

THE ENGINEERING PROFESSION'S POSITION

- Engineers Canada supports a regulatory framework for biotechnology that integrates social, ethical, health, economic, engineering, science, and environmental considerations within a public safety framework.
- Incorporating engineers' accountability into federal, provincial, or territorial legislation and regulations related to biotechnology weaves the engineering regulatory process into the fabric of government and thereby keeps Canada safe and prosperous.
- Engineers are well-positioned to work within teams across a variety of fields of science to provide innovative ideas and expert advice in the development of new biotechnologies to uphold public safety, protect the natural environment, and propel Canada forward as a leader in biotechnology.
- The unbiased, transparent, and expert advice of engineers is important to supporting and maintaining Canada's biotechnology sector.

The challenge(s)

The international community has witnessed extraordinary advances in science and engineering over the last few decades, including the exponential growth of biotechnology, a term covering a range of activities and initiatives used in many sectors across Canada, including agriculture, food, pharmaceuticals, industry, and health. Biotechnology is the branch of applied science that uses living organisms and their derivatives to produce processes and products.¹ The potential benefits from biotechnology can positively impact Canada both in terms of meeting its own needs and supporting the economy. The engineering profession has made a key contribution to the evolution of the biotechnology sector especially in areas which involve the application of engineering principles when contributing to the development of engineered organisms, biotechnology related products and other associated projects.

Like any new technological developments, there are benefits and risks associated with biotechnology. These risks include a lack of public understanding and transparency from the field, a perceived lack of expert advice and participation from the public in the regulation of biotechnology, and the inappropriate and unsafe use of biotechnology in Canada. The development and enforcement of standards are important elements in mitigating these risks. With the growing demand for biotechnology professionals and critical biotechnology infrastructure, it is important that the federal government remain vigilant in ensuring that individuals performing engineering work in this field are licensed with provincial or territorial engineering regulators.

How Engineers Canada has contributed

With the increasing demand for biotechnology, there has, and will continue to be, a rising demand for professional engineers working in this field. Innovation is synonymous with engineering, meaning engineers are well-positioned to work within teams involving a variety of fields of science to provide innovative ideas and expert advice in the development of new biotechnologies that uphold public safety, protect the natural environment, and propel Canada forward as a leader in biotechnology. The unbiased, ethical, and transparent expert advice of engineers play an important role in addressing public concerns while simultaneously supporting an innovative and accountable biotechnology sector.

Biotechnological advancements and innovations require rigorous assessments, sound regulations, and expert advice to protect the health and wellbeing of Canadians, the economy, and the natural environment. The engineering profession is well-placed to work with the scientific community in mitigating the risks associated with biotechnological advancements through strong regulatory processes and expert advice.

Canada's provincial and territorial engineering regulators exist to protect and enhance public welfare. They set high professional and ethical standards, establish, and maintain codes of conduct, and administer regulatory processes for engineers to ensure protection of the public and the natural environment. As part of these processes and their codes of ethics, engineers are compelled to respect their obligations to society, the public, and the environment.

Incorporating the requirement for licensed engineers' accountability into federal biotechnology legislation and regulations when engineering work is being performed weaves the engineering regulatory process into the fabric of government, increasing transparency and accountability in biotechnological advancements.

Recommendations to the federal government

Engineers Canada strongly believes that the federal government should:

- Ensure that any legislation or regulations that refer to engineering work in the development or implementation of biotechnology require the involvement of a professional engineer in accordance with provincial and territorial engineering Acts.
- Ensure that there is a legislative requirement that when engineering work is being performed individuals involved in the development or implementation of biotechnology at the federal level be engineers who are licensed to do so.

How Engineers Canada will contribute

- Work with key federal departments that regulate biotechnology in Canada to ensure that the value and benefit of having professional engineers involved in the development of biotechnological advancements and innovations is recognized by Canadians.
- Work with engineers in the public service to promote the value of appropriate professional involvement in the development of biotechnology.
- Monitor the federal government's agenda, legislative initiatives, and proposed biotechnology regulations to bring recommendations on biotechnology and emerging disciplines to the attention of the government.

1. Bio (2020). "What is Biotechnology?" Retrieved February 2021 from: <https://www.bio.org/what-biotechnology>.