

# GUIDELINES FOR RESEARCH ETHICS IN SCIENCE AND TECHNOLOGY



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## **Prepared by**

The National Committee for Research Ethics in Science and Technology (NENT) during the meeting of May 8<sup>th</sup> 2007, based on a draft prepared November 29<sup>th</sup> 2005 and consultative comments made to this draft.

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## **Foreword**

These guidelines for research ethics were drawn up by The National Committee for Research Ethics in Science and Technology (NENT) in 2005, and were revised in 2007 following a consultative process.

The guidelines are supplementary to existing international guidelines for research ethics. They address themselves to the individual researchers and are meant to clarify ethical obligations and rights.

Bodies of research bear for their part an obligation to ensure that the guidelines are implemented and adhered to within their research environments, and that the guidelines are routinely imparted to employees and students.

The institutions must also accommodate ethical research practice, and they should have in place mechanisms, and potentially their own guidelines, that can address and resolve possible conflicts and dilemmas pertaining to research ethics.

These guidelines provide comprehensive ethical guidance in addition to the Research Ethics Law; the guidelines deal with ethical aspects and ethical responsibility, while the law deals with legal responsibility.

In inter-disciplinary projects that include for example human medicine or the social sciences, the guidelines for research ethics that pertain to these areas must also be followed.

We want to thank Ellen-Marie Forsberg for her editorial support.

*Oslo, May 2008*

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## **SUMMARY**

### ***The overriding obligations of research***

1. Research must be conducted in accordance with human rights.
2. Research must be conducted in accordance with sustainable development and respect for the environment.
3. Research must promote peace.
4. Research must promote and take part in the development of democracy.
5. Research must promote greater global justice in the distribution of wealth through the spread of information.

### ***Good research practice***

6. The researcher and the research institution are responsible for exercising honest research practices.
7. The researcher is individually responsible for the activities, subject matter and method of his or her research, as well as for the quality of the results.
8. The researcher must respect the contributions of other researchers and follow standards for authorship and cooperation.
9. When conducting research, the researcher must follow national and international regulations on ethics and safety.

### ***Uncertainty, risk and the Precautionary Principle***

10. The researcher must clarify the degree of certainty and precision that characterizes the research results. In particular, the researcher must take care to clarify the relative extent of the results' certainty and validity, as well as indicate any elements of risk or uncertainty that may be significant for possible uses of the research results.
11. In cases where plausible, yet uncertain information exists that the use of technology or the development of a certain research field might lead to ethically unacceptable consequences for health, society or the environment, researchers within the given field must strive to provide information that is relevant for using the Precautionary Principle.
12. The researcher must respect the demand for informed consent.
13. Research must secure the privacy of the research subjects.

### ***Protection of animals in research***

14. The researcher must show due care and respect for animal welfare in the preparation and execution of animal experiments, and must account for the experiment's necessity to the relevant authorities.
15. The researcher must accommodate his or her research so that the use of research results is not contrary to the fundamental demands of animal welfare.
16. When questions may be raised concerning a researcher's use of animals testing on the basis of ethical considerations, the researcher must ask an independent ethics committee for their assessment.



### ***Relationship with traditional and alternative sources of knowledge***

17. The researcher must whenever natural seek to incorporate and respect alternative sources of knowledge, such as traditional knowledge.
18. The researcher should whenever relevant seek to use participatory methods.

### ***Openness, contract research and conflicts of interest***

19. The researcher is responsible for ensuring openness and scientific quality in contract research.
20. The researcher is obliged to be open about possible conflicts of interest.

### ***Whistle-blowing and ethical responsibility***

21. When the researcher in the course of work comes into conflict with what he or she considers to be his or her social responsibility, the researcher must have the possibility, and, according to the circumstances, duty, to act as a whistle-blower to society at large.
22. Research institutions must have in place independent mechanisms that can support employees in whistle-blowing situations.

### ***Research and popularization***

23. Research institutions should have in place clear routines that reward researchers who popularize research and participate in research-related public debates.
24. Researchers should actively use suitable modes of communication to reach relevant user groups with information about research results.

### ***Proposal for a scientific oath***

I will conduct my activities as a researcher with integrity and honesty; I will use my scientific knowledge and skills for the benefit of humanity and for a sustainable development; I will show respect for animals and nature; I will act in accordance with research ethics, and I will not allow considerations based on ideology, religion, ethnicity, prejudices or material advantages to overshadow my ethical responsibility as a researcher.

# **GUIDELINES FOR RESEARCH ETHICS IN SCIENCE AND TECHNOLOGY**

## ***Research ethics***

Just as ethics is about a vision of the good life, research ethics is about a vision of good knowledge. The term “research ethics” refers to a diverse set of values, norms and institutional regulations that help constitute and regulate scientific activity.

Ethics may be operationalized as good research practice. Good research practice entails that the aims of research do not violate common morality, ethics and respect for human dignity. Good research practice also entails that the researcher respects current regulations and principles of research ethics. Both the researcher and the research institution are responsible for accommodating and exercising good research practice.

The field of research ethics contains many elements. Research has a fundamental ethos, namely the search for truth. At the same time, research ethics emphasizes that research has a more general responsibility to society. Research ethics also concerns the internal relationship among researchers, as well as the relationship between researchers and others people. Research may in addition have consequences for animals and the environment. These guidelines attempt to cover all these elements for everyone who is involved in research.

## ***The overriding obligations of research***

The overriding norms of research can be formulated as openness, quality and accountability.<sup>1</sup> Within the UN system there are in addition many principles and declarations that science should be familiar with and adhere to, such as the conventions on human rights, the principles of sustainable development and conventions for maintaining peace and democracy. International agreements also exist that directly pertain to research ethics. For instance, UNESCO’s World Conference on Science, held in 1999, formulated a declaration and drew up a plan of action for dealing with scientific challenges that world society faces today, including the ethical challenges of science. Article 75 from the World Conference recommends that scientific institutions formulate ethical guidelines for their work. Researchers and scientific institutions should be familiar with such declarations and conventions.

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<sup>1</sup> See for example Chapter 3 in The National Committees for Research Ethics in Norway, 2003, Oppdragsforskning: åpenhet, kvalitet, etterrettelighet [Contract Research: Openness, Quality, Accountability].

The first five guidelines summarize the overriding obligations of research to mankind:

**1. Research must be in accordance with human rights.**

Research must not violate the rights that are laid down in international conventions on civil, political, economical, social and cultural human rights.

**2. Research must be in accordance with sustainable development and respect for the environment.**

This entails that research should e.g. promote conservation of biodiversity and be in accordance with the Precautionary Principle. Caution should be exercised when conducting research that might have grave consequences for the environment or for humans, even though the existence of these possible threats has not been completely established with certainty.

**3. Research must promote peace.**

Research must create a security that is mutual for individuals, groups and nations. Research must not violate international conventions which are meant to ensure peace.

**4. Research must promote and take part in the development of democracy.**

Research must not be of a kind that would undermine democratic decisions or the development of democracy. Research must promote a collective expansion of knowledge that is common to all. In cases where the development of science and technology can be misused to undermine the self-determination, human dignity and democratic rights of individuals, researchers must strive to hinder and not participate in such abuses of research.

**5. Research must promote greater global justice in the distribution of wealth through the spread of information.**

Research results and their usage must be shared in their entirety to society at large, both nationally and internationally and with developing countries in particular. Information about research must in principle be made accessible to all. Researchers have an ethical responsibility to spread information to disadvantaged countries, interest groups and concerned parties when such information may make a difference in rectifying an imbalanced distribution of wealth.

### ***Good research practice***

The next four guidelines pertain to how research ethics may be exercised through good research practice.

#### **6. The researcher and the research institution are responsible for exercising honest research practices.**

Integrity, honesty and accountability are the fundamental demands of research ethics. Research must not conceal, misrepresent or falsify anything, whether in regard to the planning, execution or reporting of the research. In accordance with the Research Ethics Law, cases of doubt may be presented to the National Committee for Investigating Integrity in Research.

Fraud, however, must be distinguished from common mistakes in research, in that fraud implies a deliberate intent to misrepresent reality. Researchers who discover or are made aware of mistakes in their research must admit the mistake, rectify it and ensure that the consequences of the mistake are minimal. It is also dishonest to present as a result something the researcher knows or should know lacks empirical or theoretical substantiation, or to fail to present important new knowledge. Each researcher has an independent responsibility to not accept fraudulent research practices, either on behalf of him- or herself or others. The researcher has a responsibility to respect the research results of others and to cite relevant works conscientiously.

This entails that:

- a) Researchers and research institutions do not accept scientific fraudulence, either in the form of forgery, manipulation or the selective presentation of data from research conducted by themselves or others.
- b) Researchers and research institutions do not tolerate plagiarism of research.
- c) Researchers and research institutions make data accessible to others for verification within a certain period of time.
- d) Researchers present research done by others in a balanced and honest manner.
- e) Research institution must have guidelines and routines for storing research data in such a manner that the data may be retrieved, also when the researcher has terminated his or her working relationship at the institution.

**7. The researcher is individually responsible for the activities, subject matter and method of his or her research, as well as for the quality of the results.**

The researcher is responsible for critically assessing whether his or her research could potentially benefit society, either directly or indirectly. The researcher is independently responsible for the research being either directly or indirectly beneficial to society, and for ensuring that it does not cause damage. The researcher therefore has a duty to be critical when selecting research topics and research strategy.

This entails that:

- a) The researcher has a critical awareness regarding the choice of subject matter in relation to goals, values and ethics.
- b) The researcher's choice of method is in proportion to the goals and expenses of the research.
- c) The researcher shows openness when reporting.
- d) The researcher subjects him- or herself to peer review and other forms of quality control.

**8. The researcher must respect the contributions of other researchers and follow standards for authorship and cooperation.**

The researcher should follow good publication practice. Honorary authorships are unacceptable. Rightful authorship is considered to be defined by three criteria<sup>2</sup>:

- a) All the authors must have made a significant and directly academic contribution to at least two of the four components of a typical research project:
  - i. Concept or design
  - ii. Data collection and processing
  - iii. Analysis and interpretation of data
  - iv. Written formulation of substantial parts of the work
- b) Secondly, all the authors should have critically read through the different drafts and approved the final version.
- c) Thirdly, all the authors should be capable of defending the work in its entirety (though not necessarily all the technical details).

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<sup>2</sup> See <http://www.britisoc.co.uk/publications/20>. It is also usual to refer to the Vancouver Convention for guidelines on authorship.

Good publication practice entails that:

- a) The researcher denotes all the source material and respects the original contributions of others through citations.
- b) The researcher clarifies the individual areas of responsibility in teamwork and clarifies the rules of co-authorship. Co-workers who have contributed significantly to the work must not be excluded as co-authors.
- c) The researcher respects the rights of others to use their own data in their own research within a reasonable limit of time (usually 1-2 years). When the relevant party does not use such data during that time span, the data may be used in other research with due citation of the given source.
- d) The researcher as a peer reviewer must follow the following rules: i) The researcher must abstain from acting as a reviewer if he or she has been involved in a contentious dispute with the given author, or is directly involved in a collaborative or competitive relationship with the author. ii) The researcher must, when necessary, state the limits of his or her competence.

### **9. When conducting research, the researcher must follow national and international regulations on ethics and safety.**

Good research practice entails that national laws and regulations are adhered to, both at home and abroad. It also entails that the researcher should carefully consider whether it is ethically defensible to follow foreign laws and regulations if such laws are of a different ethical standard than in the individual's home country.

This entails that:

- a) Researchers apply for national project permits where such permits are required.
- b) Researchers respect mandatory standards of safety for laboratories, and educate themselves and others in the use of the given equipment.
- c) Researchers do not relocate parts of their research to other countries merely because the standards of ethics or security are lower there than in the individual's home country.
- d) Researchers inform funding agencies of any potentially deviant standards of ethics or safety in countries where the research is being conducted.

### ***Uncertainty, risk and the Precautionary Principle***

Research may have far-ranging consequences for health, society or the environment. It is therefore important that the uncertainty and risk that often follow when research becomes practical and concrete is not neglected, and that decision-makers who use scientific knowledge achieve a good understanding of such knowledge in its correct context.

**10. The researcher must clarify the degree of certainty and precision that characterizes the research results. In particular, the researcher must take care to clarify the relative extent of the results' certainty and validity, as well as to indicate any elements of risk or uncertainty that may be significant for possible uses of the research results.**

Researchers are traditionally accustomed to presenting knowledge demands critically and in context. Researchers are not as accustomed, however, to presenting elements of risk and uncertainty. It is part of the researcher's ethical responsibility and striving for objectivity to clearly depict the relative certainty and validity of the information. Whenever possible, the researchers should also use suitable methods to depict the research's uncertainty<sup>3</sup>. Research institutions are responsible for conveying such methods to their employees and students

**11. In cases where plausible, yet uncertain information exists that the use of technology or the development of a certain research field might lead to ethically unacceptable consequences for health, society or the environment, researchers within the given field must strive to provide information that is relevant for using the Precautionary Principle.**

This entails that the researcher must cooperate with other relevant parties when using the Precautionary Principle. The Precautionary Principle is here defined in the following manner: "When human activities may lead to morally unacceptable harm that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm."<sup>4</sup> This principle is important for large parts of scientific research, and researchers are co-responsible for facilitating deliberations regarding the Precautionary Principle.

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<sup>3</sup> For recent methodological developments in scientific uncertainty, see for example [www.nusap.net](http://www.nusap.net).

<sup>4</sup> The definition is taken from UNESCO – COMEST (2005), where the principle is further explained: "*Morally unacceptable harm* refers to harm to humans or the environment that is threatening to human life or health, or serious and effectively irreversible, or inequitable to present or future generations, or imposed without adequate consideration of the human rights of those affected. The judgement of *plausibility* should be grounded in scientific analysis. Analysis should be ongoing so that chosen actions are subject to review. *Uncertainty* may apply to, but need not be limited to, causality or the bounds of the possible harm. *Actions* are interventions that are undertaken before harm occurs that seek to avoid or diminish the harm. Actions should be chosen that are proportional to the seriousness of the potential harm, with consideration of their positive and negative consequences, and with an assessment of the moral implications of both action and inaction. The choice of action should be the result of a participatory process." (UNESCO - COMEST, 2005, p.14.)



## ***Protection of research subjects***

Even though openness is a deep-seated norm in research, there are also areas where there is a need to guarantee the research subjects' anonymity. This pertains in particular to cases where the personal information is sensitive and may have unfortunate consequences for the research subjects.

### **12. The researcher must respect the demand for informed consent.**

When research involves humans as the object of research, the researcher must follow the rules of informed consent. Informed consent means that the person is briefed in a comprehensible manner on everything that pertains to his or her participation in the research project. Advice should be sought from a regional or national committee on research ethics in cases where there are doubts about the need or formulation of informed consent. General demands to informed consent entail that the researcher makes sure that people participating as research subjects<sup>5</sup>:

- a) Are competent and understand the project's purpose and consequences of participation.
- b) Are capable of assessing their own situation.
- c) Are capable of making an independent and voluntary decision to participate, based upon the given information and the individual's own preferences and values.
- d) Are capable of voluntarily communicating their decision.

### **13. Research must secure the privacy of the research subjects.**

Information about the research subjects must be handled with caution. The researcher must state how the information will be protected and stored. The researcher must also provide confidentiality or anonymity to those who so wish. Confidentiality entails that information and materials are de-identified, i.e. that no outside parties know who has provided which information to the researcher. This gives the researcher him- or herself the possibility of linking information to the given person(s). With anonymity not even the researcher knows which individual has provided the given information and materials.

This entails that the researcher respects privacy in the form of de-identification or anonymization of research data.

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<sup>5</sup> See Ruyter 2003.

## ***Protection of animals in research***

Some scientific research involves animals. It is accepted that also animals are moral objects that deserve respect. Animal welfare serves as a catch-all category for a number of ethical considerations towards animals. Considerations to animal welfare are also regulated in the relevant legislation<sup>6</sup>.

Research concerns animals in at least two ways: either as test animals in a research process, or as the object of the research itself (particularly in veterinary medicine, agriculture and aquaculture). Both ways must be argued for on ethical grounds. It is accepted, however, that test animals may be subject to a lesser degree of animal welfare and greater risk than normal livestock when the research serves an important purpose and animal testing is necessary to achieve the goal.

### **14. The researcher must show due care and respect for animal welfare in the preparation and execution of animal experiments, and must account for the experiment's necessity to the relevant authorities.**

This entails that:

- a) A careful deliberation takes place regarding the classic three R's of animal testing ("Reduce, Refine, Replace").<sup>7</sup>
- b) The researcher cooperates with the relevant supervisory authorities and awaits permission to conduct research that involves test animals.
- c) The researcher cooperates with the relevant supervisory authorities and follows current laws and guidelines when using test animals.

### **15. The researcher must accommodate his or her research so that the use of research results is not contrary to the fundamental demands of animal welfare.**

An example here is that research geared towards the breeding of livestock, whether this takes place with traditional methods of selective breeding or with advanced biotechnological methods, must not compromise animal welfare. In some select cases, periodical exceptions may be justified based on the animals fulfilling an important function in veterinary or human medicine.

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<sup>6</sup> See Law on Animal Protection, 1974, especially Chapter VI, as well as the Animal Testing Regulation; see: <http://www.lovdata.no/all/nl-19741220-073.html> (in Norwegian).

<sup>7</sup> See Russell, W.M.S., Burch, R.L. & Hume, C.W. (1992); see also: [http://altweb.jhsph.edu/publications/humane\\_exp/het-toc.htm](http://altweb.jhsph.edu/publications/humane_exp/het-toc.htm).

**16. When questions may be raised concerning a researcher’s animal testing on the basis of ethical considerations, the researcher must ask an independent ethics committee for their assessment.**

Ethical dilemmas in animal testing go beyond questions of pain and suffering. Authorities and research institutions should ensure the existence of suitable panels and committees with the competence and capacity to assess such ethical problems connected with animal testing as well.

***Relationship with traditional and alternative sources of knowledge***

Traditional knowledge is a cumulative set of knowledge, skills, practices and descriptions that have been preserved and developed by peoples experienced in interacting with nature.

It is a set of perceptions that is contingent upon the given location and situation, based on the personal experiences of a social group with relatively homogeneous interests and life situations, and conveyed through traditions and personal contact, where the informants’ credibility and personal background form the critical threshold for acceptance<sup>8</sup>.

Traditional knowledge among indigenous peoples is of this type, but we find such traditional knowledge in every society. Even though these forms of knowledge do not meet the usual standards for scientific knowledge, they can serve as a useful supplement when scientific or technological knowledge is applied in practice. The importance of traditional systems of knowledge has been increasingly recognized in scientific circles<sup>9</sup>.

In addition, several international organizations and institutions, e.g. the UN<sup>10</sup> and the Arctic Council, have emphasized the respect for and use of indigenous peoples’ and traditional knowledge in environmental research.

It is therefore when facing e.g. such alternative sources of knowledge that applied science and technology must attempt to engage the users in a mutual dialogue. Through participatory methods, research can simultaneously provide the necessary respect to the plurality of world views that characterizes every society.

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<sup>8</sup> From Chapter 6 in: Kaiser 2000.

<sup>9</sup> For example, Article 26 of the Declaration on Science and the Use of Scientific Knowledge (World Conference on Science 2000) states that: “that traditional and local knowledge systems, as dynamic expressions of perceiving and understanding the world, can make, and historically have made, a valuable contribution to science and technology, and that there is a need to preserve, protect, research and promote this cultural heritage and empirical knowledge”

<sup>10</sup> <http://www.ohchr.org/english/issues/indigenous/docs/declaration.doc>

**17. The researcher must whenever natural seek to incorporate and respect alternative sources of knowledge, such as traditional knowledge.**

Much of today's knowledge is based on lay knowledge. Local knowledge, since it is based upon lengthy experience, can in many cases expand on and improve research results. It is therefore important that researchers seek to incorporate such knowledge in applied research.

This entails that:

- a) When scientific knowledge or technology is applied, the researcher should be open to the potential use of relevant traditional knowledge.
- b) Researchers who directly use or base their research on sources from traditional knowledge, which is often acquired through generations, are duty bound to respect both the economic and cultural value of such knowledge. In the degree that such research creates an economic profit, a fair distribution of this profit should benefit these sources of knowledge.

**18. The researcher should whenever natural seek to use participatory methods.**

Participatory methods can enable a more thorough understanding of the subject matter and add knowledge that would otherwise have been inaccessible to outside parties. Many elements of applied science depend upon knowledge being incorporated from and accommodated for special user groups.

This entails that:

- a) Researchers engage in an open dialogue with users.
- b) Researchers use suitable methods to ensure the participation of concerned parties.

***Openness, contract research and conflicts of interest***

Openness is a goal in research, but with a greater degree of contract research and external financing of research projects, this principle may be undermined by increasing conflicts of interest. Particularly when such conflicts of interest arise, the project manager is obliged to publish, or in some other manner publicize, the research results in an objective and accountable manner.

When research is conducted on behalf of external employers, where it is the employer who usually determines the content and thematic demarcation of the research, several conflicts may arise that may affect either the research itself or its publication<sup>11</sup>.

A template has been created for a standard contract for contract research<sup>12</sup>. Contract research should be based on explicit contractual agreements between the employer and the institution conducting the research.

### **19. The researcher is responsible for ensuring openness and scientific quality in contract research.**

This usually entails that:

- a) The researcher has the overall responsibility with regard to questions of method, data collection and interpretation of the results.
- b) The research must be based on as much openness as possible.
- c) The research results are made accessible to other researchers.
- d) When a time-limited, exclusive right of use has been agreed upon, the researcher is responsible for ensuring that the research results are made public thereafter.
- e) An exclusive right of use to research should not be granted for an unlimited duration.

### **20. The researcher is obliged to be open about possible conflicts of interest.**

Openness in research and about the researcher's role is important to ensure the quality of research. Researchers who are affiliated with for example political or religious interests, or who undertake contract work for industrial companies or the authorities, may be complaisant in creating uncertainty about circumstances that may have influenced the research results. Openness about the researcher's varying roles and external affiliations may on the other hand help create greater assurance that the research results are independent and reliable.

This entails that:

- a) The researcher makes information available regarding relevant financial aspects.
- b) The researcher makes information available regarding involvement in political, religious

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<sup>11</sup> See The National Committees for Research Ethics, 2003.

<sup>12</sup> <http://www.etikkom.no/retningslinjer/oppdrag/index.txt/view> (in Norwegian).

- or other value-based organizations that could possibly influence his or her research.
- c) When a potential conflict arises between different roles, the researcher must clarify to what degree he or she is speaking as a researcher or in a different capacity.

### ***Whistle-blowing and ethical responsibility***

Sometimes conflicts arise between the individual researcher and senior authorities or persons. This is particularly problematic when the conflict arises because the researcher considers it his or her ethical duty to act as a whistle-blower, sometimes contrary to the advice of senior authorities or persons.

Such instances of whistle-blowing might pertain to internal circumstances in the research, such as for example scientific integrity, or circumstances that are important to society at large. Since such whistle-blowing is based on value judgments, there is often a basis for unresolved conflicts. The institution must ensure that the whistle-blower's legal protection is not threatened, as described in e.g. Articles 2 – 4 of the Working Environment Act.

**21. When the researcher in the course of work comes into conflict with what he or she considers to be his or her social responsibility, the researcher must have the possibility, and, according to the circumstances, duty, to act as a whistle-blower to society at large.**

This means in practice that the researcher must carefully consider:

- a) The possibilities for resolving the conflict internally in the organization.
- b) The possible consequence for him- or herself, as well as for the given research institution and for society, that such whistle-blowing might have if it is correct, or if it is incorrect.
- c) The possible consequences of failing to act as a whistle-blower.
- d) The channels for whistle-blowing that are best suited to minimize conflicts and optimize the proper actions for repairing the damage.
- e) Whether there are other motives for acting as a whistle-blower that might influence one's objectivity.

**22. Research institutions are obliged to have in place independent mechanisms that can support employees in whistle-blowing situations.**

It is important that all concerned parties in a whistle-blowing situation partake in a neutral process where an independent authority investigates the basis for the conflict, and where the whistle-blower is protected from unreasonable or untimely reactions.

This entails that:

- a) Research institutions have in place mechanisms where such an independent investigation of whistle-blowing conflicts in the institution may be conducted.
- b) Such mechanisms are known among the institution's researchers.

### ***Research and popularization***

Since research fulfils different functions, and since the researcher also has a general social responsibility, popularization of research and participation in current public debates should be a routine part of research activity.

The extent of popularization that can be expected from the individual researcher will usually vary from field to field and issue to issue. It should nonetheless be expected that popularization is put on the agenda both by the individual researcher and by the responsible research institutions.

### **23. Research institutions should have in place clear routines that reward researchers who popularize research and participate in research-related public debates.**

This entails that:

- a) General popularization of research becomes a standard criterion in any evaluation of research environments.
- b) A system exists where popularization is counted among the meritorious qualities when hiring and promoting researchers.

### **24. Researchers should actively use suitable modes of communication to reach relevant user groups with information about research results.**

This entails that:

- a) The researcher develops routines for assessing the relevance of the research for various user groups and society as a whole.
- b) Researchers should routinely consider whether their research is suitable for popularization to a broader academic or non-scientific audience, and follow up with suitable courses of action.

### ***Proposal for a scientific oath***

Guidelines for research ethics should be familiar within research environments, and they should in particular be imparted to those who are adopted into the research community upon attaining a Ph.D. degree. Such guidelines should in addition demand a certain personal obligation from the individual researcher. It has therefore been proposed that research institutions should consider whether it would be reasonable to ask each individual to swear an ethical oath of science when attaining a Ph.D. degree. An example of such a pledge is the Hippocratic Oath in medicine. The guidelines therefore include a proposal for such an oath of research ethics:

**I will conduct my activities as a researcher with integrity and honesty; I will use my scientific knowledge and skills for the benefit of humanity and for a sustainable development; I will show respect for animals and nature; I will act in accordance with research ethics, and I will not allow considerations based on ideology, religion, ethnicity, prejudices or material advantages to overshadow my ethical responsibility as a researcher.**

The National Committee for Research Ethics in Science and Technology (NENT)

*Tromsø, May 8<sup>th</sup> 2007*





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# FORSKNINGSETISKE KOMITEER

National Committees for Research Ethics in Norway

THE NATIONAL COMMITTEES FOR RESEARCH ETHICS were appointed by the Royal Ministry of Education, Research and Church Affairs on May 16, 1990. Its terms of reference include drawing up guidelines for research ethics in science and technology.

The National Committee for Research Ethics in Science and Technology (NENT) is an independent body which, based on values shared by the general public, act as a national watch-post, inform and advise upon research ethics within the relevant fields of research.

## NENT

*The National Committee for Research  
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