Environment and Climate Change Canada
Environnement et Changement climatique Canada

RELEASES OF HARMFUL SUBSTANCES TO WATER

CANADIAN ENVIRONMENTAL SUSTAINABILITY INDICATORS

Canada

Suggested citation for this document: Environment and Climate Change Canada (2025) Canadian Environmental Sustainability Indicators: Releases of harmful substances to water. Consulted on *Month day, year*. Available at: www.canada.ca/en/environment-climate-change/services/environmental-indicators/releases-harmful-substances-water.html.

Cat. No.: En4-144/81-2025E-PDF
ISBN: 978-0-660-77271-4
Project code: EC25115

Environment and Climate Change Canada
Public Inquiries Centre
Place Vincent Massey Building
351 Saint-Joseph Boulevard
Gatineau QC K1A 0H3
Toll Free: 1-800-668-6767
Email: enviroinfo@ec.gc.ca

Aussi disponible en français

CANADIAN ENVIRONMENTAL SUSTAINABILITY INDICATORS

RELEASES OF HARMFUL SUBSTANCES TO WATER

August 2025

Table of contents

List of Figures

List of Tables

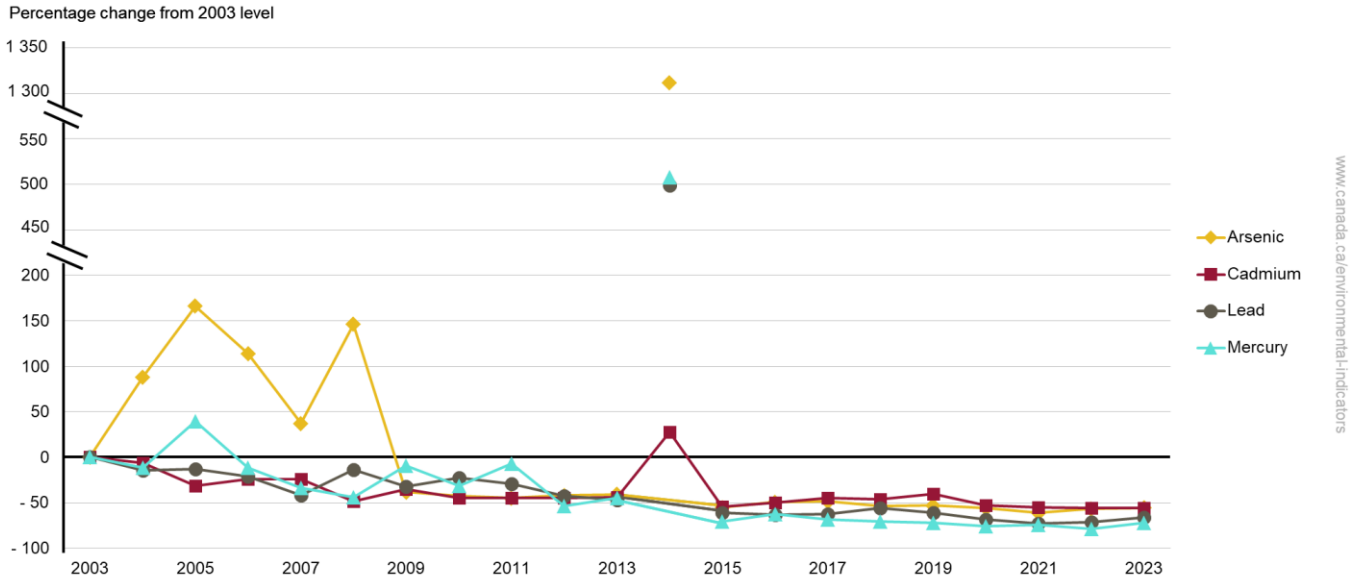
Releases of harmful substances to water

The release of some substances to the environment can harm human health, wildlife and biological diversity. Some toxic substances released to water can enter the food web and accumulate in the tissues of living organisms. Exposure to these substances, even in small amounts, can be hazardous to both humans and wildlife. Mercury and its compounds, lead, inorganic cadmium compounds and inorganic arsenic compounds are listed as toxic[1] under the *Canadian Environmental Protection Act, 1999*. The Releases of harmful substances to water indicator reports facility-based releases of these substances to water.[2]

Key results

- Facility-based releases of mercury, lead, cadmium and arsenic to water were 72%, 66%, 56% and 56% lower in 2023 than in 2003, respectively
- In 2014, a significant spill[3] accounted for 92%, 92%, 59% and 96% of total releases of mercury, lead, cadmium and arsenic, respectively
- 2022 and 2023 are matched as the lowest years on record for releases to water of cadmium, while 2022 is the lowest year on record for releases to water of mercury and 2021 the lowest year on record for releases to water of lead and arsenic

Figure 1. Facility-based releases of mercury, lead, cadmium and arsenic to water, Canada, 2003 to 2023



Data for Figure 1

Note: The indicator reports facility-based releases only. This chart accounts only for the releases to water reported in the National Pollutant Release Inventory based on the inventory reporting criteria for releases of mercury, lead, cadmium and arsenic and their compounds. The amounts presented in this indicator should not be interpreted as comprehensive totals of releases to water of these pollutants in Canada. In 2014, a significant spill at the Mount Polley mine in central British Columbia accounted for large releases of mercury, lead, cadmium and arsenic to water.
Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

[1] Section 64 of the *Canadian Environmental Protection Act, 1999* defines a substance as toxic if it is "entering or may enter the environment in a quantity or concentration or under conditions that (a) have or may have an immediate or long-term harmful effect on the environment or its biological diversity; (b) constitute or may constitute a danger to the environment on which life depends; or (c) constitute or may constitute a danger in Canada to human life or health."

[2] The indicators only track releases from facilities reporting to the National Pollutant Release Inventory.

[3] On August 4, 2014, a dam securing a tailings pond at the Mount Polley mine in central British Columbia was breached, spilling mining waste into Polley Lake and surrounding waters.

Mercury, lead, cadmium and arsenic are naturally occurring elements. Most releases of mercury, lead, cadmium and arsenic to water are contained in effluent from wastewater treatment facilities. Wastewater treatment facilities do not, themselves, generate these 4 contaminants. Mercury, lead, cadmium and arsenic found in wastewater effluents usually comes from industrial discharges to sewers.

In 2023, releases from wastewater treatment facilities accounted for 77%, 54%, 57% and 43% of total releases of mercury, lead, cadmium and arsenic, respectively. From 2003 to 2023, releases of mercury, lead, cadmium and arsenic from wastewater treatment facilities declined by 72%, 66%,56% and 56%, respectively.

For more detailed information on releases from industrial and commercial facilities, visit the Canadian Environmental Sustainability Indicator's interactive maps.

Releases of mercury to water

Mercury is a naturally occurring metal that can be emitted by natural processes (like melting permafrost, volcanic activity and soil and rock erosion). Industrial activities such as pulp and paper production, mining operations and metal processing release mercury, both directly to water in the environment and indirectly through wastewater treatment facilities. Improper disposal of mercury-containing products (such as fluorescent lamps, thermometers and waste dental amalgams) can also be a source of releases to water.[4]

Mercury can have significant negative impacts on human health and the environment. It persists in the environment and accumulates in food chains over time, posing a particular risk to populations, like the northern and Indigenous communities, who rely heavily on the consumption of predatory fish, such as freshwater trout or Arctic char, and other traditional food items, including marine mammals.

National mercury releases to water by source

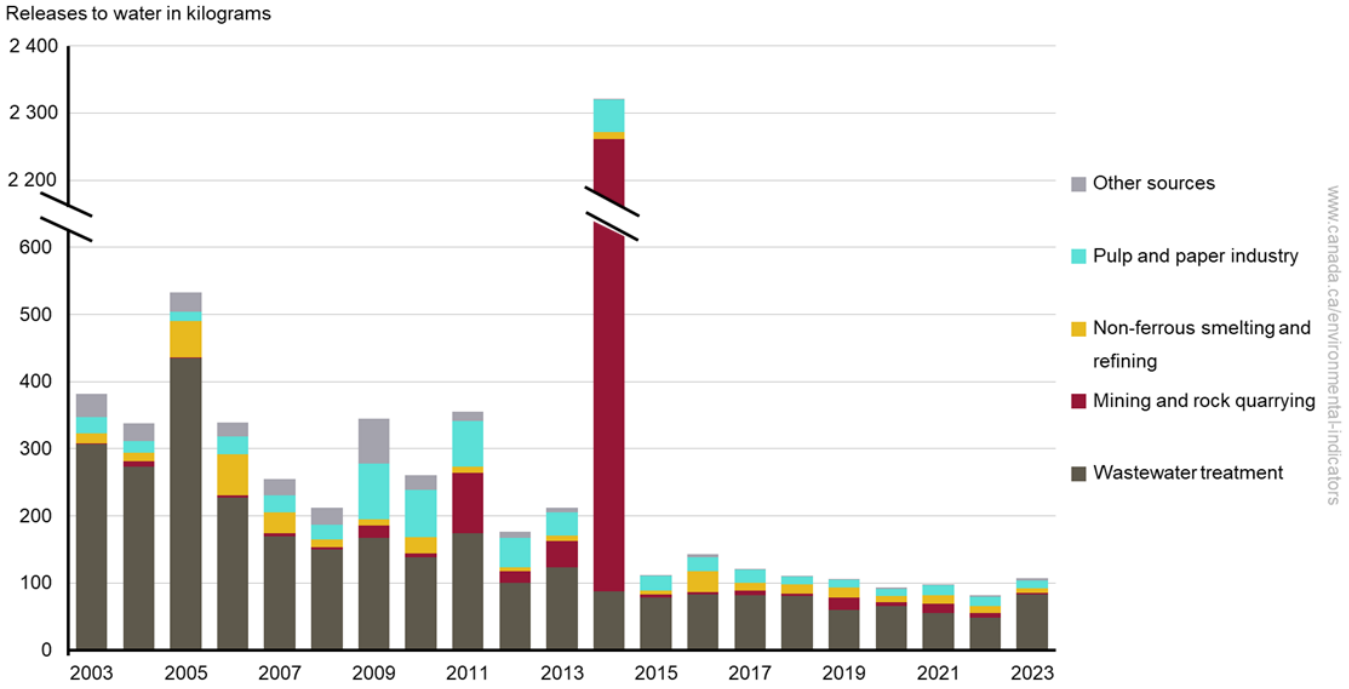
Key results

- Between 2003 and 2023, mercury releases to water have declined by 72% or 275 kilograms (kg)
- In 2023, national releases totalled 107 kg
    - the largest source was wastewater treatment facilities, representing 77% (82.8 kg) of the total
- A significant spill[5] in 2014 accounted for 92% (2,143 kg) of the 2,322 kg of mercury released in that year

[4] The *Products Containing Mercury Regulations*, which came into force in November 2015, prohibit the manufacture and import of mercury or any of its compounds, with some exemptions for essential products that have no technically or economically viable alternatives (such as certain medical and research applications and dental amalgam).

[5] On August 4, 2014, a dam securing a tailings pond at the Mount Polley mine in central British Columbia was breached, spilling mining waste into Polley Lake and surrounding waters.

Figure 2. Facility-based mercury releases to water by source, Canada, 2003 to 2023



Data for Figure 2

Note: The indicator reports facility-based releases only. The indicator includes the amount of elemental mercury and mercury in any compound, alloy or mixture reported in the National Pollutant Release Inventory based on the inventory reporting criteria. As a result, the reported mercury releases to water account for only a portion of the releases of this toxic pollutant to water in Canada. 'Other sources' include electric utilities, manufacturing (except the pulp and paper industry), the oil and gas industry, ore and mineral industries (except non-ferrous smelting and refining), solid waste management, transportation (road, rail, air and marine) and other miscellaneous sources. For more details on sources, please consult the Data sources and methods.
Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

In 2023, 4 sectors contributed 97.0% (103.7 kg) of total national releases of mercury to water: wastewater treatment, the pulp and paper industry, non-ferrous smelting and refining and mining and rock quarrying.

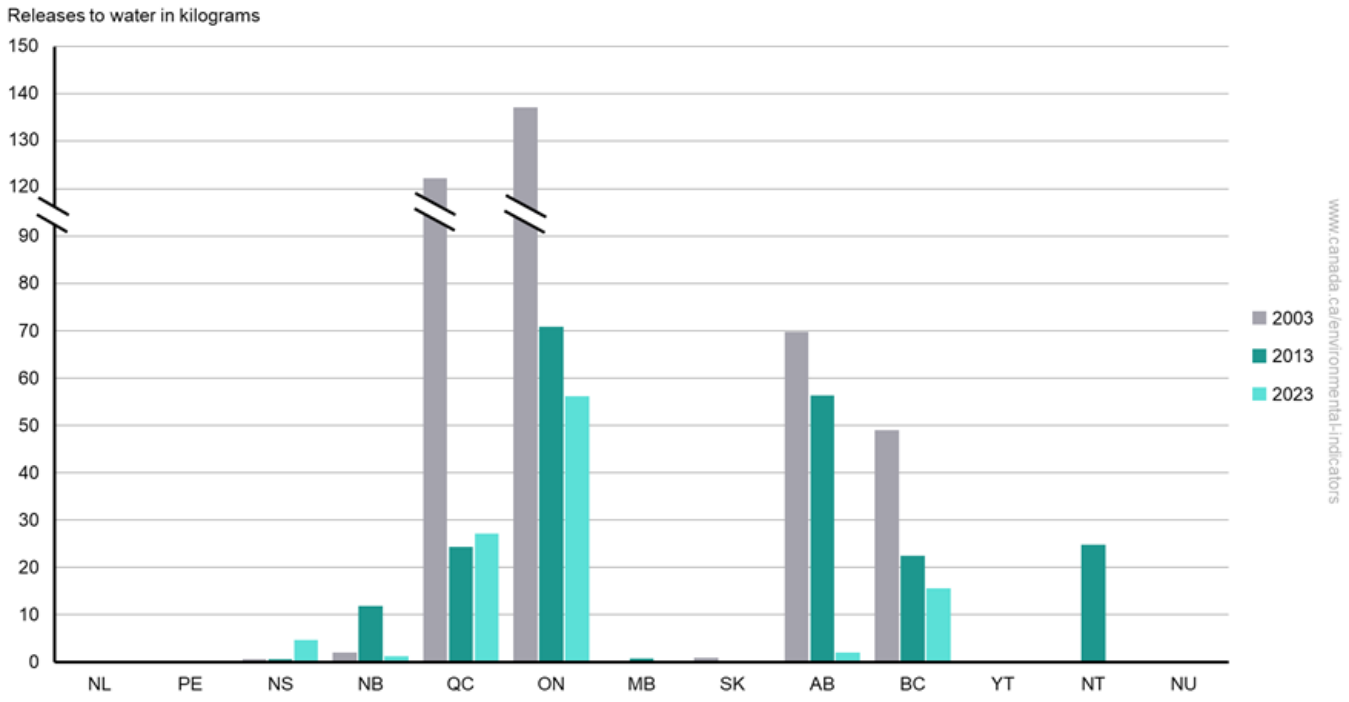
The largest reduction in releases of mercury to water between 2003 and 2023 was in wastewater treatment, with a reduction of 224 kg (-73%). This decline contributed to 82% of the total decline in mercury releases to water and is largely a result of the implementation of Wastewater Systems Effluent Regulations, which are designed to control the release of harmful substances from wastewater systems into the environment.

Releases of mercury to water by province and territory

Key results

- In 2023, Quebec, Ontario and British Columbia made up 92% (99 kg) of national mercury releases to water
- Between 2003 and 2023
    - the largest reduction in releases of mercury to water by volume was from Quebec, which reduced its releases by 75 kg (-73%)
    - a large increase of 4.1 kg (683%) was reported for Nova Scotia, driven by releases from wastewater treatment facilities and an increase in reporting facilities
    - a slight increase was reported for Newfoundland and Labrador

Figure 3. Facility-based mercury releases to water by province and territory, Canada, 2003, 2013 and 2023



Data for Figure 3

Note: The indicator reports facility-based releases only. The indicator includes the amount of elemental mercury and mercury in any compound, alloy or mixture reported in the National Pollutant Release Inventory based on the inventory reporting criteria. As a result, the reported mercury releases to water represent only a portion of the releases of this toxic pollutant to water in Canada. Some reported releases from Newfoundland and Labrador, Nova Scotia, Manitoba, Saskatchewan, the Northwest Territories and Nunavut are too small to see in the figure. To access individual provincial data for all years, please refer to the indicator's interactive figures or, for the full dataset, to the National Pollutant Release Inventory.
Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

In 2023, mercury releases to water were highest in Ontario, accounting for 52% (56 kg) of the national total. Wastewater treatment facilities were the primary source of releases in the province. Ontario, Quebec and British Columbia accounted for 92% of national mercury releases of mercury to water.

Quebec had the largest decline in mercury releases between 2003 and 2023, while Ontario had the second largest. The declines in these provinces were mostly due to large mercury reductions in releases from wastewater treatment facilities as a result of reduced industrial and residential discharges to wastewater systems.

In 2023, the largest source of mercury releases to water by province and territory was:

- wastewater treatment in Nova Scotia, Ontario, Manitoba, Alberta, British Columbia and Quebec
- the pulp and paper industry in New Brunswick
- mining and rock quarrying in Newfoundland and Labrador, the Northwest Territories and Nunavut.

Between 2003 and 2023, reported mercury releases decreased in Quebec, Ontario, Saskatchewan, Alberta, British Columbia and New Brunswick. However, Quebec and Nova Scotia had increases in mercury releases between 2013 and 2023.

Between 2003 and 2023, reported mercury releases increased in Newfoundland and Labrador, Manitoba, Nova Scotia, and the Northwest Territories. However, these provinces and territories made up only 4.6% of national releases of mercury in 2023.

Prince Edward Island and Yukon have never reported releases to the National Pollutant Release Inventory of mercury to water. Manitoba had no reported releases in 2003, the Northwest Territories had no reported releases from 2003 to 2012, and Saskatchewan did not report any releases of mercury to water in 2023.

Releases of mercury to water from facilities

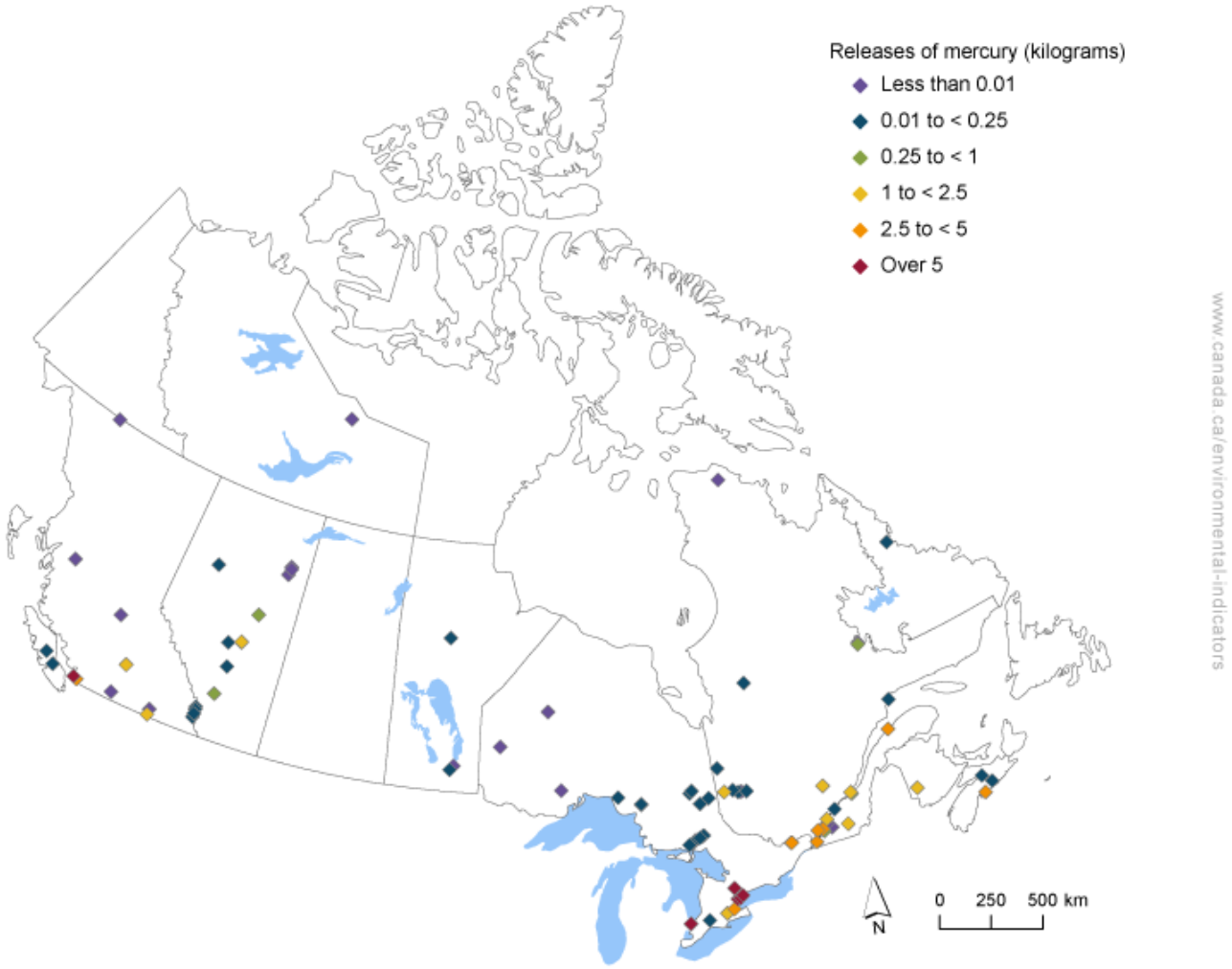
The National Pollutant Release Inventory provides detailed information on emissions and releases from industrial and commercial facilities that meet its reporting criteria.

The Canadian Environmental Sustainability Indicators provide access to this information through an interactive map. The map allows you to explore releases of mercury to water from individual facilities.

Key results

- In 2023, 88 facilities across Canada reported mercury releases. Of these facilities:
  - 23 facilities reported releases under 0.01 kilograms (kg)
  - 59 facilities reported releases between 0.01 and 5 kg
  - 6 facilities reported releases over 5 kg, which were located in Ontario (5) and British Columbia (1), accounting for 49% of total mercury releases to water

Figure 4. Releases of mercury to water by facility, Canada, 2023



Navigate data using the interactive map

Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

Releases of lead to water

Lead is a naturally occurring metal found in the Earth's crust and can be released during natural processes, such as rock and soil erosion. Lead is also released directly to the environment from sources such as the pulp and paper industry, metal processing, mining and rock quarrying, and indirectly through wastewater treatment facilities. Lead found in wastewater effluents usually comes from industrial discharges to sewers and the use of lead pipes. Lead emitted to air can be deposited on land or water surfaces and then build up in soils, sediments, humans and wildlife.

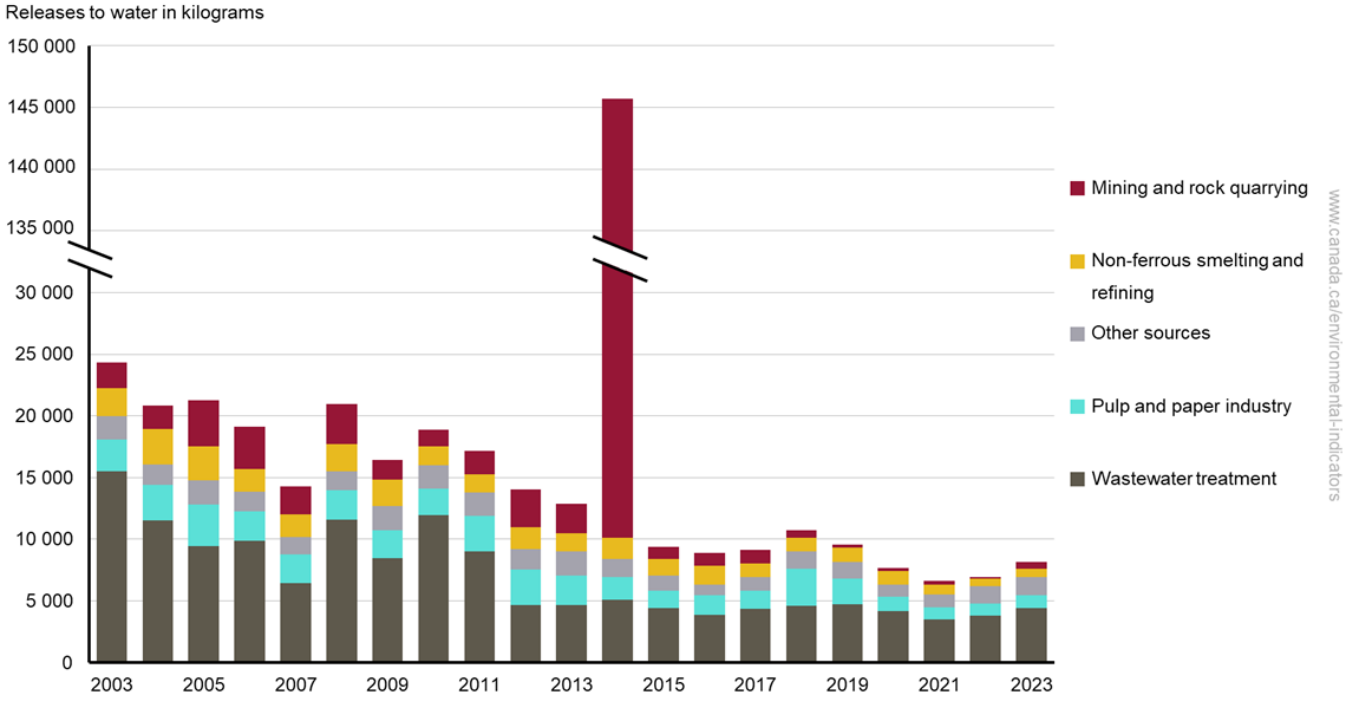
Lead is a highly toxic metal. Exposure to lead, even in small amounts, can be hazardous to both humans and wildlife. In humans, chronic exposure to relatively low levels may affect the central and peripheral nervous systems, blood pressure and renal function and may result in reproductive problems and developmental neurotoxicity.

National lead releases to water by source

Key results

- Between 2003 and 2023, lead releases to water have decreased by 66% or 16,178 kilograms (kg)
- In 2023, national releases totalled 8,161 kg
    - the largest source was wastewater treatment facilities, representing 54% (4,394 kg) of the total
- A significant spill[6] in 2014 generated 92% (134,235 kg) of the 145,709 kg of lead released in that year

Figure 5. Facility-based lead releases to water by source, Canada, 2003 to 2023



Data for Figure 5

Note: The indicator reports facility-based releases only. The indicator includes the amount of elemental lead and lead in any compound, alloy or mixture reported in the National Pollutant Release Inventory based on the inventory reporting criteria. As a result, the reported lead releases to water account for only a portion of the releases of this toxic pollutant to water in Canada. 'Other sources' include electric utilities, manufacturing (except the pulp and paper industry), the oil and gas industry, ore and mineral industries (except non-ferrous smelting and refining), solid waste management, transportation (road, rail, air and marine) and other miscellaneous sources. For more details on sources, please consult the Data sources and methods.
Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

[6] On August 4, 2014, a dam securing a tailings pond at the Mount Polley mine in central British Columbia was breached, spilling mining waste into Polley Lake and surrounding waters.

In 2023, 82% (6,697 kg) of national releases of lead to water came from wastewater treatment facilities, the pulp and paper industry, non-ferrous smelting and refining, and mining and rock quarrying.

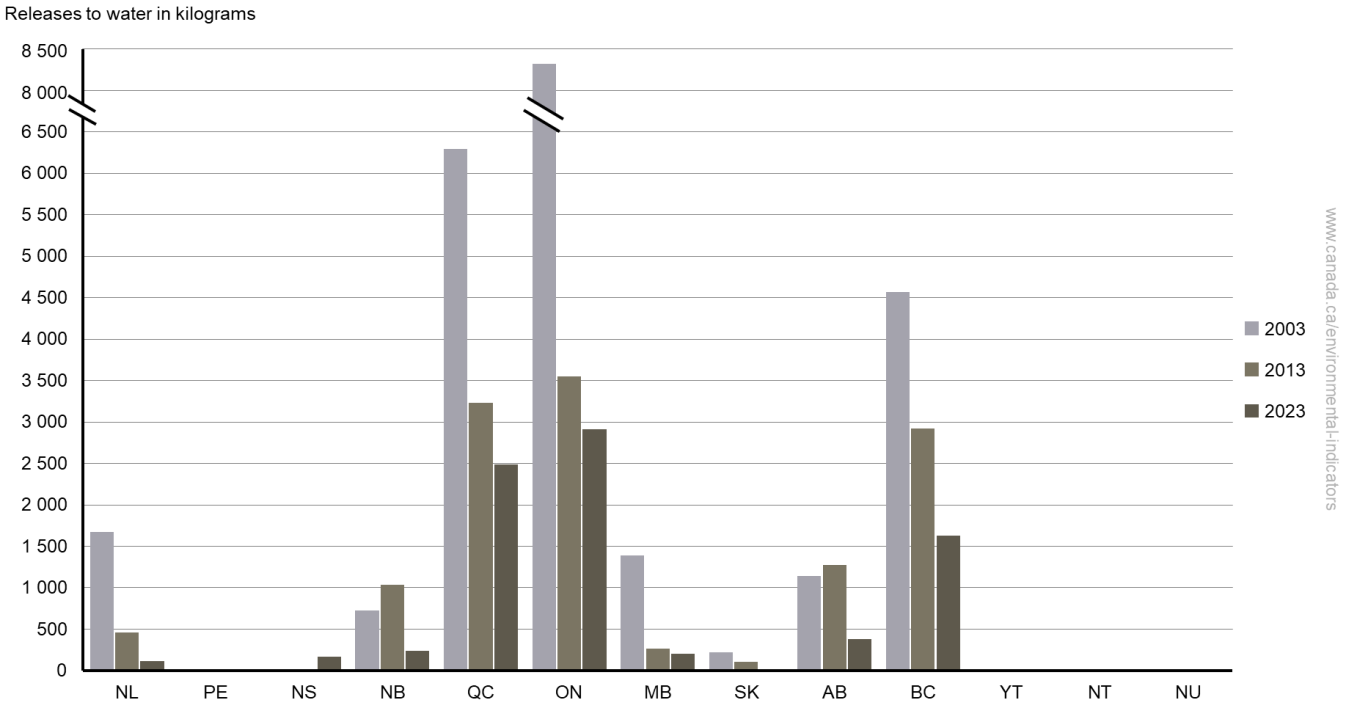
Wastewater treatment contributed to 69% (11,093 kg) of the total reduction in lead releases to water since 2003. This was largely due to stricter regulations and improved technologies that have reduced upstream industrial discharges into wastewater systems. Mining and rock quarrying, the pulp and paper industry, and non-ferrous smelting and refining contributed a further 10% (1,576 kg), 9% (1,512 kg) and 10% (1,559 kg), respectively, to the decrease in releases.

Releases of lead to water by province and territory

Key results

- In 2023, Quebec, Ontario and British Columbia made up 86% (7,025 kg) of national lead releases to water
- Between 2003 and 2023
    - the largest reduction in releases of lead to water was from Ontario, which reduced its releases by 5,408 kg (-65%)
    - the only increase in releases of lead to water was from Nova Scotia, which increased its releases by 166 kg (4,257%)

Figure 6. Facility-based lead releases to water by province and territory, Canada, 2003, 2013 and 2023



Data for Figure 6

Note: The indicator reports facility-based releases only. The indicator includes the amount of elemental lead and lead in any compound, alloy or mixture reported in the National Pollutant Release Inventory based on the inventory reporting criteria. As a result, the reported lead releases to water represent only a portion of the releases of this toxic pollutant to water in Canada. Some reported releases from Prince Edward Island, Nova Scotia, Saskatchewan, the Northwest Territories and Nunavut are too small to see in the figure. To access individual provincial data for all years please, refer to the indicator's interactive figures or, for the full dataset, to the National Pollutant Release Inventory.
Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

In 2023, lead releases to water were highest in Ontario, accounting for 36% (2,913 kg) of the national total. Ontario, Quebec and British Columbia accounted for 86% of national lead releases. However, these three provinces all had significantly lower lead releases in 2023 compared to 2003.

Ontario had the largest decline in lead releases between 2003 and 2023. This decline was mostly due to reductions in releases from wastewater treatment facilities. Nova Scotia had the largest increase in releases over this period, although releases in 2023 represented 2% of the national total. The results in Nova Scotia were mostly due to releases from a single wastewater treatment facility.

In 2023, the largest source of lead releases to water by province and territory was:

- wastewater treatment in Nova Scotia, Prince Edward Island, Ontario, Manitoba, Saskatchewan, Alberta and Quebec
- the pulp and paper industry in New Brunswick
- the non-ferrous smelting and refining industry for British Columba
- mining and rock quarrying in Newfoundland and Labrador, the Northwest Territories and Nunavut

Between 2003 and 2023, reported releases of lead decreased in all provinces and territories, except Nova Scotia, Prince Edward Island and the Northwest Territories, the latter two of which had no reported releases of lead in 2003. However, Alberta, New Brunswick, and the Northwest Territories had higher lead releases in 2013 compared to 2003. Following those increases, reported releases between 2013 and 2023 declined.

In 2003, there were no reported releases to the National Pollutant Release Inventory of lead in Prince Edward Island, Yukon nor the Northwest Territories. In 2013 and 2023, all provinces and territories reported releases, except for Yukon.

Releases of lead to water from facilities

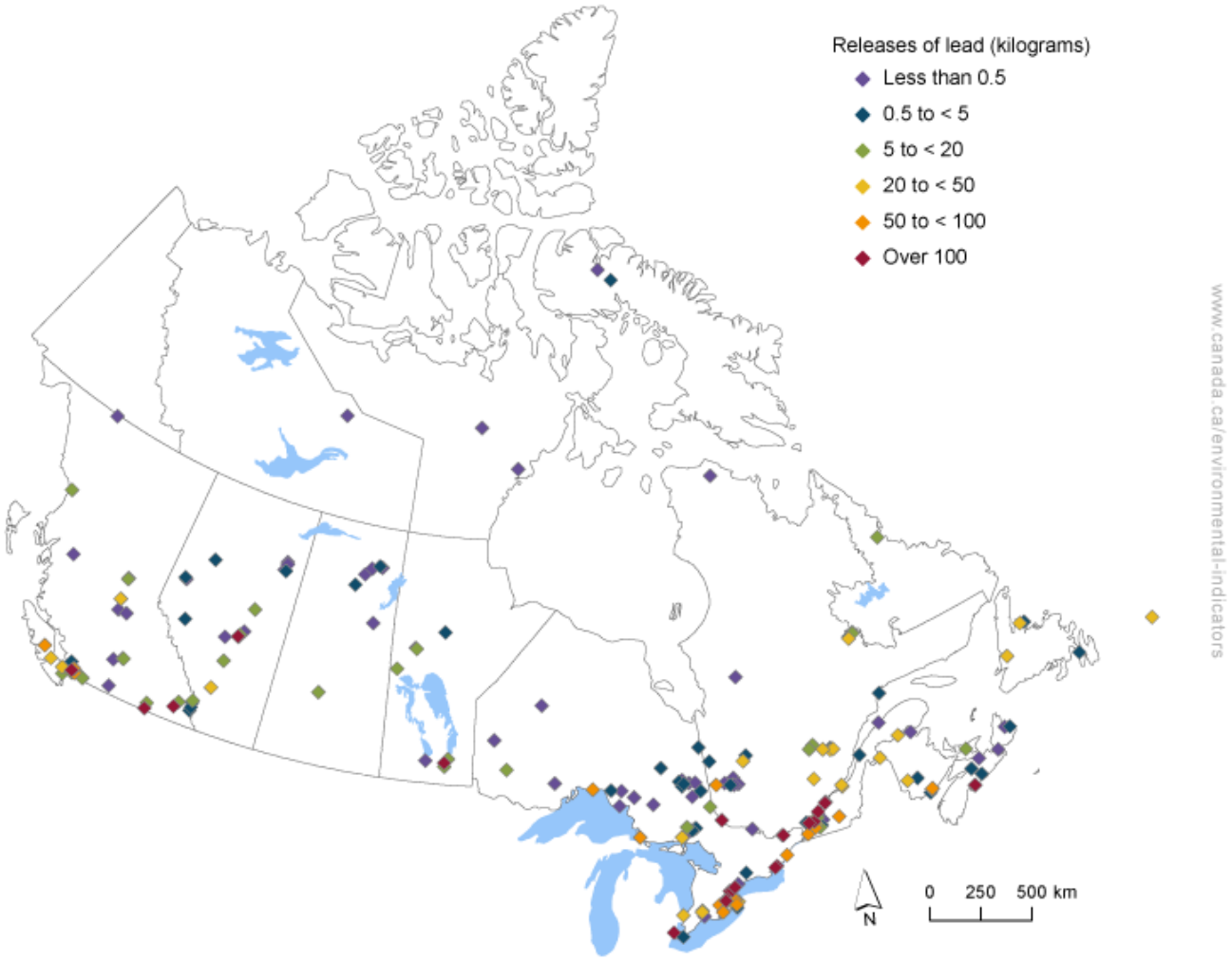
The National Pollutant Release Inventory provides detailed information on emissions and releases from industrial and commercial facilities that meet its reporting criteria.

The Canadian Environmental Sustainability Indicators provide access to this information through an interactive map. The map allows you to explore releases of lead to water from individual facilities.

Key results

- In 2023, 205 facilities across Canada reported lead releases. Of these facilities:
  - 59 facilities reported releases under 0.5 kilograms (kg)
  - 127 facilities reported releases between 0.5 and 100 kg
  - 19 facilities reported releases over 100 kg, which were located in Ontario (8), Quebec (5), British Columbia (3), Alberta (1), Manitoba (1) and Nova Scotia (1), accounting for 68% of total lead releases to water

Figure 7. Releases of lead to water by facility, Canada, 2023



Navigate data using the interactive map

Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

Other sources of lead releases to the environment

Other sources of lead releases to the environment come from everyday activities such as the use of fishing tackle and ammunition. Releases from these sources are not captured by the National Pollutant Release Inventory and therefore are not considered in the analysis of the indicators.

Fishing tackle containing lead can pose a serious threat to birds if ingested. Ingestion can lead to blindness, muscle paralysis, reduced reproductive ability, seizures and death. A single sinker or jig containing several grams of lead is enough to kill a bird. It is estimated every year approximately 460 tonnes of lead sinkers and jigs are lost into Canada's lakes and waterways.[7] This represents the most significant annual source of lead releases to water in Canada.

In Canada, the largest source of lead releases onto land is ammunition. Lead ammunition releases can eventually end up in water through leaching into soils and groundwater. Scavengers and predators such as eagles, can be poisoned by ingesting spent lead ammunition and related fragments, or by consuming wounded or dead prey containing lead fragments. Annually, ammunition used for recreational shooting, hunting and enforcement

[7] Environment and Climate Change Canada (2018) Moving towards using lead-free fishing tackle. Retrieved on March 18, 2025.

releases an estimated 5,200 tonnes of lead into the environment.[8] Migratory bird hunters are required by law to use non-toxic shot.[9] However, recreational shooting and other game hunting remain a significant source of lead releases.

Releases of cadmium to water

Cadmium is a naturally occurring metal found in the Earth's crust and can be released during natural processes, such as rock and soil erosion. It can also be released directly to the environment from human activities such as non-ferrous smelting and refining and fuel consumption for electricity or heating, and indirectly through wastewater treatment facilities. Cadmium found in wastewater effluents usually comes from industrial discharges to sewers. Cadmium is used in batteries and in electroplating to protect other metals from corrosion.

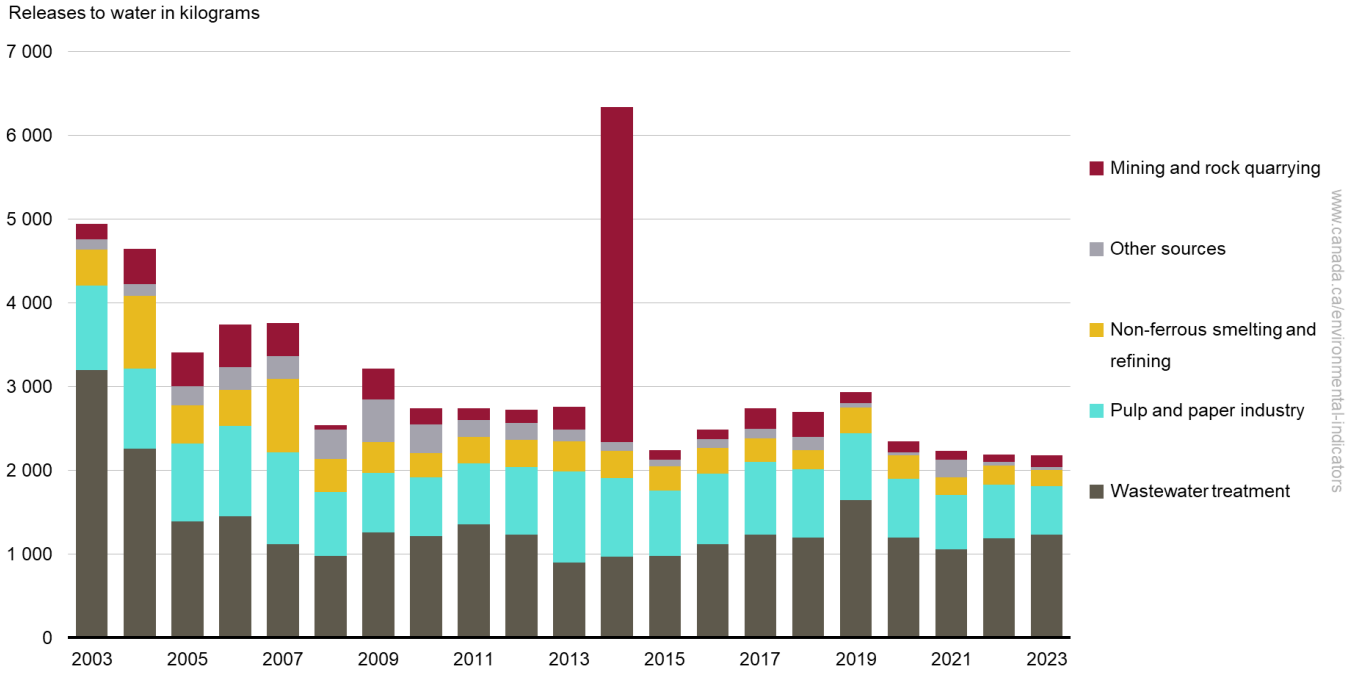
Exposure to cadmium can be hazardous to both humans and wildlife since it accumulates in the food chain over time. The Government of Canada concluded cadmium compounds may be harmful to the environment and may constitute a danger based on their carcinogenic potential. Exposure to cadmium has been associated with gastrointestinal irritation and harmful effects to the kidneys and bones.

National cadmium releases to water by source

Key results

- Between 2003 and 2023, cadmium releases to water have declined by 56% or 2,766 kilograms (kg)
- In 2023, national releases totalled 2,178 kg
    - the largest source was wastewater treatment facilities, representing about 57% (1,234 kg) of national releases
- A significant spill in 2014 accounted for 59% (3,768 kg) of the 6,339 kg of cadmium released[10] that year

Figure 8. Facility-based cadmium releases to water by source, Canada, 2003 to 2023



Data for Figure 8

[8] Environment and Climate Change Canada (2018) Moving towards using more lead-free ammunition. Retrieved on March 18, 2025.

[9] Department of Justice Canada (2024) Migratory Birds Regulations, 2022 (SOR/2022-105). Retrieved August 5, 2025.

[10] On August 4, 2014, a dam securing a tailings pond at the Mount Polley mine in central British Columbia was breached, spilling mining waste into Polley Lake and surrounding waters.

Note: The indicator reports facility-based releases only. The indicator includes the amount of elemental cadmium and cadmium in any compound, alloy or mixture reported in the National Pollutant Release Inventory based on the inventory reporting criteria. As a result, the reported cadmium releases to water account for only a portion of the releases of this toxic pollutant to water in Canada. 'Other sources' include electric utilities, manufacturing (except the pulp and paper industry), the oil and gas industry, ore and mineral industries (except non-ferrous smelting and refining), solid waste management, transportation (road, rail, air and marine) and other miscellaneous sources. For more details on sources, please consult the Data sources and methods.
Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

In 2023, 83% (1,808 kg) of cadmium released to water came from wastewater treatment facilities and the pulp and paper industry.

Wastewater treatment contributed to 71% (1,961 kg) of the total reduction in cadmium releases to water since 2003. This was largely due to stricter regulations and improved treatment technologies that reduced the amount of cadmium entering wastewater systems. The pulp and paper and non-ferrous smelting and refining industries together contributed an additional 24% (438 kg and 229 kg, respectively) to the total reduction in cadmium releases from 2003 to 2023.

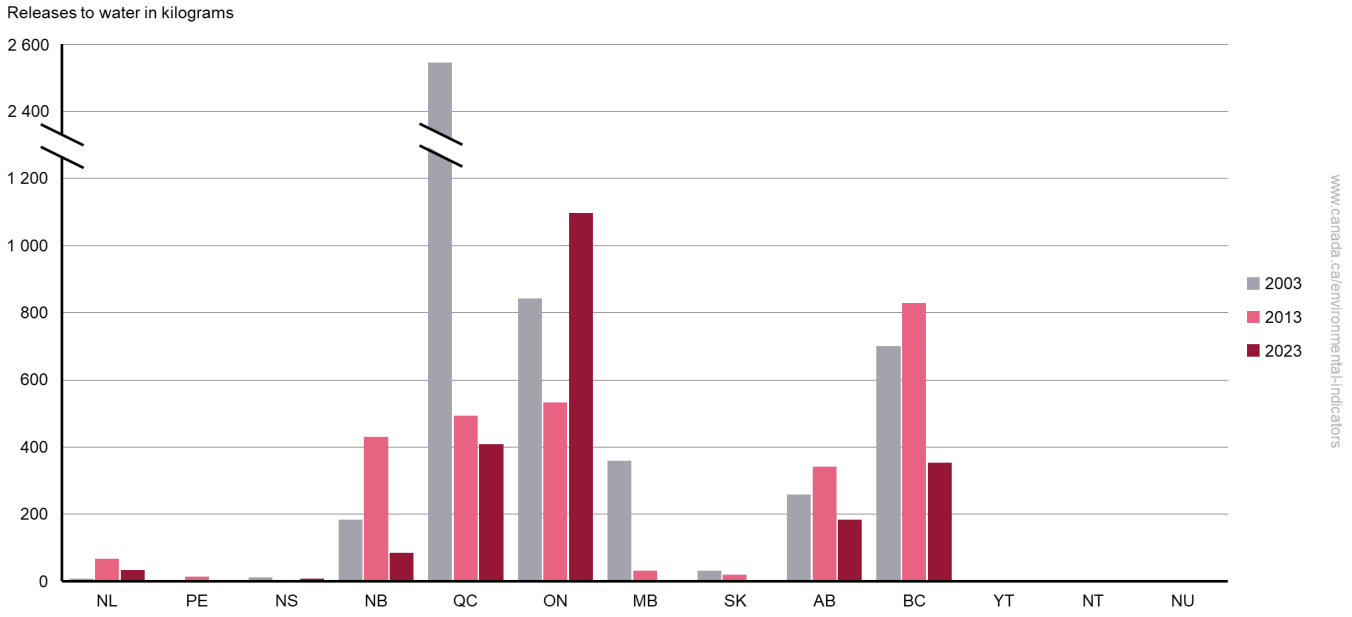
The increase in releases of cadmium to water between 2015 and 2019 was mainly due to reported increases from wastewater treatment facilities and ore and mineral industries (except non-ferrous smelting and refining).

Releases of cadmium to water by province and territory

Key results

- In 2023, Ontario, Quebec and British Columbia made up 85% (1,859 kg) of national cadmium releases to water
- Between 2003 and 2023,
    - the largest reduction in releases of cadmium to water was from Quebec, which reduced its releases by 2,136 kg (-84%)
    - the largest increase in cadmium releases to water was from Ontario, which had a 253 kg (16%) increase in releases

Figure 9. Facility-based cadmium releases to water by province and territory, Canada, 2003, 2013 and 2023



Data for Figure 9

Note: The indicator reports facility-based releases only. The indicator includes the amount of elemental cadmium and cadmium in any compound, alloy or mixture reported in the National Pollutant Release Inventory based on the inventory reporting criteria. As a result, the reported cadmium releases to water represent only a portion of the releases of this toxic pollutant to water in Canada. Some reported releases from Newfoundland and Labrador, Prince Edward Island, Nova Scotia, Saskatchewan, the Northwest Territories and Nunavut are too small to see in the figure. To access individual provincial data for all years please refer to the indicator's interactive figures or, for the full dataset, to the

National Pollutant Release Inventory.
Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

In 2023, cadmium releases to water were highest in Ontario, accounting for 50% (1,097 kg) of the national total. Wastewater treatment was the main source of these releases.

Quebec had the largest decline in cadmium releases between 2003 and 2023 (-84%). This decline was mostly due to reductions in releases from wastewater treatment facilities. Ontario had the largest increase in releases over this period (30%).

In 2023, the largest source of cadmium releases to water by province and territory was:

- wastewater treatment in Prince Edward Island, Nova Scotia, Ontario and Saskatchewan
- the pulp and paper industry in New Brunswick, Alberta and British Columbia
- mining and rock quarrying in Quebec, Manitoba, Newfoundland and Labrador, the Northwest Territories and Nunavut.

Between 2003 and 2023, reported cadmium releases decreased in all provinces and territories, except Prince Edward Island, the Northwest Territories, Newfoundland and Labrador and Ontario. The former two had no reported releases in 2003, and the latter two reported increases of 309% and 30%, respectively. Excluding those regions, New Brunswick, Alberta and British Columbia had higher cadmium releases in 2013 compared to 2003. Following that increase, reported releases between 2013 and 2023 declined by 80%, 46% and 57%, respectively.

Yukon has never reported releases to the National Pollutant Release Inventory of cadmium to water. Additionally, there were no reported releases of cadmium to water in Prince Edward Island or the Northwest Territories in 2003.

Releases of cadmium to water from facilities

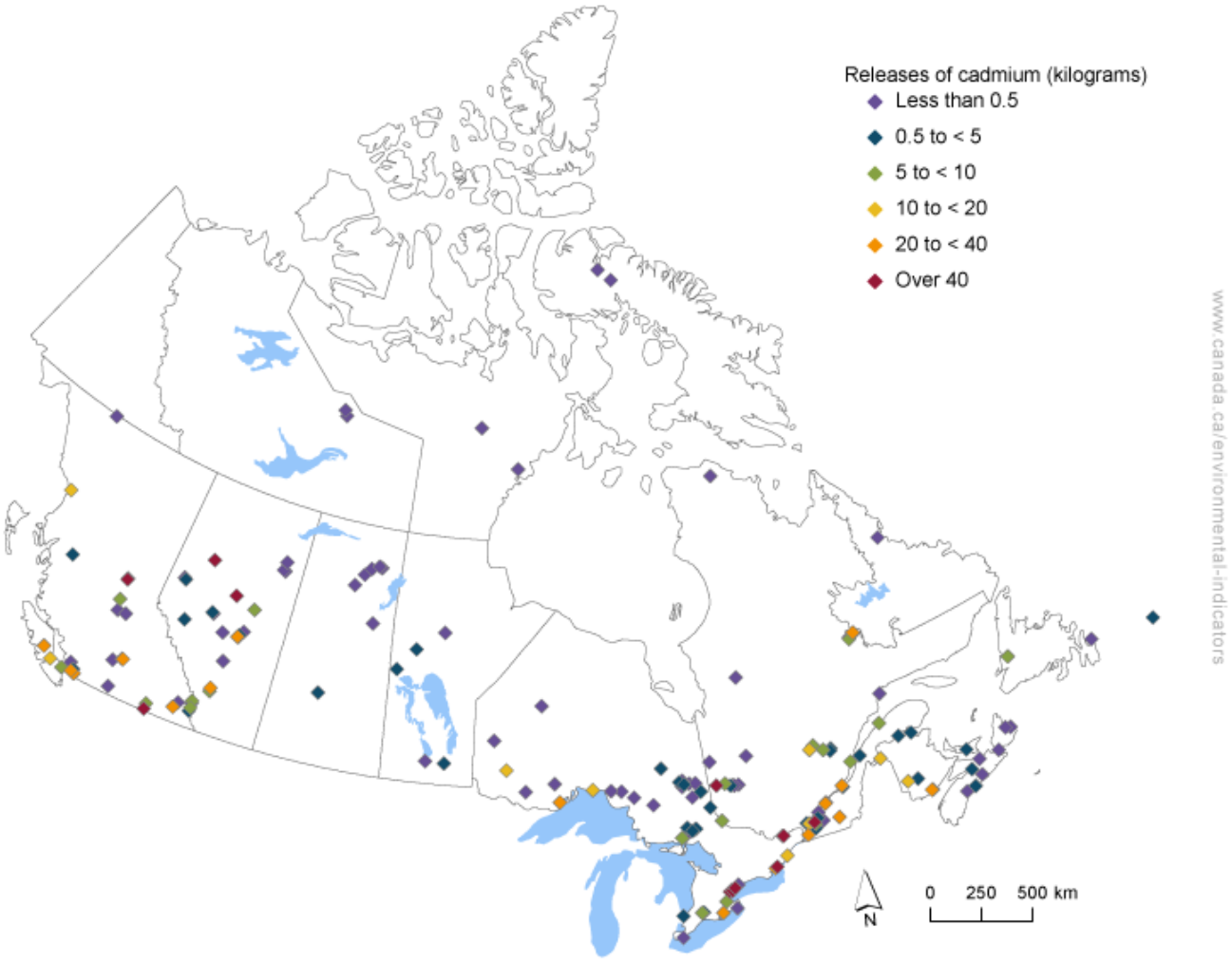
The National Pollutant Release Inventory provides detailed information on emissions and releases from industrial and commercial facilities that meet its reporting criteria.

The Canadian Environmental Sustainability Indicators provide access to this information through an interactive map. The map allows you to explore releases of cadmium to water from individual facilities.

Key results

- In 2023, 174 facilities across Canada reported cadmium releases. Of these facilities:
  - 76 facilities reported releases under 0.5 kilograms (kg)
  - 87 facilities reported releases between 0.5 to 40 kg
  - 11 facilities reported releases over 40 kg, which were located in Ontario (5), Quebec (2), Alberta (2) and British Columbia (2), accounting for 61% of total cadmium releases to water

Figure 10. Releases of cadmium to water by facility, Canada, 2023



Navigate data using the interactive map

Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

Releases of arsenic to water

Arsenic is a naturally occurring element released into aquatic and terrestrial environments by weathering and rock and soil erosion. Arsenic is also released to the environment by human activities such as mining and rock quarrying, metal processing, wood preservation, coal-fired power generation, arsenical pesticides and indirectly through wastewater treatment facilities. Arsenic found in wastewater effluents usually comes from industrial discharges to sewers.

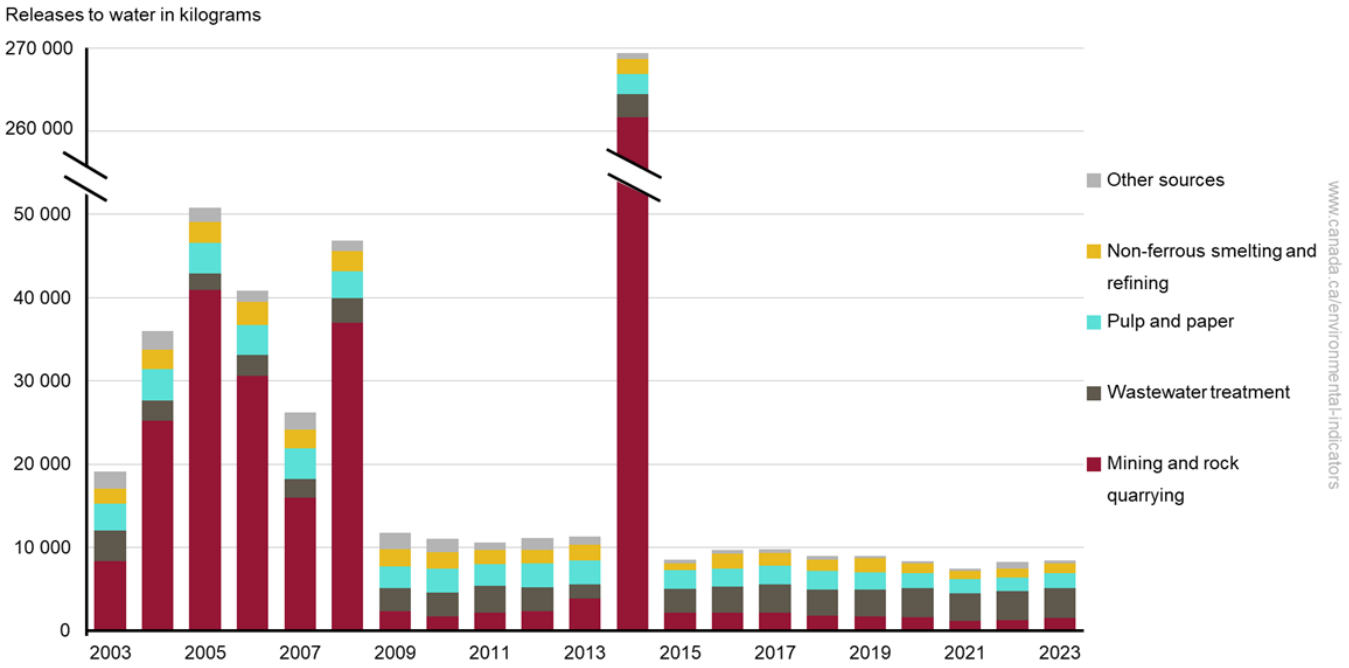
Exposure to arsenic can be hazardous to both humans and wildlife since it accumulates in the food chain over time. The Government of Canada concluded inorganic arsenic compounds may be harmful to the environment and may constitute a danger to human health based on their carcinogenic potential. In humans, exposure to arsenic has been associated with heart disease, decreased lung function and harmful effects to the skin.

National arsenic releases to water by source

Key results

- Between 2003 and 2023, arsenic releases to water have declined by 56% or 10,640 kilograms (kg)
- In 2023, national releases totalled 8,443 kg
    - the largest source was wastewater treatment facilities, representing about 43% (3,648 kg) of national releases
- A significant spill in 2014 accounted for 96% (259,050 kg) of the 269,413 kg of arsenic released[11] that year

Figure 11. Facility-based arsenic releases to water by source, Canada, 2003 to 2023



Data for Figure 11

Note: The indicator reports facility-based releases only. The indicator includes the amount of elemental arsenic and arsenic in any compound, alloy or mixture reported in the National Pollutant Release Inventory based on the inventory reporting criteria. As a result, the reported arsenic releases to water account for only a portion of the releases of this toxic pollutant to water in Canada. 'Other sources' include electric utilities, solid waste management, manufacturing (except the pulp and paper industry), the oil and gas industry, ore and mineral industries (except non-ferrous smelting and refining), and other miscellaneous sources. For more details on sources, please consult the Data sources and methods.
Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

In 2023, 64% (5,429 kg) of the arsenic released to water came from wastewater treatment facilities and the pulp and paper industry.

The largest reduction in releases of arsenic to water between 2003 and 2023 was in mining and rock quarrying, with a reduction of 6,828 kg (-82%). This decline contributed to 64% of the total decline in arsenic releases to water, largely as a result of remediation projects and improved water treatment systems.

Releases of arsenic to water by province and territory

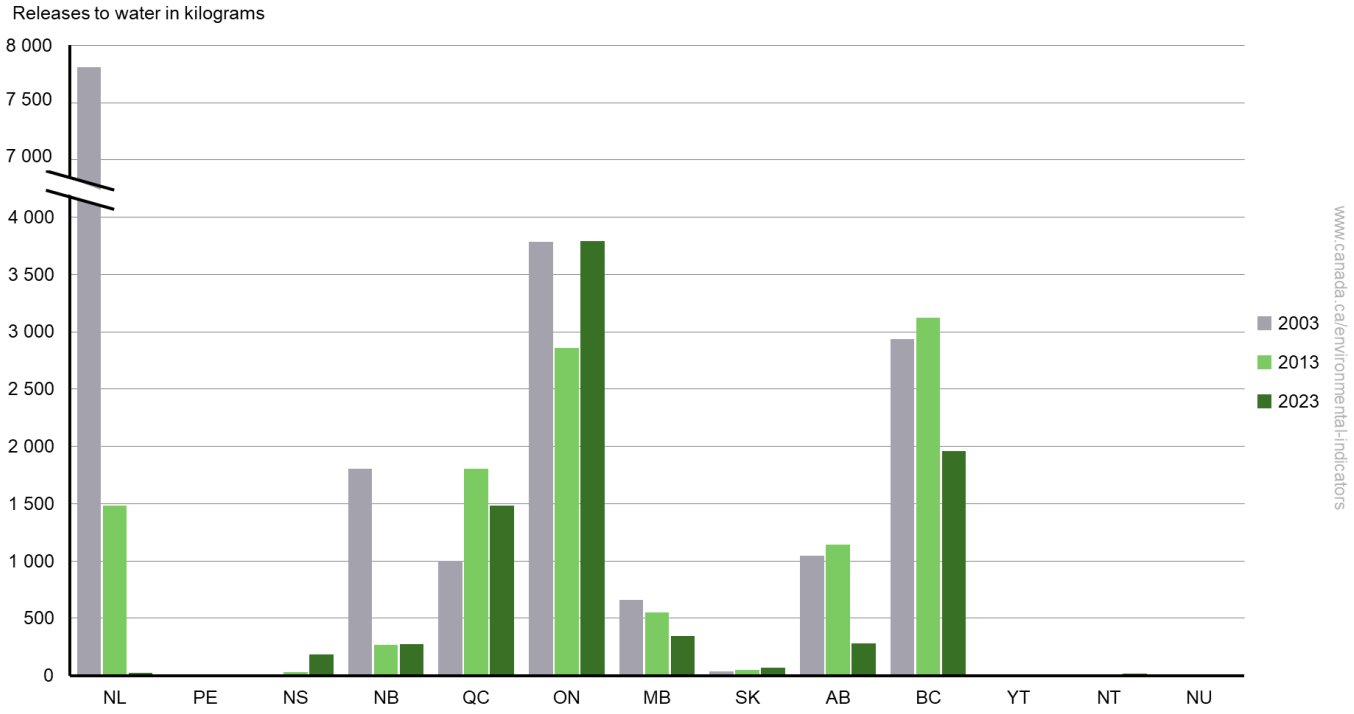
Key results

- In 2023, Ontario, Quebec and British Columbia made up 86% (7,233 kg) of national arsenic releases to water

[11] On August 4, 2014, a dam securing a tailings pond at the Mount Polley mine in central British Columbia was breached, spilling mining waste into Polley Lake and surrounding waters.

- Between 2003 and 2023,
    - the largest reduction in releases of arsenic to water was from Newfoundland and Labrador, which reduced its releases by 7,786 kg (-99.7%)
    - the largest increase in arsenic releases to water was from Quebec, which had a 488 kg (49%) increase in releases

Figure 12. Facility-based arsenic releases to water by province and territory, Canada, 2003, 2013 and 2023



Data for Figure 12

Note: The indicator reports facility-based releases only. The indicator includes the amount of elemental arsenic and arsenic in any compound, alloy or mixture reported in the National Pollutant Release Inventory based on the inventory reporting criteria. As a result, the reported arsenic releases to water represent only a portion of the releases of this toxic pollutant to water in Canada. Some reported releases from Newfoundland and Labrador, Nova Scotia, Saskatchewan, the Northwest Territories and Nunavut are too small to see in the figure. To access individual provincial data for all years please refer to the indicator's interactive figures or, for the full dataset, to the National Pollutant Release Inventory.
Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

In 2023, arsenic releases to water were highest in Ontario, accounting for 45% (3,789 kg) of the national total. Wastewater treatment was the main source of these releases.

Newfoundland and Labrador had the largest decline in arsenic releases between 2003 and 2023 (-99.7%). This decline was mostly due to reductions in releases from wastewater treatment facilities. Quebec had the largest increase in releases over this period (49%), mainly due to a rise in releases from wastewater treatment facilities.

In 2023, the largest source of arsenic releases to water by province and territory was:

- wastewater treatment in Nova Scotia, Quebec, Ontario and Alberta
- the pulp and paper industry in New Brunswick and British Columbia
- mining and rock quarrying in Newfoundland and Labrador, Manitoba, Saskatchewan, Northwest Territories and Nunavut

Between 2003 and 2023, reported arsenic releases decreased in Newfoundland and Labrador, New Brunswick, Manitoba, Alberta and British Columbia. However, New Brunswick had a 2% (5.3 kg) increase in arsenic releases between 2013 and 2023.

Between 2003 and 2023, reported arsenic releases increased in Nova Scotia, Quebec, Ontario and Saskatchewan. These provinces and territories made up 65% of national releases of arsenic in 2023.

Prince Edward Island and Yukon have never reported releases to the National Pollutant Release Inventory of arsenic to water. The Northwest Territories and Nunavut had no reported releases in 2003.

Releases of arsenic to water from facilities

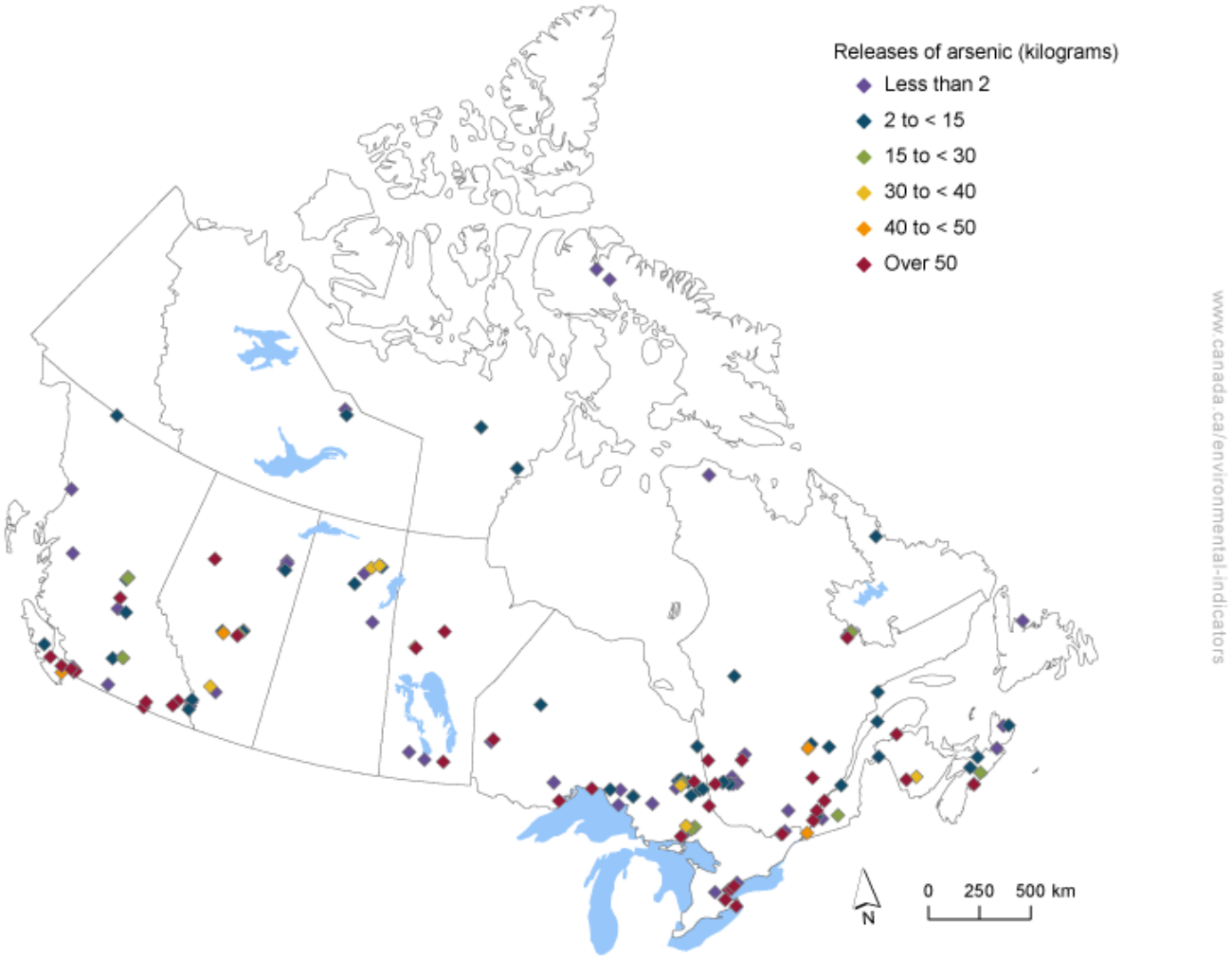
The National Pollutant Release Inventory provides detailed information on emissions and releases from industrial and commercial facilities that meet its reporting criteria.

The Canadian Environmental Sustainability Indicators provide access to this information through an interactive map. The map allows you to explore releases of arsenic to water from individual facilities.

Key results

- In 2023, 153 facilities across Canada reported arsenic releases. Of these facilities:
  - 45 facilities reported releases under 2 kilograms (kg)
  - 70 facilities reported releases between 2 to 50 kg
  - 38 facilities reported releases over 50 kg, which were located in Ontario (12), British Columbia (10), Quebec (8), Manitoba (3), Alberta (2), New Brunswick (2) and Nova Scotia (1), accounting for 88% of total arsenic releases to water

Figure 13. Releases of arsenic to water by facility, Canada, 2023



Navigate data using the interactive map

Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

About the indicators

What the indicators measure

These indicators track facility-based releases to water of 4 substances that are defined as toxic under the *Canadian Environmental Protection Act, 1999*: mercury, lead, cadmium and arsenic and their compounds. For each substance, data are provided at the national, regional (provincial and territorial) and facility level, as well as by source.

Why these indicators are important

Mercury and its compounds, lead, inorganic cadmium compounds and inorganic arsenic compounds are on the Toxic substances list under Schedule 1 of the *Canadian Environmental Protection Act, 1999*. This means that these substances are "entering or may enter the environment in a quantity or concentration or under conditions that (a) have or may have an immediate or long-term harmful effect on the environment or its biological diversity; (b) constitute or may constitute a danger to the environment on which life depends; or (c) constitute or may constitute a danger in Canada to human life or health."

The indicators inform Canadians about releases to water of these 4 substances from facilities in Canada. The Releases of harmful substances to water indicators also help the government to identify priorities and develop or revise strategies to inform further risk management and to track progress on policies put in place to reduce or control these 4 substances and water pollution in general.

Related initiatives

The indicators contribute to the Sustainable Development Goals of the 2030 Agenda for Sustainable Development. They are linked to the 2030 Agenda's Goal 12, Responsible consumption and production and Target 12.4, "By 2030, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment."

Related indicators

The Emissions of harmful substances to air indicators track human-related emissions to air of 4 toxic substances, namely mercury, lead, cadmium and arsenic, and their compounds. For each substance, data are provided at the national, provincial/territorial and facility level and by source. Global emissions to air are also provided for mercury.

The Human exposure to harmful substances indicators track the concentrations of 4 substances (mercury, lead, cadmium and bisphenol A) in Canadians.

Data sources and methods

Data sources

Data for the indicators and the interactive maps are taken from the National Pollutant Release Inventory (the inventory). These indicators include the amount of elemental mercury, lead, cadmium and arsenic in any compound, alloy or mixture released to water as reported to the inventory based on its reporting criteria as listed in section 5.3 of the 2022-2024 Guide for Reporting to the National Pollutant Release Inventory (PDF; 3.35 MB).

More information

The inventory is compiled by Environment and Climate Change Canada (the department), and includes releases reported by industrial, commercial and institutional facilities. It is Canada's legislated, publicly accessible inventory of pollutant releases (to air, water and land), disposals and transfers for recycling. It consists of information reported by facilities to the department under the *Canadian Environmental Protection Act, 1999* (the act). Under the act, owners or operators of facilities that manufacture, process or otherwise use or release one or more of the substances tracked by the inventory and that meet

reporting thresholds and other requirements must report their pollutant releases annually. For mercury, lead, cadmium and arsenic, the reporting thresholds are 5 kg, 50 kg, 5 kg and 50 kg, respectively.

Estimation of releases to water

Releases to water are estimated or measured through one of the following methods:

- continuous emission monitoring systems
- predictive emission monitoring
- source testing
- mass balance
- site-specific emission factors
- published emission factors
- engineering estimates

These measurement methods and estimation techniques are used by the facilities to report their releases (point sources) to the inventory. The Report to the National Pollutant Release Inventory program web page provides information to owners or operators of facilities required to report to the inventory, as well as details on the program's calculation methods.

Data completeness

Because the indicators are derived solely from the inventory's database, they reflect only releases from facilities that met the reporting criteria. As a result, the indicators do not include all releases in Canada. They are limited to the main point sources for each selected toxic substance.

Additionally, some facilities perform multiple activities but report their overall releases under a single activity when submitting to the inventory. For example, some facilities engage in both mining activities and smelting and refining activities but report their overall releases only under mining, which can misrepresent how pollutants are distributed across activities.

Data timeliness

The data are current up to 2023. The indicators are reported approximately 1.5 years after data collection because of the time required for data validation, analysis and interpretation.

Methods

The indicators are produced by grouping data from the inventory to report on the key sources that contribute to the majority of mercury, lead, cadmium and arsenic releases to water.

More information

Indicator coverage

Historical data are provided at the national level and by source for the period from 2003 to 2023. The year 2003 was selected as the first year for releases to water because it was the year the inventory updated its reporting criteria for mercury, lead, cadmium and arsenic. For the provincial/territorial charts, releases to water are provided for 2003, 2013 and 2023, with 2023 being the most recent year with available data and 2013 serving as a 10 year comparison. Releases of mercury, lead, cadmium and arsenic to water by facility are displayed on the Canadian Environmental Sustainability Indicators' interactive maps.

Source classification

Source descriptions for the indicators were taken from Statistics Canada's North American Industry Classification System. The 4-digit code of the classification system, as reported by the facilities, was used for source classification for the data reported by the inventory. These sources were then classified into the following sources for reporting in the indicators:

- electric utilities
- manufacturing (except pulp and paper)
- mining and rock quarrying
- miscellaneous

- non-ferrous smelting and refining
- oil and gas industry
- ore and mineral industries
- pulp and paper industry
- solid waste management
- transportation (road, rail, air and marine)
- wastewater treatment

Table 1 shows the allocation of sources of harmful substances reported in the indicators compared with sources reported by the inventory.

Table 1. Alignment of sources reported in the Canadian Environmental Sustainability Indicators and sources in the National Pollutant Release Inventory

Sources in the Canadian Environmental Sustainability Indicators	Sources in the National Pollutant Release Inventory (based on the North American Industry Classification System)
Electric utilities	Electric power generation, transmission and distribution
Manufacturing (except pulp and paper)	Aerospace product and parts manufacturing
Manufacturing (except pulp and paper)	Basic chemical manufacturing
Manufacturing (except pulp and paper)	Cement and concrete product manufacturing
Manufacturing (except pulp and paper)	Coating, engraving, cold and heat treating and allied activities
Manufacturing (except pulp and paper)	Electric lighting equipment manufacturing
Manufacturing (except pulp and paper)	Electrical equipment manufacturing
Manufacturing (except pulp and paper)	Engine, turbine and power transmission equipment manufacturing
Manufacturing (except pulp and paper)	Forging and stamping
Manufacturing (except pulp and paper)	Fruit and vegetable preserving and specialty food manufacturing
Manufacturing (except pulp and paper)	Motor vehicle manufacturing
Manufacturing (except pulp and paper)	Motor vehicle parts manufacturing
Manufacturing (except pulp and paper)	Other chemical product manufacturing
Manufacturing (except pulp and paper)	Other electrical equipment and component manufacturing
Manufacturing (except pulp and paper)	Other fabricated metal product manufacturing
Manufacturing (except pulp and paper)	Other food manufacturing
Manufacturing (except pulp and paper)	Other miscellaneous manufacturing
Manufacturing (except pulp and paper)	Paint, coating and adhesive manufacturing
Manufacturing (except pulp and paper)	Pesticide, fertilizer and other agricultural chemical manufacturing
Manufacturing (except pulp and paper)	Petroleum and coal product manufacturing
Manufacturing (except pulp and paper)	Pharmaceutical and medicine manufacturing
Manufacturing (except pulp and paper)	Rubber product manufacturing
Manufacturing (except pulp and paper)	Semiconductor and other electronic component manufacturing

Sources in the Canadian Environmental Sustainability Indicators	Sources in the National Pollutant Release Inventory (based on the North American Industry Classification System)
Manufacturing (except pulp and paper)	Ship and boat building
Manufacturing (except pulp and paper)	Spring and wire product manufacturing
Manufacturing (except pulp and paper)	Veneer, plywood and engineered wood product manufacturing
Mining and rock quarrying	Metal ore mining
Mining and rock quarrying	Coal mining
Mining and rock quarrying	Non-metallic mineral mining and quarrying
Miscellaneous	Defence services
Miscellaneous	General medical and surgical hospitals
Miscellaneous	Other professional, scientific and technical services
Miscellaneous	Recyclable material merchant wholesalers
Miscellaneous	Support activities for water transportation
Non-ferrous smelting and refining industry	Non-ferrous metal (except aluminum) production and processing
Oil and gas industry	Oil and gas extraction
Ore and mineral industries	Alumina and aluminum production and processing
Ore and mineral industries	Foundries
Ore and mineral industries	Iron and steel mills and ferro-alloy manufacturing
Ore and mineral industries	Steel product manufacturing from purchased steel
Pulp and paper	Converted paper product manufacturing
Pulp and paper	Pulp, paper and paperboard mills
Solid waste management	Remediation and other waste management services
Solid waste management	Waste collection
Solid waste management	Waste treatment and disposal
Transportation (road, rail, air and marine)	Rail transportation
Wastewater treatment	Water, sewage and other systems

For display purposes, sources with smaller releases are sometimes grouped together under the category "Other sources" in the figures and corresponding data tables of releases by source. The grouped sources may differ by substance and are listed in the notes of each figure and data table.

Recent changes

The wastewater and waste management source in the Canadian Environmental Sustainability Indicators was split into 2 separate sources: wastewater treatment and solid waste management. These sources are listed under 2 different North American Industry Classification System codes.

The provincial/territorial comparison of releases to water was expanded to include 2003, the first year data was available. Also included is 2023, the latest year data was available, and a 10-year comparison to 2013. A new substance, arsenic, was included in the indicator.

Caveats and limitations

The indicators reflect only facility-based releases to water as reported to the inventory. They do not include estimates of releases from other sources, such as runoff from cities, transboundary pollution or consumer products in Canada. Releases of fishing tackle make up most of the releases of lead to water in Canada, but are not included in the indicator.

Occasional updates and data quality checking can be done after initial release of the inventory.

The number and composition of facilities that report releases to water to the inventory vary each year. This variation is due to the fact that only facilities that meet or exceed the reporting threshold are required to report. An analysis of how this might affect the apparent trends has not been undertaken.

Facilities reporting to the inventory may use different methods to calculate releases. These methods vary depending on the substance and/or facility, and may also change from year to year.

The years 2020 and 2021 were marked by the COVID-19 pandemic which had an impact on a wide range of economic sectors, especially the energy and transport sectors. The emissions change must be interpreted with caution as the impact of the pandemic on the emissions is not discussed in detail.

Resources

References

Environment and Climate Change Canada (2018) Moving towards using more lead-free ammunition. Retrieved on March 21, 2025.

Environment and Climate Change Canada (2018) Moving toward using lead-free fishing tackle. Retrieved on March 21, 2025.

Environment and Climate Change Canada (2025) Using and interpreting data from the National Pollutant Release Inventory. Retrieved on March 21, 2025.

Environment and Climate Change Canada (2025) Bulk data files for all years – releases, disposals, transfers and facility locations. Retrieved on March 21, 2025.

Related information

NPRI sector overview: Aluminium

NPRI sector overview: Electricity

NPRI sector overview: Metal ore mining

NPRI sector overview: Oil sands extraction

NPRI sector overview: Wastewater

Annex

Annex A. Data tables for the figures presented in this document

Table A.1. Data for Figure 1. Facility-based releases of mercury, lead, cadmium and arsenic to water, Canada, 2003 to 3

Year	Mercury (percentage change from 2003 level)	Lead (percentage change from 2003 level)	Cadmium (percentage change from 2003 level)	Arsenic (percentage change from 2003 level)
2003	0	0	0	0
2004	-11	-14	-6	88
2005	40	-13	-31	166
2006	-11	-21	-24	114
2007	-33	-41	-24	37
2008	-44	-14	-49	146
2009	-10	-32	-35	-38
2010	-32	-22	-45	-42
2011	-7	-29	-45	-45
2012	-54	-42	-45	-42
2013	-44	-47	-44	-41
2014	508	499	28	1,312
2015	-71	-61	-55	-55
2016	-63	-64	-50	-49
2017	-68	-62	-45	-49
2018	-71	-56	-46	-53
2019	-72	-61	-41	-53
2020	-76	-69	-53	-56
2021	-74	-73	-55	-61
2022	-79	-71	-56	-57
2023	-72	-66	-56	-56

Note: The indicator reports facility-based releases only. This chart accounts only for the releases to water reported in the National Pollutant Release Inventory based on the inventory reporting criteria for releases of mercury, lead, cadmium and arsenic and their compounds. The amounts presented in this indicator should not be interpreted as comprehensive totals of releases to water of these pollutants in Canada. In 2014, a significant spill at the Mount Polley mine in central British Columbia accounted for large releases of mercury, lead, cadmium and arsenic to water.
Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

Table A.2. Data for Figure 2. Facility-based mercury releases to water by source, Canada, 2003 to

Year	Wastewater treatment (releases to water in kilograms)	Mining and rock quarrying (releases to water in kilograms)	Non-ferrous smelting and refining (releases to water in kilograms)	Pulp and paper industry (releases to water in kilograms)	Other sources (releases to water in kilograms)	Total (releases to water in kilograms)
2003	306.7	1.5	14.1	24.1	35.3	381.6
2004	272.7	8.2	13.3	17.5	26.1	337.8
2005	435.2	1.0	53.4	14.0	29.1	532.6
2006	226.9	3.5	61.6	26.3	20.8	339.1
2007	169.4	4.1	31.2	25.6	24.0	254.3
2008	149.7	3.9	10.7	22.8	25.3	212.4
2009	167.5	17.7	9.4	83.6	66.6	344.9
2010	137.9	6.4	23.4	71.0	21.9	260.5
2011	173.6	90.2	9.3	68.2	13.5	354.8
2012	100.3	17.0	5.9	43.9	9.4	176.4
2013	123.6	38.6	8.5	34.6	6.5	211.8
2014	87.4	2,174.4	10.4	47.8	1.7	2,321.7
2015	77.9	5.0	5.5	21.7	1.6	111.8
2016	83.2	3.4	30.7	21.0	4.4	142.7
2017	81.4	6.9	12.0	19.3	0.7	120.3
2018	80.8	2.6	14.3	11.3	1.8	110.8
2019	59.8	18.4	14.7	11.8	0.8	105.5
2020	65.9	5.4	8.9	11.1	1.4	92.7
2021	55.4	12.9	12.9	15.5	1.2	97.8
2022	48.6	6.1	10.4	14.5	2.4	82.0
2023	82.8	2.0	6.7	12.2	3.1	106.9

Note: Totals may not add up due to rounding. The indicator reports facility-based releases only. The indicator includes the amount of elemental mercury and mercury in any compound, alloy or mixture reported in the National Pollutant Release Inventory based on the inventory reporting criteria. As a result, the reported mercury releases to water account for only a portion of the releases of this toxic pollutant to water in Canada. “Other sources” include electric utilities, manufacturing (except the pulp and paper industry), the oil and gas industry, ore and mineral industries (except non-ferrous smelting and refining), solid waste management, transportation (road, rail, air and marine) and other miscellaneous sources. For more details on sources, please consult the Data sources and methods.
Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

Table A.3. Data for Figure 3. Facility-based mercury releases to water by province and territory, Canada, 2003, 2013 and

Province or territory	2003 (releases to water in kilograms)	2013 (releases to water in kilograms)	2023 (releases to water in kilograms)
Newfoundland and Labrador	< 0.1	0.1	< 0.1
Prince Edward Island	n/a	n/a	n/a
Nova Scotia	0.6	0.5	4.7
New Brunswick	2.0	11.8	1.1
Quebec	122.2	24.4	27.2
Ontario	137.2	70.9	56.1
Manitoba	n/a	0.7	0.2
Saskatchewan	0.9	< 0.1	n/a
Alberta	69.7	56.2	2.0
British Columbia	48.9	22.4	15.5
Yukon	n/a	n/a	n/a
Northwest Territories	n/a	24.8	< 0.1
Nunavut	n/a	n/a	n/a
Canada	381.6	211.8	106.9

Note: n/a = not available, it indicates that the province or territory has no reported releases. Totals may not add up due to rounding. The indicator reports facility-based releases only. The indicator includes the amount of elemental mercury and mercury in any compound, alloy or mixture reported in the National Pollutant Release Inventory based on the inventory reporting criteria. As a result, the reported mercury releases to water represent only a portion of the releases of this toxic pollutant to water in Canada. The data table provides a snapshot of mercury releases by province and territory. To access all available years data please refer to the indicator's interactive figures or, for the full dataset, to the National Pollutant Release Inventory.
Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

Table A.4. Data for Figure 5. Facility-based lead releases to water by source, Canada, 2003 to

Year	Wastewater treatment (releases to water in kilograms)	Pulp and paper industry (releases to water in kilograms)	Other sources (releases to water in kilograms)	Non-ferrous smelting and refining (releases to water in kilograms)	Mining and rock quarrying (releases to water in kilograms)	Total (releases to water in kilograms)
2003	15,487.1	2,583.0	1,901.8	2,253.9	2,112.9	24,338.7
2004	11,526.4	2,886.4	1,631.8	2,881.5	1,925.5	20,851.7
2005	9,472.5	3,340.5	1,964.5	2,778.4	3,713.5	21,269.4
2006	9,899.8	2,365.9	1,569.5	1,874.6	3,429.6	19,139.3
2007	6,417.4	2,370.8	1,396.1	1,819.4	2,252.4	14,256.2
2008	11,582.8	2,424.6	1,493.6	2,194.1	3,274.9	20,970.0
2009	8,475.9	2,252.7	1,971.6	2,148.8	1,611.5	16,460.4
2010	11,973.3	2,117.4	1,938.8	1,526.6	1,341.9	18,898.0
2011	8,990.8	2,888.1	1,886.3	1,518.9	1,876.0	17,160.1
2012	4,698.6	2,864.8	1,642.4	1,773.6	3,074.4	14,053.8
2013	4,660.3	2,423.3	1,905.9	1,483.6	2,388.7	12,861.9
2014	5,114.7	1,849.4	1,417.6	1,768.1	135,559.6	145,709.4
2015	4,395.9	1,459.9	1,236.7	1,338.7	991.3	9,422.5

Year	Wastewater treatment (releases to water in kilograms)	Pulp and paper industry (releases to water in kilograms)	Other sources (releases to water in kilograms)	Non-ferrous smelting and refining (releases to water in kilograms)	Mining and rock quarrying (releases to water in kilograms)	Total (releases to water in kilograms)
2016	3,880.0	1,576.9	855.7	1,527.6	1,042.0	8,882.2
2017	4,375.8	1,444.0	1,131.3	1,111.4	1,078.4	9,140.9
2018	4,596.9	3,013.2	1,343.5	1,117.8	620.5	10,692.4
2019	4,707.7	2,135.2	1,329.3	1,136.9	266.3	9,575.4
2020	4,191.6	1,122.5	1,004.1	1,085.7	240.3	7,644.2
2021	3,482.6	972.1	1,081.9	790.3	307.7	6,634.6
2022	3,782.6	993.9	1,408.4	627.9	183.1	6,995.9
2023	4,393.8	1,071.0	1,465.2	694.7	537.1	8,161.8

Note: Totals may not add up due to rounding. The indicator reports facility-based releases only. The indicator includes the amount of elemental lead and lead in any compound, alloy or mixture reported in the National Pollutant Release Inventory based on the inventory reporting criteria. As a result, the reported lead releases to water account for only a portion of the releases of this toxic pollutant to water in Canada. “Other sources” include electric utilities, manufacturing (except the pulp and paper industry), the oil and gas industry, ore and mineral industries (except non-ferrous smelting and refining), solid waste management, transportation (road, rail, air and marine) and other miscellaneous sources. For more details on sources, please consult the Data sources and methods.
Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

Table A.5. Data for Figure 6. Facility-based lead releases to water by province and territory, Canada, 2003, 2013 and

Province or territory	2003 (releases to water in kilograms)	2013 (releases to water in kilograms)	2023 (releases to water in kilograms)
Newfoundland and Labrador	1,670.0	456.6	116.8
Prince Edward Island	n/a	4.6	7.1
Nova Scotia	3.9	11.1	169.4
New Brunswick	724.9	1,033.8	240.2
Quebec	6,296.2	3,232.7	2,485.0
Ontario	8,321.2	3,552.6	2,912.7
Manitoba	1,385.0	265.3	206.8
Saskatchewan	217.1	104.8	13.7
Alberta	1,141.5	1,273.3	378.8
British Columbia	4,563.9	2,918.7	1,627.0
Yukon	n/a	n/a	n/a
Northwest Territories	n/a	1.9	0.1
Nunavut	15.0	6.5	4.2
Canada	24,338.7	12,861.9	8,161.8

Note: n/a = not available, it indicates that the province or territory has no reported releases. Totals may not add up due to rounding. The indicator reports facility-based releases only. The indicator includes the amount of elemental lead and lead in any compound, alloy or mixture reported in the National Pollutant Release Inventory based on the inventory reporting criteria. As a result, the reported lead releases to water represent only a portion of the releases of this toxic pollutant to water in Canada. The data table provides a snapshot of lead releases by province and territory, to access all available years data please refer to the indicator’s interactive figures or, for the full dataset, to the National Pollutant Release Inventory.
Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

Table A.6. Data for Figure 8. Facility-based cadmium releases to water by source, Canada, 2003 to

Year	Wastewater treatment (releases to water in kilograms)	Pulp and paper industry (releases to water in kilograms)	Non-ferrous smelting and refining (releases to water in kilograms)	Other sources (releases to water in kilograms)	Mining and rock quarrying (releases to water in kilograms)	Total (releases to water in kilograms)
2003	3,195.1	1,012.2	426.4	129.7	181.2	4,944.6
2004	2,258.8	957.7	867.8	136.5	423.8	4,644.6
2005	1,391.2	931.6	454.0	229.4	402.1	3,408.3
2006	1,452.3	1,076.4	435.3	267.6	514.9	3,746.5
2007	1,115.0	1,104.2	877.7	264.2	396.6	3,757.7
2008	979.1	766.1	394.8	348.1	54.2	2,542.2
2009	1,260.1	710.4	365.4	511.6	368.9	3,216.4
2010	1,212.8	704.5	289.0	345.6	189.0	2,741.0
2011	1,356.3	723.7	321.5	201.8	134.5	2,737.7
2012	1,233.2	823.7	327.0	200.9	158.9	2,743.6
2013	902.2	1,095.6	352.2	145.9	268.0	2,763.8
2014	968.0	941.5	319.5	107.9	4,001.7	6,338.6
2015	976.7	783.0	287.3	83.8	114.6	2,245.4
2016	1,117.7	838.6	314.1	103.5	110.5	2,484.5
2017	1,234.6	866.5	282.2	116.5	237.7	2,737.4
2018	1,199.3	814.3	229.6	130.0	301.6	2,674.9
2019	1,645.2	796.5	311.9	54.0	128.6	2,936.2
2020	1,194.5	704.7	281.4	31.4	131.8	2,343.9
2021	1,059.1	647.8	210.4	211.0	105.2	2,233.4
2022	1,190.4	640.0	228.9	39.1	97.0	2,195.4
2023	1,233.6	574.7	197.0	36.3	136.8	2,178.4

Note: Totals may not add up due to rounding. The indicator reports facility-based releases only. The indicator includes the amount of elemental cadmium and cadmium in any compound, alloy or mixture reported in the National Pollutant Release Inventory based on the inventory reporting criteria. As a result, the reported cadmium releases to water account for only a portion of the releases of this toxic pollutant to water in Canada. 'Other sources' include electric utilities, manufacturing (except the pulp and paper industry), the oil and gas industry, ore and mineral industries (except non-ferrous smelting and refining), solid waste management, transportation (road, rail, air and marine) and other miscellaneous sources. For more details on sources, please consult the Data sources and methods.
Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

Table A.7. Data for Figure 9. Facility-based cadmium releases to water by province and territory, Canada, 2003, 2013 and

Province or territory	2003 (releases to water in kilograms)	2013 (releases to water in kilograms)	2023 (releases to water in kilograms)
Newfoundland and Labrador	8.4	67.3	34.3
Prince Edward Island	n/a	14.7	1.5
Nova Scotia	12.1	1.8	8.3
New Brunswick	184.8	430.2	85.1
Quebec	2,544.8	492.9	408.3
Ontario	843.6	533.9	1,097.0
Manitoba	360.3	32.4	5.1
Saskatchewan	31.8	20.7	1.1
Alberta	258.3	341.7	184.0
British Columbia	700.3	828.3	353.6
Yukon	n/a	n/a	n/a
Northwest Territories	n/a	0.1	<,0.1
Nunavut	0.2	0.1	0.1
Canada	4,944.6	2,763.8	2,178.4

Note: n/a = not available, it indicates that the province or territory has no reported releases. Totals may not add up due to rounding. The indicator reports facility-based releases only. The indicator includes the amount of elemental cadmium and cadmium in any compound, alloy or mixture reported in the National Pollutant Release Inventory based on the inventory reporting criteria. As a result, the reported cadmium releases to water represent only a portion of the releases of this toxic pollutant to water in Canada. The data table provides a snapshot of cadmium releases by province and territory, to access all available years data please refer to the indicator's interactive figures or, for the full dataset, to the National Pollutant Release Inventory.
Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

Table A.8. Data for Figure 11. Facility-based arsenic releases to water by source, Canada, 2003 to 2023

Year	Wastewater treatment (releases to water in kilograms)	Mining and rock quarrying (releases to water in kilograms)	Pulp and paper (releases to water in kilograms)	Non-ferrous smelting and refining (releases to water in kilograms)	Other sources (releases to water in kilograms)	Total (releases to water in kilograms)
2003	3,726.1	8,302.8	3,231.8	1,779.1	2,043.1	19,082.9
2004	2,424.0	25,209.2	3,745.3	2,363.2	2,201.3	35,942.9
2005	2,004.2	40,934.5	3,660.6	2,515.5	1,656.8	50,771.7
2006	2,521.4	30,555.3	3,609.7	2,767.4	1,339.9	40,794.0
2007	2,217.2	15,956.5	3,706.3	2,207.0	2,092.5	26,179.9
2008	3,019.1	36,944.7	3,157.4	2,481.4	1,283.7	46,886.3
2009	2,759.8	2,311.9	2,610.5	2,064.4	2,007.1	11,753.7
2010	2,885.8	1,704.0	2,813.5	2,005.0	1,578.0	10,986.4
2011	3,170.5	2,170.1	2,628.8	1,743.2	824.4	10,536.9
2012	2,852.5	2,356.8	2,836.6	1,648.6	1,374.9	11,069.4
2013	1,689.7	3,818.5	2,922.4	1,911.5	969.9	11,312.0
2014	2,813.9	261,634.0	2,377.6	1,793.7	793.4	269,412.6
2015	2,808.8	2,174.8	2,237.3	846.4	467.6	8,534.8

Year	Wastewater treatment (releases to water in kilograms)	Mining and rock quarrying (releases to water in kilograms)	Pulp and paper (releases to water in kilograms)	Non-ferrous smelting and refining (releases to water in kilograms)	Other sources (releases to water in kilograms)	Total (releases to water in kilograms)
2016	3,162.3	2,143.1	2,120.6	1,846.2	385.0	9,657.3
2017	3,387.5	2,119.7	2,250.3	1,593.4	432.0	9,782.8
2018	3,172.2	1,733.9	2,217.6	1,388.8	407.1	8,919.6
2019	3,211.6	1,709.4	2,039.3	1,692.1	303.4	8,955.7
2020	3,474.3	1,631.4	1,765.4	1,230.0	258.3	8,359.3
2021	3,368.9	1,112.4	1,709.4	949.7	300.6	7,441.0
2022	3,571.1	1,196.5	1,632.1	1,044.6	791.8	8,236.1
2023	3,647.7	1,474.4	1,781.0	1,125.0	414.9	8,443.0

Note: Totals may not add up due to rounding. The indicator reports facility-based releases only. The indicator includes the amount of elemental arsenic and arsenic in any compound, alloy or mixture reported in the National Pollutant Release Inventory based on the inventory reporting criteria. As a result, the reported arsenic releases to water account for only a portion of the releases of this toxic pollutant to water in Canada. 'Other sources' include solid waste management, manufacturing (except the pulp and paper industry), the oil and gas industry, ore and mineral industries (except non-ferrous smelting and refining), and other miscellaneous sources. For more details on sources, please consult the Data sources and methods.
Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

Table A.9. Data for Figure 12. Facility-based arsenic releases to water by province and territory, Canada, 2003, 2013 and 2023

Province or territory	2003 (releases to water in kilograms)	2013 (releases to water in kilograms)	2023 (releases to water in kilograms)
Newfoundland and Labrador	7,810.0	1,482.4	24.0
Prince Edward Island	n/a	n/a	n/a
Nova Scotia	6.5	27.7	181.9
New Brunswick	1,804.4	269.9	275.2
Quebec	998.4	1,802.9	1,486.5
Ontario	3,784.0	2,861.3	3,789.5
Manitoba	659.9	549.8	346.7
Saskatchewan	33.8	52.1	71.6
Alberta	1,049.1	1,139.7	282.7
British Columbia	2,936.9	3,122.4	1,957.1
Yukon	n/a	n/a	n/a
Northwest Territories	n/a	1.5	15.3
Nunavut	n/a	2.2	12.6
Canada	19,082.9	11,312.0	8,443.0

Note: n/a = not available, it indicates that the province or territory has no reported releases. Totals may not add up due to rounding. The indicator reports facility-based releases only. The indicator includes the amount of elemental arsenic and arsenic in any compound, alloy or mixture reported in the National Pollutant Release Inventory based on the inventory reporting criteria. As a result, the reported arsenic releases to water represent only a portion of the releases of this toxic pollutant to water in Canada. Some reported releases from Newfoundland and Labrador, Nova Scotia, Saskatchewan, the Northwest Territories and Nunavut are too small to see in the figure. To access individual provincial data for all years please refer to the indicator's interactive figures or, for the full dataset, to the National Pollutant Release Inventory.
Source: Environment and Climate Change Canada (2025) National Pollutant Release Inventory.

Additional information can be obtained at:

Environment and Climate Change Canada
Public Inquiries Centre
Place Vincent Massey Building
351 Saint-Joseph Boulevard
Gatineau QC K1A 0H3
Toll Free: 1-800-668-6767
Email: enviroinfo@ec.gc.ca