



COMPENDIUM OF CANADA'S ENGAGEMENT IN INTERNATIONAL ENVIRONMENTAL AGREEMENTS AND INSTRUMENTS

UNECE Protocol to Abate Acidification, Eutrophication, and Ground-level Ozone (Gothenburg Protocol) (Protocol to the UNECE Convention on Long-Range Transboundary Air Pollution (LRTAP))

SUBJECT CATEGORY:

Air

TYPE OF AGREEMENT / INSTRUMENT:

Multilateral

FORM:

Legally-binding treaty

STATUS:

- Canada ratified the Gothenburg Protocol and its amendments on November 28, 2017 and submitted its commitments for automatic incorporation into the Protocol
- Signed by Canada December 1, 1999
- In force internationally May 17, 2005
- Amended Protocol adopted May 4, 2012, came into force October 7th 2019

LEAD & PARTNER DEPARTMENTS:

Lead: Environment and Climate Change Canada
Partners: Health Canada, Agriculture and Agri-Food Canada, Global Affairs Canada

FOR FURTHER INFORMATION:

Web Links:

- [Text of the Gothenburg Protocol](#), original text and as amended (2012):
- [National Pollutant Release Inventory](#)
- [Air Pollutant Emissions Inventory](#):

Contacts:

[ECCC Inquiry Centre](#)

COMPENDIUM EDITION:

June 2022

PLAIN LANGUAGE SUMMARY

Many air pollutants travel long distances and across national boundaries and affect countries in which the pollutants did not originate. The Gothenburg Protocol assists Canada in improving air quality by addressing pollutants from outside its borders that nevertheless impact Canadian air quality. Ratifying the Gothenburg Protocol was an important step in ensuring that Canadians have clean air and a healthier environment.

The Gothenburg Protocol was established to address pollutants that cause acidification and ground-level ozone. It sets limits on air pollutants including sulphur dioxide, nitrogen oxide, ammonia and volatile organic compounds that are hazardous to human health and the environment. It was updated in 2012 to include particulate matter (PM) and black carbon (as a component of PM) and to include new commitments for 2020.

A review of the Gothenburg Protocol is currently underway. The purpose of the review is to determine how effective the Protocol has been in achieving its air quality objectives and point to remaining gaps. The review is expected to be complete by December 2022. At that time, discussions on next steps will begin and may result in amendments to the treaty.

LRTAP and its Protocols are unique. The organization is a leading scientific and policy forum for air pollution and closely links science and policy. This cooperation has been very effective and key to its success.

OBJECTIVE

The objective of the Gothenburg Protocol under the United Nations Economic Commission for Europe's (UNECE) LRTAP Convention is:

- to control and reduce emissions of sulphur dioxide (SO_2), nitrogen oxides (NO_x), ammonia (NH_3), volatile organic compounds (VOCs), and PM that are caused by human activities and likely to cause adverse effects on human health and the environment, ecosystems, crops, materials and the

- climate, in the short- and long-term as a result of long-range atmospheric transport;
- to ensure that atmospheric depositions or concentrations do not exceed critical loads/levels;
- that Parties give priority, in implementing measures to reduce PM, to sources that are also significant sources of black carbon to provide benefits for human health and the environment and to help mitigation of near-term climate change.

KEY ELEMENTS

The LRTAP Convention is the only legally binding international instrument aimed at addressing air pollutants. It entered into force in 1983 and has since been supplemented by eight protocols. These include protocols on sulphur dioxide (1985 Helsinki and 1994 Oslo Protocols), nitrogen oxides (1988 Sofia Protocol), heavy metals, persistent organic pollutants and funding for the scientific work of the Convention. Canada is a Party to all of the protocols (except for the Geneva Protocol on VOCs).

The Gothenburg Protocol is the most recent protocol and contains emissions ceilings for 2010 and beyond for SO₂, NO_x, NH₃, and VOCs. Commitments for 2020 and beyond for those pollutants as well as fine particulate matter (PM_{2.5}) are included in the 2012 amended Gothenburg Protocol, expressed as a percentage reduction from 2005. NH₃ commitments apply to Europe only. Canada's commitments under the Protocol are expressed as emissions ceilings for 2010, and, for 2020 and beyond, as emission reductions expressed as a percentage reduction from 2005.

Black carbon, a short-lived climate pollutant, was added as a component of particulate matter to the amended Protocol, which calls for countries to prioritize PM_{2.5} reductions from sources that have significant black carbon content. The Protocol also calls for Parties to voluntarily report emissions and projections of black carbon.

In addition, emission limit values for several stationary and mobile sources/sectors as well as some equipment types are also included as annexes to the Protocol.

This multi-pollutant, multi-effect protocol is meant to eventually replace the older protocols that cover the same pollutants. Thus, when all Parties ratify the amended Protocol, their obligations under the following existing protocols: SO₂ (1985 Helsinki and 1994 Oslo Protocols); NO_x (1988 Sofia Protocol); and VOC (1991 Geneva Protocol); will become null and void.

EXPECTED RESULTS

Canada's 2010 emissions ceilings are 1,450kt for SO₂, 2,250kt for NO_x, and 2,100kt for VOCs. Canada's

emission reduction commitments from 2005 levels for 2020 and beyond are 55% for SO₂, 35% for NO_x, 20% for VOCs, and 25% for PM_{2.5}.

CANADA'S INVOLVEMENT

Canada ratified the Gothenburg Protocol and its 2012 amendments on November 28, 2017. Canada and the U.S. also manage transboundary pollution bilaterally under the Canada-U.S. Air Quality Agreement.

The Gothenburg Protocol is of interest to Canada because it addresses transboundary air pollution in the UNECE region. Alongside the Canada-U.S. Air Quality Agreement, the Protocol is a key mechanism for reducing the flow of these pollutants, including transport to North America from other regions.

Canada actively and constructively contributes to the scientific and policy work of the Convention.

RESULTS / PROGRESS

Activities

Canada continues to show leadership on the environment and participate constructively in the Convention, including being a key party in negotiations to amend the Gothenburg Protocol, a process finalized in 2012. Canada has also contributed by chairing a number of negotiating groups that delivered key results important to finalizing the amended Protocol. Canada has also served two terms as Chair of the Convention's Working Group on Strategies and Review, the main policy and negotiating body of the Convention. Canada participates on a number of ad hoc groups charged with moving work forward inter-sessionally, such as the group undertaking the review of the Gothenburg Protocol.

The Convention is currently undertaking a review of the Gothenburg Protocol to assess its sufficiency and effectiveness in achieving its objectives. This work is driven by activities that have taken place within the Convention including the scientific assessment of the Convention (SAR); the policy response to that assessment and updating the Long-term Strategy for the Convention based on that policy response. The SAR indicates that, even with full implementation of the Convention and its protocols, further work will still be required, especially to address ozone levels. These are predicted to increase after 2020, driven mostly by emissions of methane (an ozone precursor) from outside the geographic region of the Convention. The review of the Gothenburg Protocol is expected to be complete by December 2022. At that time, parties will discuss next steps.

The key to ensuring Canada meets its emission reduction commitments under the Gothenburg Protocol is the Air Quality Management System (AQMS), which

is the cornerstone of Canada's approach to addressing outdoor air pollution.

Working with provinces and territories, Canada has established ambient air quality standards for fine particulate matter, ozone, nitrogen dioxide and sulphur dioxide. These standards are the driver for air quality management across the country. In addition, Canada has put in place regulatory and non-regulatory instruments to reduce air pollutant emissions from major industrial sources, transportation, and consumer and commercial products.

Reports

Canada submits inventory reports for the pollutants covered by the Gothenburg Protocol in its annual submission to the UNECE. Canada will continue to report on these pollutants and meet its annual reporting requirements. Canada's most recent air pollutant inventory can be viewed on the [Air Pollutant Emissions Inventory: overview page](#). Its official submission to the UNECE can be found [on their website](#).

Results

Canada met its emission reduction commitments in the Helsinki (SO₂), Oslo (SO₂) and Sofia (NO_x) Protocols many years ago. For more detailed information on the emission reduction commitments for these older protocols, please see the [2022 Air Pollutant Emissions Inventory Report](#).

Canada has also met its emission reduction commitments under the Gothenburg Protocol. Emissions of SO_x were 0.7 million tonnes in 2020, 55% below the 2010 emission ceiling under the 1999 Gothenburg Protocol and 69% below 2005 levels. Emissions of NO_x were 1.4 million tonnes in 2020, 36% below the 2010 emission ceiling under the 1999 Gothenburg Protocol and 36% below 2005 levels. Emissions of non-methane VOCs (NMVOCs) were 1.5 million tonnes in 2020, 30% below the 2010 emission ceiling under the 1999 Gothenburg Protocol and 36% below 2005 levels. Excluding sources from road dust, construction operations, and crop production, PM_{2.5} emissions in 2020 were 30% lower compared to 2005 levels. Canada has met its 2020 commitments and is on track to continue meeting them.

The Canadian population's exposure to ambient air pollution has decreased since 2007. Prior to the most recent reporting period, 77% of Canadians were living in areas where outdoor pollution levels for PM_{2.5}, ozone, SO₂, and NO_x were below the Canadian Ambient Air Quality Standards. In 2016 to 2018, this percentage dropped to 68%, which has been attributed to smoke from large wildfires in Canada and the U.S. that negatively affected air quality in parts of Canada in 2018.