



NRC·CMRC

Research and Scientific Integrity Policy



National Research
Council Canada

Conseil national de
recherches Canada

Canada 

1. Effective date

1.1. This policy takes effect on December 12, 2018

2. Context

2.1. This policy is issued pursuant to the August 9, 2018 Memoranda of Agreement between the National Research Council of Canada (NRC) and the Professional Institute of the Public Service of Canada (PIPSC) in Respect of Scientific Integrity. This policy applies to all the NRC employees and other people working for the NRC (as defined in Section 9).

3. Authorities

3.1. This policy should be read in conjunction with the NRC Code of Conduct (2013)¹, which includes the Values and Ethics Code for the Public Sector² as adopted April 2, 2012, the Directive on the Management of Communications³, the Public Servants Inventions Act⁴, the Copyright Act⁵, and the NRC Policy on Conflict of Interest and Post-Employment.⁶

3.2. Where there is conflict or incompatibility between this Policy and legislation and/or a provision of any relevant collective agreement, the provisions of the legislation or relevant collective agreement take precedence.

3.3. Where there is conflict or incompatibility between this Policy and a mandatory Policy instrument of the Treasury Board and/or the NRC policy instruments (i.e. policy, directive or standard), the provisions of the Treasury Board mandatory Policy instrument and/or the NRC policy instruments take precedence.

3.4. Where there is conflict or incompatibility between this Policy and a voluntary Policy instrument of the Treasury Board and/or the NRC policy instruments (i.e. guidelines or tools), the provisions of this Policy take precedence.

3.5. The NRC will maintain a record of all instances of conflict or incompatibility between this Policy and legislation, collective agreements, or Treasury Board policy instruments and/or the NRC policy instruments, and submit this record as part of the performance evaluation as per s. 7.9 of this Policy.

3.6. In consultation with employees and their bargaining agents, the President of the NRC has authority to support research and scientific integrity by establishing relevant and applicable standards for the design, conduct, management, review and communication of research and science within the NRC. When appropriate, the President can assign this authority to the NRC Senior Ethics Officer.

4. Objectives and expected results

The objectives of this Policy are to:

4.1. Foster a culture that supports and promotes research and scientific integrity in the design, conduct, management, review and communication of research, science, and related activities.

4.2. Increase public, employee, client, collaborator and stakeholder trust in the credibility and reliability of the NRC research and scientific activities.

4.3. Enhance national and international recognition of NRC research and science excellence, which optimizes the NRC's ability to create industrial, economic and social benefits for Canadians.

4.4. Set out expectations regarding the design, conduct, management, review and communication of research, science, and related activities.

4.5. Enhance employee understanding of the contributions of research and science to evidence-informed decision-making, as well as the role of managers, communication specialists, researchers and scientists in the development of government policy and advice.

The expected results of this Policy are that:

4.6. Employees involved in the design, conduct, management, review, use or communication of research, science, or related activities understand and conduct themselves in a manner consistent with the principles of research and scientific integrity.

4.7. The NRC is recognized by employees, stakeholders, clients, collaborators and the public for its research and science excellence and as a reliable and credible source of research and scientific information.

4.8. The NRC Employees are recognized nationally and internationally for their research excellence.

4.9. As appropriate and to the extent possible, allegations of breach of the principles of research and scientific integrity as defined in s. 6 are addressed through a fair, impartial, efficient, confidential and respectful process.

4.10. Employees understand and seek to enhance the contributions of research and science to science advice, government policy and evidence-informed decision-making.

5. Application

5.1. This Policy applies to all the NRC employees and other people working for the NRC, as defined in s. 9.

6. Research and scientific integrity principles

The NRC recognizes that stakeholder trust in the research and scientific information provided by government depends upon the integrity of the process by which such information is produced, managed and communicated. So too does trust in the decision-making process that makes use of such information.

Furthermore, the NRC recognizes that all employees must uphold and conform to standards of excellence accepted by the wider research and scientific community.

To this end, in designing, conducting, managing, reviewing, using or communicating research, science and related activities, the NRC employees shall:

6.1. Ensure that all such activities are carried out in a manner that is consistent with all relevant and applicable standards of research and scientific excellence, research ethics, responsible research conduct including health, safety and environmental standards.

6.2. Ensure that the conduct of the NRC research and science and any research or scientific products, as well as any associated communications, are free from political, commercial, client, and stakeholder interference.

6.3. In the absence of clear and compelling reasons for limiting disclosure, ensure that research and scientific information produced by the NRC is made available to the public in a timely manner and in keeping with the Government of Canada's Directive on Open Government.

6.4. Accurately represent and appropriately acknowledge the contributions of both themselves and others to their research or scientific work.

6.5. Avoid conflicts of interest, and ensure that any real, potential or apparent conflict of interest is explicitly recognized, reported and appropriately managed.

6.6. Encourage discussion based on differing interpretations of research and scientific evidence as a legitimate and necessary part of the research and scientific processes and, where appropriate, ensure that these differences are made explicit and accurately represented.

6.7. Ensure that the significant and meaningful contribution of all employees to government programs, policies, regulations, and decision-making is acknowledged in official publications or communications, including the names and roles of those who made significant contributions to these products and activities.

6.8. Report any breach of these principles (i.e. a breach of scientific integrity) to their supervisor, manager or designated official.

7. Requirements

7.1. Implementation

7.1.1. This Policy will be communicated to all employees by the President of the NRC, supported by the Secretary General and the Departmental Science Advisor.

7.1.2. The NRC will continue to develop and implement the additional procedures, policies, guidelines, tools, training and professional development opportunities necessary to support this Policy.

7.1.3. The NRC will ensure that clients, contractors and/or collaborators involved in, or providing services in support of, research, science or related activities are informed of this policy.

7.2. Fostering a culture of science integrity

The NRC recognizes two complementary approaches to fostering a culture of research and scientific integrity. One focuses on instilling the virtues that underlie responsible conduct in research, science and related activities (s. 7.2.1). A second focuses on the procedure for bringing allegations of breaches forward, the investigation of these allegations, and the consequences of a finding that a breach has occurred (s. 7.2.2)

7.2.1. Science virtues

In accordance with relevant collective agreements:

7.2.1.1. The NRC recognizes the importance of research networking with national and international peers and active participation in the business and organization of relevant scientific and professional societies, which form an important part of ensuring employees understand and are held to the standards of their communities.

7.2.1.2. The NRC recognizes the importance of the virtues underlying research and scientific excellence, including intellectual curiosity and honesty, constructive skepticism, meticulousness, avoidance of bias, humility in the discovery and use of science evidence, and the limitations of scientific inquiry. To this end, it will ensure to support training, education and professional development opportunities that allow employees to further their understanding of, and appreciation for, these virtues.

7.2.1.3. The NRC will ensure to support training, education, and professional development opportunities to inform and educate employees about responsible conduct in research, research ethics, and the annotation, management and archiving of research and scientific data.

7.2.1.4. The NRC will encourage the development and implementation of a research and scientific integrity mentorship program for employees, whereby mentors exhibiting exemplary science virtues in their conduct and work are paired with more junior employees.

7.2.2. Breaches of research and scientific integrity

7.2.2.1. When an employee believes that there has been a breach of research and scientific integrity, the employee shall seek to resolve the issue in a fair and respectful manner in accordance with the NRC Interim Guidelines on Breaches of Research and Scientific Integrity (2018)⁷. In such cases, employees at all levels are encouraged to discuss and resolve these matters with their immediate supervisor. They may also seek advice and support from other appropriate sources including the NRC Senior Ethics Officer and their bargaining agents.

7.2.2.2. The President of the NRC will appoint a NRC Senior Ethics Officer to address allegations of breaches of this Policy in accordance with the related NRC Interim Guidelines on Breaches of Research and Scientific Integrity (2018).

7.2.2.3. The NRC Senior Ethics Officer will ensure that alleged breaches of this Policy shall be promptly and thoroughly reviewed and investigated by the NRC.

7.2.2.4. The NRC will endeavour to protect personal information and otherwise provide safeguards to ensure that employees may bring forward, in good faith, allegations of breach of scientific integrity or participate in an investigation procedure without prejudice or fear of reprisal.

7.2.2.5. When NRC employees have information that could indicate a serious breach of the NRC Code of Conduct (2013) they can avail themselves of the procedures laid out in the Public Servants Disclosure Protection Act⁸. They may also seek advice and support from other appropriate sources including the NRC Senior Ethics Officer and their bargaining agents.

7.3. Openness, transparency and timeliness

The NRC recognizes and understands the importance of openness and transparency about all elements of the research and scientific process as well as the timely release of scientific and research information. It nonetheless also recognizes that there may be legitimate and compelling reasons that may limit the disclosure or availability of research or scientific information to employees, stakeholders or the public.

7.3.1. This policy, as well as any associated policies, directives or guidelines, may be posted on the NRC's public website in permission-less downloadable form.

7.3.2. As the current policy and any associated policies, guidelines or tools are amended and revised, the NRC will maintain an annotated electronic archive of all such changes, with all archive elements available in permission-less downloadable form.

7.3.3. No NRC employee shall suppress, alter or otherwise impede the timely release of research or scientific information in the absence of clear and compelling reasons for doing so.

7.3.4. NRC employees shall ensure that research and scientific information (including that produced by contractors, grantees, or other partners who participate in, or assist with, the design, conduct, use or management of research, science or related activities) is produced and disseminated in a timely and transparent manner, in the absence of clear and compelling reasons for not doing so.

7.4. Public communication of research and scientific information

The NRC recognizes the right to freedom of expression by all employees on matters of research or science. It also recognizes the important role of all employees in communicating research and scientific information to the public.

Moreover, the NRC recognizes that all employees are subject to the NRC Code of Conduct (2013). The NRC and all employees further recognize the need for caution and prudence in the public communication of

classified or sensitive business, scientific or research information, as well as existing legal constraints on information disclosure. Finally, the NRC recognizes that effective public communication requires certain skills, and that employees may have different degrees of comfort with public fora.

7.4.1. Employees shall have the right, and are encouraged, to speak about or otherwise express themselves on science and their research, without approval or pre-approval of managers, supervisors or other relevant personnel, and without being designated as an official spokesperson. In doing so, they must respect the relevant provisions of the Access to Information Act⁹, the Public Servants Inventions Act, any formal and informal confidentiality and intellectual property protection expectations of the NRC and its clients, and the NRC Code of Conduct (2013).

7.4.2. In any public communications, employees must be familiar with and respect any legal restrictions on information disclosure such as privacy rights, matters before the courts, and cabinet confidences. They must also respect the NRC Code of Conduct (2013), and the Access to Information Act. Unless explicit approval to do so has been given by supervisors or managers, classified or sensitive business, research or scientific information shall not be discussed in any public communication.

7.4.3. In the case of planned formal public communication events with sufficiently long lead times (e.g. public talks or lectures), employees should notify their supervisor/manager of the upcoming event and provide a copy of their communication material for information purposes only and without prejudice. Where a public communication relates to an invention, that public communication must follow the disposition of that invention under the Public Servants Inventions Act.

7.4.4. In the case of formal public communication events with short lead times (e.g. media interviews) that effectively preclude prior notification, employees should notify their supervisor/manager as soon as possible after the event for information purposes only and without prejudice.

7.4.5. Pursuant to s. 7.4.2 and 7.4.3, the NRC will ensure that employees are provided with guidelines consistent with relevant collective agreements and the Directive on the Management of Communications, to assist them in determining the types of public communications for which supervisor/manager notification is desirable or required, and the appropriate timing and form of any such notifications.

7.4.6. Employees are under no obligation to act as public NRC subject matter experts or appear in public fora, and may decline any such invitation or request without prejudice, unless explicitly given this task by management.

7.4.7. Any public communication which describes work conducted by employees must be reviewed and approved by them or their designates before publication or dissemination, and must acknowledge their contribution(s). In cases where an employee does not wish authorship and/or their contribution to be acknowledged, they should be consulted as to whether, in their view, the work is accurately described and findings interpreted appropriately.

7.4.8. Employees are encouraged to participate in media training provided by the NRC, but this is not a requirement for them to express themselves about science or their research.

7.4.9. Where an employee is speaking in the role of an official spokesperson, they must identify themselves by name and position and speak on the record for public attribution.

7.5. Dissemination of research and scientific findings

The NRC recognizes that communication among researchers and scientists is critical to the development of scientific and scholarly knowledge. Moreover the NRC recognizes that its employees are part of a global community of scientific and scholarly expertise, their contribution to which is critical to maintaining and

enhancing the credibility and reputation of NRC experts, the reputation and credibility of the NRC, and the contribution of the NRC to the knowledge economy.

As with public communications, employees disseminating or communicating information through research or scientific media are subject to, and bound by, the Access to Information Act, the NRC Code of Conduct (2013) and must abide by the Directive on the Management of Communication where it does not conflict with the relevant collective agreements.

The following outlines the NRC principles and procedures for publication approval. Approval to publish will not be unreasonably withheld.

7.5.1. Drafts of NRC research or scientific publications authored by NRC employees shall be submitted to their manager or supervisor prior to formal submission, and discussed in a timely fashion.

7.5.2. If the submitted research or scientific publication does not contain explicit comments about or recommendations on federal statutory, regulatory or policy matters, approval of publication content by managers, supervisors or other relevant personnel is not required before submission for publication, communication or dissemination. In doing so, employees must respect the relevant provisions of the Access to Information Act, the Public Servants Inventions Act, the Copyright Act, any formal and informal confidentiality and intellectual property protection expectations of the NRC and its clients, and the NRC Code of Conduct (2013).

7.5.3. If the research or scientific publication contains explicit comments about or recommendations on federal statutory, regulatory or policy matters, approval of publication content by managers, supervisors or other relevant personnel is required before submission for publication, communication or dissemination.

7.5.4. For communications that do require approval, managers, supervisors or other relevant personnel may require revisions or editorial changes. In the event that approval is contingent upon incorporation of such revisions or changes, and the author(s) are not in agreement with the suggested changes, the work will not be attributed to the employee if the employee so requests. In the event that approval is withheld, the author(s) shall be so informed in writing of the reasons.

7.5.5. In support of Articles 7.5.2 -7.5.4 and in consultation with employees and their bargaining agents, the NRC will develop guidelines to assist employees, managers and supervisors in identifying and distinguishing communications that do/do not require manager or supervisor approval.

7.5.6. The responsible author(s) of any research or scientific communication must ensure that:

- Approval of all listed authors and contributors is obtained;
- All authors share responsibility for the work in question and are prepared to defend the aspects of the research in which they were directly involved;
- Authorship is discussed at the earliest possible phase of the research and issues are addressed well before the writing of a manuscript;
- The work in question is not a republication of original work except when the republication involves translation or dissemination to diverse audiences and is consistent with existing standards on republication, including, for example, the publication of reviews;
- All contributions to the work are appropriately acknowledged in a manner conforming to accepted standards of the relevant discipline(s) and publication(s);
- The NRC authors' federal affiliations are listed;
- The communication has been subjected to appropriate independent peer review and that technical and/or editorial changes that may result from this review have been addressed;
- Matters related to acknowledgements and official languages have been appropriately managed and administered;

- The possibility of publishing in Open Access journals for scientific and technical papers has been explored;
- They have exercised due diligence in ensuring that all issues related to the Public Servants Inventions Act, intellectual property and related matters have been resolved;
- They understand relevant terms and conditions for publication, including copyright and level of authority required for approvals.

Moreover, employees should seek credible and reputable outlets for academic publication that conform to established practices and standards of academic publishing, including particularly rigorous peer review practices.

7.5.7. In cases where the NRC employees have provided data or information to be used in a government document (e.g. a report, briefing note, etc.), management and those responsible for preparing the documents should consult with the employee(s) concerned to ensure that the data/information is used and interpreted appropriately.

7.6. Contributions to the research and scientific community

The NRC recognizes that the participation of NRC employees in the global scholarly community depends upon domestic and international collaboration and partnerships. Such collaborations and partnerships provide important opportunities for NRC employees to leverage their expertise, knowledge and infrastructure in developing research and scientific knowledge to the benefit of Canadians.

To this end, the NRC will:

7.6.1. Encourage and facilitate domestic and international research or scientific collaborations and partnerships between NRC employees and the external research and development communities in universities and colleges; provincial, territorial or indigenous governments; industry and business; and civil society.

7.6.2. Make a reasonable effort to appropriately resource participation in relevant scientific and professional societies, working committees, conferences, workshops and symposia identified by employees as well as management.

7.6.3. Make a reasonable effort to ensure appropriate engagement or participation of employees in international science and research-based fora of which Canada is a formal member.

Furthermore:

7.6.4. The NRC encourages activities related to collaboration with the extramural research and development communities, including the appointment of NRC employees to adjunct professorships.

7.7. Role of employees in science advice and evidence-informed decision-making

The NRC recognizes that employees have important roles to play in providing advice that informs federal programs, policy, regulations and law. Research and scientific findings are an important source of evidence that must be appropriately considered in evidence-informed decision-making.

Moreover, employees have an important role to play in providing advice not only on the research required to resolve today's issues, but also to identify emerging scientific and technical issues, research directions and opportunities.

To this end and in consultation with employees and their bargaining agents, the NRC will develop and deploy transparent and systematic mechanisms and procedures for:

7.7.1. Gathering, evaluating and incorporating scientific advice into the NRC and government-wide policy and regulatory decision-making process.

7.7.2. Engaging employees in the design, development, and evaluation of robust and resilient research programs that will be able to meet the research needs of the future.

7.7.3. Identifying and prioritizing areas of federal authority for which the current federal science or research capacity is inadequate or where federal investment in research and development is likely to provide substantial benefits to Canadians.

In addition, the NRC will:

7.7.4. Support the development of training and professional development opportunities devoted to the roles of science and research in developing evidence to support evidence-informed decision-making. Such opportunities may be made available to all employees who engage in, supervise, manage, support, review, use or report on research and scientific activities; analyze, curate or communicate data or information generated by these activities; and/or seek to use information derived from these activities in decision-making.

7.8. Responsible conduct of research and science

The NRC is committed to ensuring that the NRC's research and science conforms to the highest standards of responsible research and science conduct and shall strive to follow the relevant and applicable research practices honestly, accountably, openly and fairly in the development and dissemination of research and scientific knowledge.

7.8.1. Research and scientific integrity involves the application of concepts of transparency, openness, high quality work, avoidance of conflict of interest and ensuring high standards of impartiality and research ethics. Employees involved in science or research shall conform to the standards of responsible research. Such standards include, but are not limited to ensuring that:

- All research and scientific activities (including study design and implementation; recording, analyzing, and interpreting data; and in reporting and publishing data and findings) are conducted with the highest scientific rigour;
- Complete and accurate records of data, methodologies and findings, including graphs and images, are maintained in a manner consistent with policies, processes and best practices. This curation is essential to the verification and/or replication of the work by others;
- Referencing and, where applicable, obtaining permission for use of all published and unpublished work, including data, source material, methodologies, findings, and images as appropriate;
- Authorship consent is obtained, and that all those and only those who have made a substantial (conceptual and/or material) contribution to, and who accept responsibility for, the contents of the publication or document;
- Individuals, organizations or institutions who have sponsored and/or funded the research are appropriately described and acknowledged;
- All and only those individuals who have participated in the research are appropriately recognized and acknowledged;
- The contribution of those and only those who have contributed to research, including funders and sponsors, is appropriately described and acknowledged;
- Any real, perceived or potential conflict of interest is reported and appropriately managed;
- Information included in grant or award applications is accurate and complete, including information on partners, collaborators, co-applicants, and that their permission to be listed has been obtained;
- Research involving humans or animals conforms with the NRC Policy for research involving human participants¹⁰ and NRC Animal Care Committee Policies and Procedures Manual¹¹ including Tri-council principles and procedures as specified in the Tri-Council Policy Statement: Ethical Conduct for

Research Involving Humans¹² and the Canadian Council on Animal Care Guide to the Care and Use of Experimental Animals¹³ respectively.

7.8.2. Employees involved in science or research shall avoid breaches of responsible research conduct. Research misconduct does not include unintended error (experimental, analytical, and/or computational) or honest differences in interpretations or judgments of data. All types of scientific misconduct must be interpreted reasonably with a sense of what is customary in the relevant scientific and research community. Such breaches include, but are not limited to:

- Fabrication: Making up data, source material, methodologies or findings, including graphs and images;
- Falsification: Manipulating, changing, or omitting data, source material, methodologies or findings, including graphs and images, without acknowledgement and which results in inaccurate findings or conclusions;
- Destruction of research records: The destruction of one's own or another's research data or records specifically to avoid the detection of wrongdoing or in contravention of this or any other applicable policies and/or laws, regulations and professional or disciplinary standards;
- Plagiarism: Presenting and using another's published or unpublished work, including theories, concepts, data, source material, methodologies or findings, including graphs and images, as one's own, without appropriate referencing and without permission where required;
- Redundant publication or self-plagiarism: The re-publication of one's own previously published work or part thereof, including data, in any language, without adequate acknowledgment of the source, or adequate justification;
- Invalid authorship or contributions: Inaccurate attribution of authorship, including attribution of authorship to persons other than those who have made a substantial contribution to, and who accept responsibility for, the contents of a publication or document. Invalid authorship also includes the failure to acknowledge those who have made substantial contributions to the work in question;
- Peer review abuse: non-disclosure of conflict of interest, unfairly delaying a rival's publication;
- Mismanagement of conflict of interest: Failure to appropriately identify and address any real, potential or apparent conflict of interest;
- Misuse of research funds: Failure to comply with the prescribed funding conditions and requirements;
- Inaccurate grant and awards application: Providing incomplete, inaccurate or false information in a grant or award application or related document, such as a letter of support or a progress report;
- Inaccurate statement of collaborations. Listing of co-applicants, collaborators or partners without their agreement;
- Research Practice Misconduct: Research activities that are contrary to health, safety and environment policies and in violation of human participant protocols and laboratory animal protocols; and
- Subject of a formal allegation: Failure to inform the NRC of any formal allegation for research misconduct by another organization.

7.9. Monitoring and performance evaluation

The NRC will annually review this and associated policies, guidelines or tools to ensure they remain relevant and seek employee and applicable bargaining agent input and feedback on the implementation of this Policy and provide performance indicators as practical.

7.9.1. In consultation with the Office of the Chief Science Advisor (OCSA) and NRC's employees and their bargaining agents, the NRC will design, develop and implement a monitoring plan for this Policy that will provide information on (a) the extent to which the policy has achieved its objectives (that is, policy performance); and (b) future policy and associated instrument (e.g. guidelines, directives, etc.) adjustments, modifications or changes likely to improve policy performance. Any such plan must have regard for other government initiatives or circumstances that may affect estimated performance independent of, or in concert with, the Policy.

7.9.2. Any plan developed under article 7.9.1 shall explicitly identify (a) the performance indicators that will be monitored; (b) how the data on these indicators will be collected, annotated and curated; (c) how performance baselines will be characterized; and (d) how changes from baseline will be estimated and evaluated.

7.9.3. A copy of all data and information collected as part of the monitoring plan will be forwarded annually to the Office of the Chief Science Advisor (OCSA), the NRC's Joint Consultation Committee and the Governance Committee for Implementation of Government-Wide Scientific Integrity Policy comprised of the Secretary of the Treasury Board, the Chief Science Advisor and the President of the Professional Institute of the Public Service of Canada.

8. Responsibilities

President of the NRC

The President of the NRC and his/her delegates are responsible for fostering an environment that encourages excellence and integrity in research, science and related activities, and for promoting a culture of open communication where employees may disclose, in good faith, information concerning breaches of scientific integrity. The President, with the support of the Secretary General, is also responsible for:

- ensuring that this Policy is communicated to all employees;
- monitoring compliance with this Policy within the NRC and taking corrective action as needed;
- performance evaluation of this Policy; and
- providing an annual confirmation of the compliance and reporting with this Policy as requested by the Governance Committee for Implementation of Government-Wide Scientific Integrity Policy.

Vice-Presidents, Directors General, Directors, managers and supervisors

Vice-Presidents, Directors General, Directors, managers and supervisors are responsible for implementation of this Policy. Such responsibilities include:

- informing employees about this Policy and ensuring that they are aware of their rights and responsibilities and obligations under the Policy;
- ensuring compliance with this Policy, providing to employees information about the processes available to them if they wish to make an allegation under this Policy, and addressing all allegations of breach of scientific integrity that are brought to their attention or of which they are aware; and
- ensuring that employees are aware of professional development and training opportunities that may be available in support of this Policy.

Specific responsibilities will be articulated in procedures and guidelines that will be developed to support this Policy.

NRC employees who conduct research, science or related activities

All NRC employees involved in the design, conduct, management, review, use, or communication of research, science or related activities, and all persons conducting research, science or related activities under the auspices of the NRC will have primary responsibility for:

- ensuring their behaviour and conduct conforms to the principles of scientific integrity;
- ensuring that they design, conduct, manage, review, use, or communicate research or science in a manner fully consistent with this Policy;
- reporting a suspected breach of scientific integrity as soon as possible; and
- participating in good faith in any inquiry or investigation conducted pursuant to this Policy and the NRC Interim Guidelines on Breaches of Research and Scientific Integrity (2018).

9. Definitions

Alteration: (of a scientific or research work): any change in the form or content of a research or scientific work that may affect the interpretation of the work and/or its implications.

Authors: those who have made a substantial intellectual contribution to the research, at a minimum through direct participation in at least two of the following activities: conception of the research project; performance of the research; interpretation of the data; technical assistance, and writing of the manuscript. General supervision of the research group, data collection, critical reviews of the manuscript and funding of the research are not generally sufficient for authorship.

Breach: (of research and scientific integrity): failure to abide by any of the provisions described in s. 6 or s. 7 of this Policy.

Classified or sensitive research or scientific information: research or scientific information which would normally be considered to be exempt from disclosure under the Access to Information Act.

Clear and compelling reasons: (for withholding publication of scientific or research information): legitimate reasons include, but are not limited to: (a) disclosure of such information is exempt under the Access to Information Act or the Security of Information Act; (b) technical or technological constraints, contractual obligations, copyright, and/or intellectual property protections, limit or prevent making the information available.

Client: any person, organization or institution, whether internal or external to government, who (1) receives research, scientific or technical services carried out by the NRC; or (2) is a recipient and/or user of intellectual property, data or information provided or licensed by the NRC.

Collaborator: any person, organization or institution, whether internal or external to government, with whom the NRC jointly conducts research or scientific work aimed at investigating a problem or area of mutual interest.

Communication (of science): science communication involves any exchange of scientific or research information (including research results and interpretations thereof, methods, protocols, data, and products) in any form, between or among employees and the consumers or users of this information, including the public, other scientists or researchers, other government employees, and clients.

Compelling evidence: evidence of sufficient strength to convince the decision-maker that it is likely that the claim for which the evidence is adduced is true.

Employee: to be interpreted broadly to cover all employees within the NRC, including supplementary workers and students, all of whom have a greater or lesser role to play in the scientific integrity procedures described in this Policy.

Intellectual Property: means proprietary and/or technical information and/or know-how, including of scientific and technical discoveries of any kind and in a form which is useful, or has the potential to be useful, and transferable and which may be protected under law by way, but not limited to, patents, trademarks, copyrights, industrial designs, integrated circuit topographies and trade secrets.

Interference: any action that alters or suppresses the work or the impartiality of an employee, as understood within the NRC Code of Conduct, including the expectation that they provide decision makers with all the information, analysis and advice they need, while striving to be open, candid and impartial. Interference also includes alteration or inappropriate suppression of research methodology and results or dissuasion of reporting of results by any party, including clients. With respect to work conducted for or with third parties such as clients or collaborators, it is acknowledged that the NRC may, so long as the integrity of the research is maintained, consult with, or take reasonable direction from, such third parties on research direction.

People who work for the NRC: are NRC employees, as well as, guest workers, as well as independent and volunteer visiting workers that are working within an NRC facility and are either: receiving compensation, other than salary, from the NRC or working on an NRC project.

President: as defined in the National Research Council Act.

Related activity: any activity that (a) supports science or research (e.g. laboratory operations and management; infrastructure (including information and communication infrastructure); (b) uses research or scientific information as an input (e.g. solicitation or preparation of science advice; evaluation of research or scientific evidence); (c) involves the curation, communication or archiving of scientific or research data or information.

Research: any undertaking intended to extend knowledge through a disciplined inquiry or systematic investigation.¹⁴

Researcher/Scientist: employees primarily involved in the application of comprehensive knowledge in a field of science or engineering, for the achievement of one of the following primary objectives:

- the planning, conduct, and evaluation of research and development in support of the advancement of scientific or technical knowledge in the fields of science and engineering, the resolution of which involves technological uncertainty;
- the provision of scientific or technical advice both within and outside the NRC derived as a result of conducting personal research; or
- the management of projects in the fields of science or engineering.

Science: the pursuit and application of knowledge and understanding of the natural world through application of one or more elements of the scientific method. In the context of the current policy, it is understood to include both fundamental and applied natural, physical, biomedical and social science, as well as engineering and mathematics.¹⁵

Scientific integrity: the condition resulting from adherence to concepts of transparency, openness, high quality work, avoidance of conflict of interest and ensuring high standards of impartiality and research ethics.

Suppression: (of a scientific or research work): the deliberate withholding of a scientific or research work, or any portion thereof, from publication or dissemination, in the absence of clear and compelling reasons for doing so.

Timely manner: within a time frame that is consistent with usual review and approval processes, and consistent with logistical and resource constraints. The NRC or external collaborators may impose reasonable embargo periods to respect the right of a principal investigator to first publication.

10. Enquiries

For further information on this policy, contact the [NRC Corporate Secretariat](#).

Footnotes

- 1 [NRC Code of Conduct \(2013\).](#)
- 2 [Values and Ethics Code for the Public Sector.](#)
- 3 [Directive on the Management of Communications.](#)
- 4 [Public Servants Inventions Act.](#)
- 5 [Copyright Act.](#)
- 6 The [NRC Policy on Conflict of Interest and Post-Employment.](#)
- 7 The [NRC Interim Guidelines on Breaches of Research and Scientific Integrity \(2018\).](#)
- 8 [Public Servants Disclosure Protection Act.](#)
- 9 [Access to Information Act.](#)
- 10 The [NRC Policy for research involving human participants.](#)
- 11 [Animal Care Committee Policies and Procedures Manual.](#)
- 12 [Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans.](#)
- 13 [Canadian Council on Animal Care Guide to the Care and Use of Experimental Animals, Vol. 1 \(2nd edition\).](#)
- 14 Adopted from the 2008 Tri-Council [definition of research.](#)
- 15 Adopted from the [Science Council.](#)