

Guideline on the code of ethics

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Notice

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About this Engineers Canada paper

This national Engineers Canada paper was prepared by the Canadian Engineering Qualifications Board (CEQB) and provides guidance to regulators in consultation with them. Readers are encouraged to consult their regulators' related engineering acts, regulations, and bylaws in conjunction with this Engineers Canada paper.

About Engineers Canada

Engineers Canada is the national organization of the provincial and territorial associations that regulate the practice of engineering in Canada and license the country's 295,000 members of the engineering profession.

About the Canadian Engineering Qualifications Board

CEQB is a committee of the Engineers Canada Board and is a volunteer-based organization that provides national leadership and recommendations to regulators on the practice of engineering in Canada. CEQB develops guidelines and Engineers Canada papers for regulators and the public that enable the assessment of engineering qualifications, facilitate the mobility of engineers, and foster excellence in engineering practice and regulation.

About Equity, Diversity, and Inclusion

By its nature, engineering is a collaborative profession. Engineers collaborate with individuals from diverse backgrounds to fulfil their duties, tasks, and professional responsibilities. Although we collectively hold the responsibility of culture change, engineers are not expected to tackle these issues independently. Engineers can, and are encouraged to, seek out the expertise of Equity, Diversity, and Inclusion (EDI) professionals, as well as individuals who have expertise in culture change and justice.

1 Fundamental principles

Ethics is the study of moral duty and obligation. It involves a set of principles or values that are used to evaluate the appropriateness of behavior. These principles can be presented in two ways: broad guiding principles that inspire or detailed rules of conduct that are enforceable. Professions that have been given the right and responsibility of self-regulation, including the engineering profession, have tended to opt for the first alternative, espousing sets of underlying principles as codes of professional ethics which form the basis and framework for responsible professional practice arising from this context, professional codes of ethics are sometimes incorrectly interpreted as a set of rules, rather than dynamic principles intended to guide all manner of decisions in daily practice. The intention is that the Engineers Canada Guideline on code of ethics be applied across registrants' practices, going beyond specific examples contained herein.

The Engineers Canada *Guideline on code of ethics* (hereafter "**the Code**") represents a synthesis of the individual regulators' codes and is intended to provide a general guide for registrants regardless of jurisdiction. While offering guidance specific to engineering, the Code is based on underlying principles of integrity, truth, honesty, and trustworthiness, respect for human life and welfare, respect for the environment, fairness, transparency, competence, and accountability.

For the purposes of this guideline, "registrant" means an individual registered with a regulator, and could refer to an engineer, engineer-in-training, member-in-training, engineering intern, or licensee.

2 The code of ethics

Registrants should conduct themselves with integrity, in an honourable and ethical manner. Registrants should uphold the values of truth, honesty, and trustworthiness, and they shall safeguard human life and welfare as well as the environment. In keeping with these basic tenets, registrants should:

1. Hold paramount the safety, health and welfare of the public and the protection of the environment and promote health and safety within the workplace.
2. Practice engineering only in areas of their competence, carefully, diligently, and with honest conviction.
3. Act in compliance with applicable legislation, bylaws, and professional standards.
4. Provide professional statements that distinguish between facts, assumptions, and opinions.
5. Act as faithful agents of their clients or employers, maintaining confidentiality and disclosing where conflicts of interest arise without delay and in a manner that is fair and just for all affected parties.
6. Maintain competence in relevant specializations, including an awareness of advances in the regulated practice and relevant science, to continuously develop their skills and effectively guide those who they oversee.
7. Conduct themselves with integrity, equitability, fairness, courtesy, and good faith towards clients, colleagues, and others; be cooperative, collegial, and acknowledge the contributions of others; give and accept honest and fair professional criticism.
8. Assume responsibility only for work that they have prepared or that has been prepared under direct supervision and control, and for which they can validate outputs used in its development.
9. Report clearly to employers, clients, and, in cases affecting public safety, suitable stakeholders, the possible consequences if engineering decisions, judgements, or recommendations are overruled or disregarded.
10. Report to their regulator and/or other appropriate agencies regarding any illegal, dangerous, or unethical engineering decisions or practices by registrants or others
11. Monitor and report consequences of actions both of and from projects, including risks associated with the environment.
12. Promote the equitable and dignified treatment of people in accordance with human rights legislation.
13. Act in ways that enhance public knowledge and appreciation of engineering.

3 Interpretation of the code of ethics

The following interpretations are intended to expand on and discuss some of the more difficult and interrelated components of the Code, rather than providing a set of prescriptive or exhaustive rules. Generally speaking, registrants have a duty to practice in a careful and diligent manner and accept responsibility and accountability for their actions. This duty is not limited to design, supervision or management; it applies to all areas of practice (e.g., construction supervision and management, preparation of shop drawings, engineering reports, feasibility studies, environmental impact assessments, engineering developmental work, professional behaviour, consulting, etc.).

When engineers sign and seal documents, they indicate their acceptance of responsibility for the work and that the work can be relied upon. This applies regardless of whether the work is done as an employee of or consultant to privately or publicly owned firms, crown corporations, or government agencies or departments. Without exemption, signing and sealing documents is appropriate whenever engineering principles have been used and public welfare may be at risk.

Whether engineers are supervising work or doing it directly themselves, they are obligated to act ethically and take responsibility for the work. When supervising others, an engineer should set reasonable limits on the number of supervisees to ensure an adequate degree of oversight. Due to the engineer's ethical obligations, a symbolic role in supervision is inappropriate because it runs contrary to the concept of taking professional responsibility. For example, a title such as "engineering manager" or "director of engineering" in a large corporation, utility, or government agency or department is only ethical if the engineer can adequately remain aware of engineering activities or decisions being made daily throughout the organization.

Principle 1: Hold paramount the safety, health and welfare of the public and the protection of the environment and promote health and safety within the workplace.

In this principle, "paramount" indicates that all other requirements of the Code are subordinate if protection of public safety, the environment, or other substantive public interests are involved.

Principle 2: Practice engineering only in areas of their competence, carefully, diligently, and with honest conviction.

Registrants should only offer services, advise on, or undertake engineering assignments in areas of their competence by virtue of their education, experience, and ability. This includes exercising care and

communicating clearly in accepting or interpreting assignments, and in setting expected outcomes. It also includes the responsibility to obtain the services of a specialist or expert if required, or, if the required knowledge does not exist, to proceed only with full disclosure to all parties involved. Hence, this requirement is more than simply duty to a standard of care; it also involves honesty with one's client or employer and oneself.

Principle 3: Act in compliance with applicable legislation, bylaws, and professional standards.

It is the registrant's responsibility to develop and maintain an awareness of legislation, bylaws, and professional standards, and to act in accordance with these. This is important as an ethical principle, because engineering occurs within the context of legal and regulatory frameworks that evolve over time in response to public need.

Principle 4: Provide professional statements that distinguish between facts, assumptions, and opinions.

Registrants are consulted for their expertise and judgment on a wide range of issues. Because of this reliance on registrants, it is very important that they clearly indicate whether they are providing an opinion, making assumptions, or stating facts. Each is accompanied by a different level of certainty. If these types of comments are not differentiated clearly in a registrant's work, serious consequences and misunderstandings can result.

Registrants should make it clear whether they are providing an opinion, making assumptions, or stating facts regarding engineering in all spoken and written communications. Facts stated in professional documents must be supported by data or credited to a reliable source. Representations of facts must be precise and must be provided with careful attention and diligence to ensure their accuracy and reliability. Sensitivity analyses should be carried out if conclusions are derived based on assumed parameters.

Registrants should make an effort to state what assumptions they are making in the absence of data. If called upon to provide a professional opinion, registrants should remain objective, fair, and independent, while relying on facts to the greatest degree possible.*

Principle 5: Act as faithful agents of their clients or employers, maintaining confidentiality and disclosing where conflicts of interest arise without delay and in a manner that is fair and just for all affected parties.

Registrants should act as faithful agents or trustees of their clients and employers and act with objectivity, fairness, and justice to all parties. The exception to this is in cases where there is risk to public safety and other parties outlined in Principle 1. With respect to the handling of confidential information or intellectual property, the concepts of "ownership" and protecting the owner's rights is appropriate. Registrants shall not reveal facts, data, or information obtained in a professional capacity without prior consent of their owner. In instances where there is a risk to the public, the registrant should endeavour to have the client and/or employer appropriately redress the situation before escalating concerns to the public or to regulators while respecting the client's and employer's rights to confidentiality and safeguarding their proprietary information.

Registrants should avoid conflict of interest situations with employers and clients but, should such conflicts arise, it is the registrant's responsibility to fully disclose, without delay, the nature of the conflict to potentially affected parties. In those circumstances where full disclosure is insufficient, or could be seen to be insufficient, to protect all parties' interests, the registrant shall withdraw totally from the issue and/or use extraordinary means, involving independent parties, if possible, to monitor the situation. For example, it is inappropriate to act as agent for both the provider and recipient of professional services. If a client's and an employer's interests are at odds, the registrant should attempt to deal fairly with both. If the conflict of interest is between the intent of a corporate employer and a regulatory standard, the registrant should attempt to reconcile the difference, and if that is unsuccessful, it may become necessary to inform the regulator for the sake of public safety.

Being a faithful agent or trustee includes the obligation of engaging, or advising to engage, experts or specialists when such services are deemed to be in the client's or employer's best interests. It also means being accurate, objective, and truthful in making public statements on behalf of the client or employer when required to do so, while respecting the client's and employer's rights of confidentiality and proprietary information. In addition, being a faithful agent includes not using a previous employer's or client's specific privileged or proprietary information, trade practices, or process information without the owner's consent.

Principle 6: Maintain competence in relevant specializations, including advances in the regulated practice and relevant science, to continuously develop their skills and effectively guide those who they oversee.

Registrants have a responsibility to remain informed of developments in their areas of expertise throughout their careers. This includes maintaining current knowledge and understanding of scientific advancements, best practice standards, and regulatory changes. Should the registrant's area of technical focus shift due to

technical or personal reasons, the registrant has a duty to attain and maintain competence in the new area. In effect, following this principle requires a personal commitment to ongoing professional development and continuing education. [†]

Additionally, within the framework of the practice of their profession, registrants are expected to provide opportunities to further the professional development of their subordinates and colleagues.

Principle 7: Conduct themselves with integrity, equitability, fairness, courtesy, and good faith towards clients, colleagues, and others; be cooperative, collegial, and acknowledge the contributions of others; give and accept honest and fair professional criticism.

When called upon to review another engineer's work, there is an obligation to inform (or make every effort to inform) the other engineer, whether the engineer is still actively involved or not. In this situation, and in any circumstance, the engineer shall give proper acknowledgement and give and accept honest and fair criticism on professional matters, in such a manner that maintains dignity and respect for everyone involved.

When working on projects with other engineers or professionals, a registrant should endeavor to cooperate on the timely and thorough completion of the work, and to act in such way that shows professionalism and collegiality at all stages of the project (e.g. by providing necessary information and materials such as drawing and documentation in a forthright manner, by signing off on and closing out projects in a professional manner, by openly and accurately representing information as needed, etc.)

This ethical principle extends to interactions with the public, the profession, and one's peers. This requires honesty with oneself and complements Principle 4.

Principle 8: Assume responsibility only for work that they have prepared or that has been prepared under direct supervision and control, and for which they can validate outputs used in its development.

Engineers assume the responsibility both for their own work and the work of those who they supervise. Although the advent of revolutionary technologies (e.g., those impacted by artificial intelligence and robotization) have the potential to significantly streamline engineering work, in the use of these, a registrant is still ultimately responsible for the outputs, and so must consider and appropriately manage the implications and potential impacts. If the work of a tool that has potential applications in engineering work cannot be verified and validated, on an ongoing basis if appropriate (i.e., in consideration that tools and technologies evolve), then it puts the public at significant risk.

Principle 9: Report clearly to employers, clients, and, in cases affecting public safety, suitable stakeholders, the possible consequences if engineering decisions, judgements, or recommendations are overruled or disregarded.

Registrants have a duty to report risks of engineering work to their employers and clients, and in cases where the overruling of an engineering decision may cause risks to the public, registrants may be required to report more broadly to stakeholders and ultimately regulators. The initial action is generally to discuss the problem with the supervisor or employer. If the supervisor or employer does not adequately respond to the registrant's concern, then, in a consultancy situation, the client must be advised; in a manufacturing process plant or government agency, the most senior officer should be informed. If these attempts fail to rectify the situation, the registrant must present the concerns to the regulator, even at the risk of loss of employment.

Principle 10: Report to their regulator and/or other appropriate agencies regarding any illegal, dangerous, or unethical engineering decisions or practices by registrants or others.

Acting in accordance with the Code, and having attempted to redress any situation within their organization, registrants are obliged to report to their regulator or other appropriate agency any illegal or unethical engineering decisions or practices by registrants or others. Care must be taken not to enter into legal arrangements which compromise this obligation.

Following the reporting hierarchy outlined in Principle 9, the registrant must report unethical engineering activity undertaken by other registrants or by non-registrants. This extends to, for example, situations in which senior officials of a firm make "executive" decisions which clearly and substantively alter the engineering aspects of the work and could potentially pose a risk to safeguarding the public welfare or the environment.

Principle 11: Monitor and report consequences of actions both of and from projects, including risks associated with the environment.

Because of the rapid advancements in technology and the increasing impact of engineering work on the environment, registrants have an obligation to be mindful of the effect that their decisions will have on the environment and the well-being of society, and to report any concerns of this nature in the same manner as outlined in Principle 9. Furthermore, with the rapid advance of technology and the possible societal impacts on large populations of people, registrants must endeavour to foster the public's understanding of technical

issues more than ever before.

Registrants should strive to comprehend and address both the immediate and long-term environmental effects of their work. This encompasses tangible impacts that occur during the work's execution and future considerations regarding potential harm to the public if the work fails due to climate change-related factors. It encompasses the need to consider the impacts climate change may have on the work itself. This principle aligns with Principle 6, which emphasizes the importance of maintaining competence and staying informed about advancements in scientific fields relevant to the work.

Principle 12: Promote the equitable and dignified treatment of people in accordance with human rights legislation.

Registrants should treat all people equitably and with dignity. Registrants must also respect evolving human rights legislation and the prohibited grounds of discrimination such as race, national or ethnic origin, colour, religion, age, sex, sexual orientation, gender identification, marital status, family status, disability, and conviction for an offence for which a pardon has been granted or in respect of which a record suspension has been ordered or any other grounds.

This interpretation encapsulates the equitable and dignified treatment of Indigenous people, including acting with respect when considering traditional and cultural uses of land.

Principle 13: Act in ways that enhance public knowledge and appreciation of engineering.

Honesty, integrity, competence, devotion to service, and dedication to generally enhancing the quality of life are cornerstones of professional responsibility. Within this framework, registrants shall be objective and truthful and include all relevant and pertinent information in professional reports, statements, and testimony. They shall accurately and objectively represent their clients, employers, associates, and themselves consistent with their academic, experience, and professional qualifications. Registrants are expected to respect the law in their personal conduct and must not engage in acts that compromise their professional reputation or bring discredit to their profession (e.g. inappropriate social media posts). This tenet is more than “not misrepresenting” as it also implies disclosure of all relevant information and issues, especially when serving in an advisory capacity or as an expert witness.

Similarly, fairness, honesty, accuracy in advertising, and business conduct are expected. Registrants are expected to respect the law in their personal conduct and must not engage in acts that compromise their professional reputation or bring discredit to their profession. Except in pro bono cases, registrants should not underbill for their services, as this compromises the reputation of the profession's value.

Notes

* Sections of this exposition draw on EGBC's "Guide to the code of ethics". www.egbc.ca. Accessed June 8, 2023.

† Sections of this exposition draw on EGBC's "Guide to the code of ethics". www.egbc.ca. Accessed June 8, 2023.