution. The authors should provide a statement to this effect in the acknowledgement section. With the soft-wares being available for such checks for inadvertent duplication, there should be no room for accidental plagiarism.

In the CSIR system, the Library/Knowledge Resource Centre/ Standing Publications, Ethics and Scientific Vigilance Committee or any other designated Division of each institution may be requested to provide such software, and to help with such checks for each manuscript rigorously.

3.6 Redundant /Salami Publications:

Resorting to 'Redundant' publications for artificial enhancement of the number of publications is also a serious act of misconduct. Also, the simultaneous submission of the same manuscript in multiple journals, in order to have one of them accept it, is gross misconduct.

3.7 Safe laboratory practices:

It is obligatory that CSIR institutions train their staff for safe laboratory practices and provide sufficient budget for training programs to be conducted at regular intervals. Proper attire, use of gloves, proper ventilation, proper shoes, proper instruction and training in handling hazardous chemicals/gases/ radioactivity, and safety sheets for proper fire, electrical and other facility must be in place in all places of work. These should be checked regularly and a proper record be maintained.

Provisions for these and for training are the ethical and administrative responsibility of the management of the institution. The scientists and staff are also responsible in ensuring proper information and usage of facilities. Appropriate budgetary provisions in a separate budget head, should be created towards these, by the institution/CSIR.

A '**Laboratory Procedures and Safety Officer**' should be appointed in each of CSIR centres/institutions with a defined responsibility. Periodic checks and repeated training of researchers through mandatory in-house courses or workshops should be held at least once a year and at the time of induction of new colleagues. Safe laboratory practices are listed in Ref 4.

3.8 Research on humans and human biological materials:

Stringent guidelines on the use of humans as experimental participants in clinical trials, and the use of human biological material in research, exist. The Union Health Ministry has provided guidelines on these, as well as on the exchange of human biological materials and these should be adhered to (Ref.2). Similarly, clinical trials (all phases) should be held as per the guidelines and with prior approval from the concerned agency group (Ref. 13).

On the use of human biological materials for experimental research, even in the laboratory and the clinic, one needs first 'informed consent' from the individual from whom the material is obtained, and based on this, approval from the human ethics committee of the institution. Details of these are found in the guidelines published by the Indian Council of Medical Research (ICMR, Ref.2) and all in the CSIR system will need to follow these guidelines by ICMR, *sensu stricto*.

3.9 Use of animals in research:

The Ministry of Environment, Forests and Climate Change (*MoEFCC*), India has provided guidelines on the rules and regulations on the use of animals in research (Ref.14). Due and humane care should be taken of animals before, during and after the experiments. The animal houses should comply with the best possible standards of hygiene and upkeep, regular training program should be conducted, and regular interaction with animal welfare groups and scientists is recommended in order to ensure minimal distress. All in CSIR system will need to follow these guidelines of MoEFCC, *sensu-stricto*.

4. Gender issues

National and institutional guidelines must be followed. The handbook on sexual harassment of concern at workplace, published by the Ministry of Women and Child Development (Ref.15) will be the guiding principles for all CSIR institutions. Each institute shall have a committee on various aspects of these issues, and this committee should meet on a periodic basis and proactively work towards programs to create awareness on such issues.

Gender equality should be the core value system of every academic individual and institution in CSIR and full, unbiased equal opportunity to women should be provided. A regularly conducted orientation program on gender sensitivity, awareness of the rights of workplace and its environments, should be carried out so that everyone, at all levels, is sensitized.

CSIR Institutions should endeavour to develop a system of accessible and affordable care services, lounge services to cater to special needs for women to provide them with a gender equitable environment. The option of working out of home in case of women with small children should be explored and approved on a case by case basis. Every CSIR institution should carry a gender audit and its report should be placed as open access. Novel steps and efforts to encourage women in their work places should be enumerated and listed.

As far as possible, it will be desirable to have women experts on each panel of selection and administration and the Institute Committee should examine all cases of gender related misconduct as an academic misconduct and within the provisions of existing laws. Gender harassment of men in any respect should also be treated at par with those for women.

5. Dealing with Misconduct

The suggested **Standard Operating Procedure (SOP)** for inquiry in any act of scientific misconduct is detailed in the **Appendix-B** and **Table-1** which provides for the fair and transparent trial of an accused and safeguards the interest of whistle-blowers (Ref. 16; Section 13). An Institutional Committee on Ethics called the **Standing Publications, Ethics and Scientific Vigilance Committee (SEC)** involving people at different levels (scientific, administrative, technical, students, and with gender representation) should be established. The committee would be chaired by a Chief Scientist or higher with an Ethics Officer as member secretary. The SEC would be responsible for training staff members on all aspects of scientific ethics and looking into best lab practices and publications to be observed by the scientific community.

Scientific misconducts would be investigated by the **Scientific Investigation Board (SIB)** comprising scientific/technical personnel of appropriate expertise (with gender and SC/ST/OBC representation) and with at least one external expert to investigate the matter, fact finding and recommending the punitive action. The SIB would be set-up by Director of the laboratory, and DG, CSIR for the headquarters.

6. Types of reports and related documents covered under this umbrella

In addition to publications in professional journals, the recommendations highlighted in Section 3 above as “Good Science Practices” will apply for all research papers, academic theses for M. Phil, M. Tech, PhD, DSc, and other degrees, technical reports, grant applications as well as consultancy reports and certifications.

7. Intellectual Property

Any publication or a report that has the possibility of a consequential patent that could lead to a marketable application or product is defined as intellectual property. The authors who are involved in the publication/report should first ensure, before making it public, as to who did what and the share that accrues to each of them in the proceeds ahead of time. And when this ‘property’ is patented and licensed for commercialization, no dispute should then occur about the share of each in the property and its proceeds. Any share that accrues to the laboratory/institute where the discovery/invention was made (using its facilities) must also be agreed upon *a priori* and in writing.

Towards this, each academic institution/research laboratory is advised to have an in-house intellectual property rights (IPR) expert, or have one as a consultant. The rules that apply in the institution must be adhered to by the authors and users of the patent. A handy and updated manual on IPR and technology transfer has been published by the Indian Council of Medical Research (Ref.2) and the CSIR laboratories and individuals are advised to refer to the same.

8. Ethics in Governance and Conflict of Interest (Col):

Governance is an integral part of any institution and involves several layers of activities ranging from appointments and periodic evaluations, allotment of funds, approval for training programs and deputation for various meetings related to the institution, allotment of staff and students, to name a few. All these require fairness in judgement in decision making, despite the fact there is often a considerable room for subjectivity. Institutional systems must be created such that the decision making process is fair and transparent, providing equal opportunity to all.

An important element in the decision making is the aspect of **Conflict of Interest (Col)**, which has been addressed to in detail (Ref. 4-6). **Col** arises when an individual finds himself under multiple loyalties arising due to either of personal/professional relationships or due to extraneous financial considerations. These lead to a compromise on the interest of the CSIR system as these impact a person's impartiality in the decision making process (be it a selection process for a new employee; promotion of a colleague; financial matter in respect of purchases; financial grants for research, or for selection of an award or a fellowship).

It is therefore essential that in every decision making process, all the members who are involved with decision making process, necessarily sign a **Conflict of Interest Statement** indicating that none of his/her relatives, students, collaborators, group members or institutional members is/are being considered in the proposed meeting for decision making. This procedure should apply to all committees relating to the work of CSIR, i.e., institutional issues and matters such as funding for research under its Extramural Programs, various awards and prizes, and the like. Those conflicted may recuse themselves from the committee proceedings.

Conflicts of interest can also arise from competitions in research work when one favours his students/institutional colleagues in comparison to others with comparable merit. This may be, for an eventual *quid pro quo* from his colleagues. The same applies to grant process for sponsored research on behalf of National funding agencies. In all such meetings which lead to a decision of long term consequence, a **conflict of interest form** given in **Appendix-C** should be signed by each member and countersigned by the Chairman and kept as a part of the minutes.

9. Other Recommendations

9.1 Suggestions for action to reduce the stresses that lead to unethical conduct: an important aspect of reducing such cases is appropriate training and understanding of the issues involved. Thus, CSIR may evolve a system of regular workshops on various aspects, such as good laboratory practices, safety issues, publication and plagiarism, gender sensitivity, data analysis and statistical procedures and importantly training in communication.

To ensure that these courses occur at regular intervals, a dedicated **Ethics Officer** and **Safety Officer** can be appointed. He/she will be responsible to ensure that the training is imparted effectively and regularly including for those inducted afresh. These courses should carry credits in terms of career advancement. The

Safety Officer will also ensure and report on non-compliance of safety norms. Deliberate incidences of misconduct in respect of safety and ethics, may attract a mention in the confidential file of the officer/employee concerned and may affect his assessment itself.

Performance parameters for career advancement must be focussed on the quality of work and not on number of publications, nor where the research work is published. Agencies across India (UGC, MHRD, DST, DBT, SERB, CSIR, ICMR and others) must agree on a common set of parameters which should be followed. CSIR may take a lead in reorienting its evaluation procedures to take cognizance of what is published and not where is published. INSA policy statement (10) may be used as a general guideline.

- 9.2 In doing so, predatory journals must be avoided. Periodic updates of the names of such journals are published (e.g., the Beall's List; <https://beallslist.weebly.com/>) and such others). As a simple rule, with the exception of some highly reputed journals published by scientific societies that charge publication fee to ensure open access, rapid publication through payment should be strictly avoided.
- 9.3 Prior to sending for publications, scientists should check for plagiarism using current software tools that should be made available by the institute. The library of the institute/ Knowledge Resource Centre / Standing Publications, Ethics and Scientific Vigilance Committee or any other designated Division of the Institute can provide this service as a part of their mandate.
- 9.4 Archival of all primary data including field records related to publication to be deposited with the institute's knowledge resource centre or any other designated Division of the Institute with appropriate security for intellectual property. Both soft and hard copies should to be kept. This will imply creation of a data archival system within CSIR systems with appropriate security. This will require resource allocation.
- 9.5 Due acknowledgement of the work at CSIR should be made.
- 9.6 Under safe laboratory practices, due attention must be given frequently on areas such as fire safety, use of hazardous chemicals, disposal of waste of various kinds (chemical, biological, material, radioactive) and related issues. Mock drills should be conducted from time to time in order to keep all in the institution prepared and ready. Intervals between such drills should be no more than 6 months.

10. Personal Ethics/introspection:

Much of CSIR work is based on public funds and hence should be used with abundant caution. More importantly, it should be the duty of each individual to personally evaluate if the work done by him/her would lead to any tangible benefit to CSIR or the country in terms of a definitive novel idea, product or a patent.

Most institution have a cell for outreach activities and it is a part of the duties of scientists working with public funding that they provide regular overviews of their work

to the stakeholders in a clear to understand manner, without any attempt to overstate the achievement. It is essential that scientists use proper and measured language while presenting their work and mentioning the limitations of the work.

On a subtler nuance is the fact that many laboratories are well funded due to the system they belong to. These laboratories then procure large equipment and use these to work as material characterization centre and then demand their pound of flesh in the intellectual property, without any serious contribution. This is a gross unethical use of public funds, and should be discouraged. Every instrument bought with public funding should be treated as a public property and with reasonable caution on their misuse, should be made available to all, based only on the scientific merit of the analysis being done.

It is also ethical that precious public funds are used judiciously in the choice of a program. Only those programs that conform to the overall contours of CSIR's mandate be taken up. Please refer to Chapter 6 of Ref.3 for further elucidation.

11. EMR grants and CSIR grantees:

These guidelines shall also apply to researchers availing of CSIR extramural grants, as well as to CSIR Fellows including the Distinguished and Bhatnagar Fellows.

12. Grievance Redressal Mechanism: Appointment of Ombudsman

The scientific misconduct would be investigated by Scientific Investigation Board (SIB). The report of the SIB would be shared with the accused while implementing the punitive action. Any scientific/technical staff or a research worker, who is not satisfied with the recommendation of the SIB and the punishment/decision based on same by the competent authority can appeal, within 60 days, to Director General, CSIR for Grievance Redressal.

The appeal should be based on merits, clearly bringing out facts and with supporting evidences that were not taken into consideration by the SIB. DG, CSIR may, in turn, and based on the merits of the appeal, refer the matter to an Ombudsman of the concerned subject group for recommendation. The decision of DG, CSIR on recommendation of the Ombudsman shall be final and binding on all sides.

Any researcher or student who is being pressurised by his/her supervisor for unethical practices related to publications and laboratory practices may approach Standing Publications, Ethics and Scientific Vigilance Committee (SEC)/Ethics Officer.

An **Ombudsman** here is defined as an independent, impartial, free-service provider, who has not been associated with, or a beneficiary of the CSIR system ever. The Ombudsman would investigate complaints that have not been solved by the organization complained against. He/she would investigate complaints where something has been handled badly or unfairly, making someone suffer as a result. The Committee suggests the appointment of one Ombudsman to each of the five major

groups of CSIR institutions (groups of Physics, Chemistry, Biology, Engineering and Information sciences). Such an Ombudsman should be a non-CSIR person of proven scholarship, integrity and administrative experience. It is also suggested that all the Ombudsmans work in close synergy and as a group, for an overall coherence of application of rules, within the CSIR system. The Ombudsman may take the support of any technical expert, if so required.

The Ombudsman would be provided necessary support by Standing Publications, Ethics and Scientific Vigilance Committee (SEC) coordinated by Ethics Officer of the institute/CSIR Hqs. The Ombudsman will be paid honorarium, TA/DA and provided accommodation for holding the meetings.

13. Whistle Blowers and his/her identity and Protection

Whistle blowers are people who inform the authorities of some wrong doings. In an ideal case, any unsigned report from an unidentified source/person should not be acted upon. However, in the larger interest of CSIR, the DG may initiate an inquiry in cases where any anonymous complaint is accompanied by factual and verifiable data for a particular case. Fraudulent and inappropriate complaints made for reasons other than the larger interest of CSIR, will also attract a departmental enquiry, but this will also be in the scope of an approach Ombudsman. All such cases will be dealt with by the CSIR HQs and the protection of whistle blower will be ensured by it.

14. Acknowledgments

Committee thank Dr. Sudeep Kumar (Honorary Advisor to the DG), Sh. R. P. Singh (Chief Scientist & In-Charge, Mission Directorate) and Sh. Anoj Kumar Chadar (Principal Scientist, Mission Directorate, CSIR) for active participation and for appropriate advice and suggestions. And Committee thank Dr. S. Mande, DG, CSIR for his active interaction and advice.

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A.1 Authorship Guidelines

While it is clear that authorship accrues to all those who contribute to the study that being submitted as a research paper/book/monograph, often differences arise on the sequence of the authorships and credits therein. A few general guidelines are provided below, though there should be a room in these for a case- by- case adjustment. Normally the person who is responsible for ideation and conceptualization of experiments/ problems, creation of a work plan/ identification of potential collaborators and their role and the one who ensures the veracity of data becomes the **Corresponding Author**. The person who carries our most of the actual work in the laboratory or on the computational/calculation/formalism aspect normally becomes the **first author**. This person is also responsible for the first draft of the paper. Normally this would be a younger worker like a graduate student or a junior colleague.

Co-authorship accrues to all those who have made a reasonable scientific contribution to the work including generating new data/ developing algorithms or like. Co-authors are also expected to explicitly contribute to the science being presented and agree to the final results in a formal sense. Any change in the sequence of authorship, post-submission, should be done by informing the editor with clear reasons. Care should be taken to ensure that such actions are not required as they reflect somewhat poorly on the group and the institution.

In the case of reviews/report where consolidation/synthesis of information is generally presented, the sequence of the authorship should be discussed *a priori*. In such cases, the lead author is the one who takes the initiative of writing the first draft.

Authorship is a serious matter and be accepted with all responsibility that accrues with it. Thus, by agreeing to a co-authorship/authorship one **implicitly assumes shared accountability** for the scientific content, its accuracy *vis-a-vis* its being genuine, and other related aspects. This applies in all cases even when a fraudulent data/manipulated image was not sourced from one of the co-authors. Every co-author shares a role in any part of a fraudulence in the entire work chain, if detected at any time. A written consent of all authors to any report that is submitted for publication in some form is desirable, along with an explicit statement of who did what and contributed in which manner.

It is unethical to offer, expect or accept **honorary** or **guest authorship** based on some ones administrative/scientifically higher position. This is unethical.

Acknowledgement is another area that needs due care. Normally, in any study many people and all these should be acknowledged in a proper manner. These include, people, funding sources and the laboratory staff. Routine discharge of duties by staff need not be acknowledged, but those who contribute to science/experiments in a meaningful manner should not be ignored either.

B.1 Standing Publications, Ethics and Scientific Vigilance Committee (SEC):

Every CSIR lab as well as the HQ should have a **Standing Publications, Ethics and Scientific Vigilance Committee (SEC)** look into the best lab practices and publications to be observed by the scientific community. The committee would be chaired by a Chief Scientist (or one at a higher level) and comprise scientific and technical, administrative, and research fellows/students as members (with gender representation), with the Ethics Officer as the Member Secretary. The Committee in each lab would be constituted by its Director, while for the Hqs, it would be constituted by the DG. The Terms of Reference (TOR) of the committee would be as follows:

- i. The Committee shall regularly conduct seminars in Good Laboratory Practices and publications;
- ii. shall make mandatory implementation of communication numbers at the time of publications after obtaining approval from competent authority;
- iii. shall check Similarity index and Plagiarism of all publications;
- iv. shall ensure that the scientific audit of each publication is done;
- v. shall advice and guide the Director/DG, CSIR on all matters pertaining to misconduct in scientific practices and research ethics;
- vi. shall respond to any external parties (on behalf of CSIR) for compliance with ethical standards in respect of research projects undertaken by staff;
- vii. on an entirely voluntary basis, researchers may seek the inputs of this Committee for consultation on ethical aspects of their research;
- viii. shall work on any other matter as assigned by the Director / DG, CSIR

B.2 Standard Operating Procedure (SOP) for dealing with Scientific Misconduct

The following SOP is suggested for dealing with alleged cases of Scientific Misconduct:

- i. Complaint/information can be entertained from 'identified' individual. Anonymous complaints are not to be entertained.
- ii. The scientific misconduct is to be investigated by the **Scientific Investigation Board (SIB)**.
- iii. Director (for individual laboratory) and/or DG-CSIR (for CSIR Hqs) will set up a Scientific Investigation Board (SIB) comprising scientific/technical personnel of appropriate expertise (with gender and SC/ST/OBC representation) and with at least one external expert to investigate the matter, fact finding and recommending the punitive action (taking input/response of the accused, if needed).
- iv. The SIB will do due diligence including interaction with the concerned scientific staff, examine the records and suggest the suitable punitive action commensurate with the offence done as per the **Table-1** given below. Based on the above, SIB will submit the report to the Director and/or DG, CSIR as the case may be for consideration and appropriate action.
- v. In case of minor, moderate and major penalties (except those covered in section B.2.vi below), the same will be imposed on the accused directly by the Director for the laboratory and DG, CSIR for the Hqs.
- vi. The cases of major and severe transgressions involving penalties such as Deferred promotion/ Deferred increments/ Reduction to lower stage/ Compulsory retirement / Removal from Service, will be dealt as per the established administrative process (as per the rules and regulations adopted by the CSIR) by administration with the approval of the competent authority.
- vii. **Appellate Authority for Grievance Redressal:** The report of the SIB would be shared with the accused while implementing the punitive action. DG, CSIR will be the Appellate Authority for reviewing the punitive action recommended by SIB and implemented by the competent authority. The accused shall have the right to appeal, within 60, days against the recommendation of the SIB (and the punishment/ decision based on the same by competent authority), to the Director General, CSIR, for Grievance Redressal. The appeal should be based on merits, clearly bringing out facts and with supporting evidences which were not taken into consideration by SIB. DG, CSIR may in turn, based on the merits of appeal, refer the matter to an Ombudsman of concerned subject group for recommendation. The decision of DG, CSIR on the recommendation of the Ombudsman shall be final and binding on all sides.

B.3 Table-1: Levels of misconduct and suggested advice on action to be taken

Category	Characteristics	Examples	Action
I. Simple Error/ Minor Transgression	Non-deliberate, evidence of experiments having been performed via lab books or other records, with minimal or no change to primary scientific conclusions	<ul style="list-style-type: none"> • Plagiarism – materials and methods • Unmodified/Un-manipulated image duplication between figures or panels, where original data can be shown • Mistake in matters of credit/authorship where there is no clear misconduct 	<p>First: No action required other than correction of mistake /Counselling</p> <p>Second: Minor penalty such as warning for person(s) held responsible</p>
II. Moderate Transgression	<p>Very frequent instances of category I transgressions (>10).</p> <p>Deliberate, errors with changes to primary scientific conclusions, probable data fabrication</p>	<ul style="list-style-type: none"> • Plagiarism – main text • Modified image duplication between figures or panels or Instances of image duplication between publications, inability to provide original data • Deliberate denial of authorship or credit 	<p>Minor penalty commensurate with frequency and degree</p> <p>Removal from responsible position/Ban supervision/ Ban submission of proposals/ Ban consultancy/ Defer increments/Deferred promotion / Take a credit course on Ethics.</p>

<p>III. Major Transgression</p>	<p>Frequent instances of category II transgressions</p> <p>Any instance of clear data fabrication,</p>	<ul style="list-style-type: none"> • Plagiarism – data or >50% of text • Clear image manipulation sufficient to change scientific interpretation • Instances of repeated image duplication between publications, with different labels • Deliberate usurping of credit, fake authorships 	<p>Penalty to responsible person(s)</p> <p>Take a credit course on Ethics/</p> <p>Deferred promotion/ deferred increments/ reduction to lower stage/ compulsory retirement</p>
<p>IV. Severe Transgression</p>	<p>Very frequent instance of category III transgressions</p>		<p>Major penalty commensurate with the severity of misconduct</p> <p>Compulsory retirement/ removal from service</p>

Conflict of Interest Statement

I hereby certify and undertake that none of my relatives, students, collaborators, group members or institutional members is/are being considered in the proposed meeting for decision making.

S. No.	Name, Designation and Institutional Affiliation of the Member	Signature	Remarks (viz. recused due to Conflict of Interest etc.)
1.			
2.			
So on...			

(Signature of Chairman of the Committee)

Name:

Designation:

Institutional Affiliation:

Date:

Place:

Note: Any member can 'recuse' oneself from the meeting because of a potential conflict of interest and same need to be recorded in remarks section.