

Nanotechnology

Nanotechnology – Legislation and Occupational Exposure Limits

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How are nanomaterials regulated in Canada?

Environment and Climate Change Canada and Health Canada review new nanomaterials for potential environmental and human health risks. Once they are deemed safe for manufacture and use in Canadian commerce, they are listed on the Domestic Substance List (DSL) under the Canadian Environmental Protection Act. An approach to nanoscale forms of substances on the domestic substances list was published by [Environment Canada and Health Canada](#) in 2015.

Depending on their use or application, their safety can be assessed under other relevant Acts and regulations for their use. For example, a nanoproduct could be assessed as falling under:

- Workplace hazardous products follow the Workplace Hazardous Materials Information System (WHMIS) legislation (the Hazardous Product Act and regulations)
- Consumer products follow the Consumer Product Safety Act and regulations
- Pest control products follow the Pest Control Product Act and regulations
- Fertilizers follow the Fertilizer Act and regulations
- Feeds (manufacture, sale, and import of livestock feeds) follow the Feeds Act and regulations
- Drugs, cosmetics, medical devices, and foods follow the Food and Drugs Act and regulations

What does this document cover?

Nanotechnology is a field that is quickly changing both in terms of how we use it, and in our understanding of it. If you have concerns, you are encouraged to contact the manufacturer or supplier, or to do further research in scientific journals.

For more information, please see:

- Nanotechnology – [General](#)
- Nanotechnology – [Controls](#)
- Nanotechnology – Health and Safety Concerns

Are nanomaterials regulated by occupational health and safety laws?

Not all hazards will be specifically addressed in occupational health and safety legislation. When this occurs, every provincial, territorial, and federal workplace occupational health and safety act in Canada includes a “general duty clause,” which requires employers to take every reasonable precaution to ensure the workplace is safe.

The control measures should be based on hazard identification and risk assessment, which is carried out by a competent person (e.g., an occupational hygienist). This process will:

- Identify or verify chemical products that are nanomaterials or that contain nanomaterials
- Determine if the nanomaterial or product poses a hazard
- Determine if the tasks or conditions contribute to the risk

How can nanomaterials be identified?

There are no “unique identifiers” that differentiate nanomaterials from their macro form. The supplier may specify that material is in “nano form” by using the prefix “nano” before its macro name, such as nano-titanium dioxide in their literature and safety data sheet (SDS). The supplier, manufacturer, online databases or scientific literature can be consulted for more information.

Note that the unique numbers assigned to chemicals by the Chemical Abstracts Service (CAS) do not differentiate between nano-, micro- and macro-forms.

Are there specific WHMIS safety data sheets (SDSs) for nanomaterials?

Canada's federal supplier Workplace Hazardous Materials Information System (WHMIS) legislation, which consists of the Hazardous Product Act (HPA) and Hazardous Product Regulation (HPR), does not explicitly address nanomaterials. However, the supplier must have a competent person (e.g., chemist, toxicologist, biologist, or occupational hygienist) review the nanomaterial's hazards and classify it, based on the classification criteria.

If the nanomaterial meets one or more of the classification criteria, the nanomaterial is considered to be a hazardous product. The supplier must prepare a compliant safety data sheet (SDS) and label for the nanomaterial.

Are there occupational exposure limits for nanomaterials?

Occupational exposure limits have been set for a limited number of nanomaterials.

Exposure limits may be listed in your [jurisdictional](#) legislation, or your jurisdiction may have adopted the American Conference of Governmental Industrial Hygienists' Threshold Limit Values®.

Where can I find more information?

More information is available from:

- [Engineered nanoparticles: Health and safety considerations](#) – Employment and Social Development Canada
- [Occupational Exposure Sampling for Engineered Nanomaterials](#) - National Institute for Occupational Safety and Health (NIOSH)
- ISO/TS 12901-1:2024: [Nanotechnologies — Occupational risk management applied to engineered nanomaterials — Part 1: Principles and approaches](#)
- [WHO guidelines on protecting workers from potential risks of manufactured nanomaterials](#) - World Health Organization

(*We have mentioned these organizations as a means of providing a potentially useful referral. You should contact the organization(s) directly for more information about their services. Please note that mention of these organizations does not represent a recommendation or endorsement by CCOHS of these organizations over others of which you may be aware.)

Fact sheet first published: 2026-08-21

Fact sheet last revised: 2026-08-21

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