Update to Canada's National Implementation Plan

Under the Stockholm Convention on Persistent Organic Pollutants

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Executive summary

The purpose of this Update to Canada's National Implementation Plan (NIP) is to inform the Conference of the Parties of the Stockholm Convention on Persistent Organic Pollutants, and the public, of Canada's plan for implementing its obligations with respect to five (5) newly ratified listings of persistent organic pollutants (POPs) to the Convention. In May 2022, Canada ratified: dicofol, hexachlorobutadiene (HCBD), polychlorinated naphthalenes (PCNs), short-chain chlorinated paraffins (SCCPs), and technical endosulfan and its related isomers (endosulfan). Each Party to the Stockholm Convention is required, under Article 7 of the Convention, to develop a NIP demonstrating how it will implement its obligations under the Convention. Canada submitted its first NIP to the Stockholm Convention Secretariat on May 17, 2006. In 2013, Canada submitted an updated NIP, covering nine (9) new POPs listed to the Convention in 2009. In accordance with Article 7(c) of the Convention, Canada has prepared this update to its 2006 and 2013 NIPs outlining the plans and programs Canada has in place to meet its obligations under the Convention.

POPs are toxic substances that are predominantly human-made, persist in the environment, and accumulate within living organisms, including humans. Within the environment, POPs can concentrate in environmental media and biota. POPs can also be transported great distances, and subsequently be deposited in remote regions, especially in colder climates. Domestic action alone cannot eliminate the impacts of POPs on Canadians and the environment. As POPs can be transported great distances, international management is also necessary in order to limit the amount of POPs found in the Canadian environment. International agreements like the Stockholm Convention help to reduce emissions from all countries, which otherwise could ultimately end up in Canada.

Canada's initiatives outlined in this update include legislation, regulations, voluntary programs and standards, policies, programs and other related measures to manage and eliminate these five POPs. Canada has already taken significant steps to reduce domestic sources of the five newly ratified POPs through its authorities under the *Canadian Environmental Protection Act, 1999* and the *Pest Control Products Act*; through action under the Chemicals Management Plan; and via regulations such as *Prohibition of Certain Toxic Substances Regulations, 2012*. This update also outlines Canada's National Action Plan (NAP) for reducing total releases of by-product emissions of pentachlorobenzene from anthropogenic sources. Finally, Canada continues to lend its expertise and resources to support information exchange, public awareness and education, research and monitoring, technical assistance, capacity building and reporting.

The Update to Canada's NIP has been developed in consultation across federal departments and with provinces and territories. A draft of this document was also made available for comment by Indigenous organizations, industry, businesses, environmental and health non-governmental organizations and the public. Canada remains committed to meeting its obligations under the Convention and continuing its contributions toward protecting human health and the environment from POPs.

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List of acronyms

AMAP	Arctic Monitoring and Assessment Programme
BAT	Best available techniques
BEP	Best environmental practices
CCME	Canadian Council of Ministers of the Environment
CEPA	*Canadian Environmental Protection Act, 1999*
CHMS	Canadian Health Measures Survey
CMP	Chemicals Management Plan
ECCC	Environment and Climate Change Canada
ESECLR	*Export of Substances on the Export Control List Regulations*
FCSAP	Federal Contaminated Sites Action Plan
GAPS	Global Atmospheric Passive Sampling Network
GEF	Global Environment Facility
GLB	Great Lake Basin program
GMP	Global Monitoring Plan
HCBD	Hexachlorobutadiene
HCH	Hexachlorocyclohexane
LRTAP	Convention on Long-range Transboundary Air Pollution
MIREC	Maternal-Infant Research on Environmental Chemicals
NAP	National Action Plan (on unintentionally produced POPs, under the Stockholm Convention)
NAPS	National Air Pollution Surveillance Program
NCP	Northern Contaminants Program
NCSCS	National Classification System for Contaminated Sites
NIP	National Implementation Plan (under the Stockholm Convention)
NPRI	National Pollutant Release Inventory
PCB	Polychlorinated biphenyls
PCNs	Polychlorinated naphthalenes
PCPA	*Pest Control Products Act*
PCTSR	*Prohibition of Certain Toxic Substances Regulations, 2012*
PeCB	Pentachlorobenzene
PFAS	Per- and polyfluoroalkyl substances
PFOA	Perfluorooctanoic acid (also used for this acid, its salts and PFOA-related compounds)
PFOS/PFOSF	Perfluorooctane sulfonic acid (also used for this acid, its salts and perfluorooctane sulfonyl fluoride (PFOSF))
PMRA	Pest Management Regulatory Agency
POPs	Persistent organic pollutants
SCCPs	Short-chain chlorinated paraffins
UPOPs	Unintentionally produced persistent organic pollutants
XBR	*Cross-border Movement of Hazardous Waste and Hazardous Recyclable Material Regulations*

Chapter 1 – Introduction

National Implementation Plans

Canada is a Party to the Stockholm Convention on Persistent Organic Pollutants, a global agreement that entered into force on May 17, 2004. The objective of the Stockholm Convention is to protect human health and the environment from persistent organic pollutants (POPs). POPs are organic substances (chemicals) that have a combination of harmful characteristics. POPs remain in the environment for long periods, cause adverse effects to the environment and/or human health, have the potential to migrate long distances and tend to accumulate in northern climates. Canada continues to be particularly impacted by POPs and inhabitants of Canada's North are at greater risk for POP exposure. By ratifying the Convention, Parties agree to the management and control of POPs through a series of specific measures.

Under Article 7 of the Stockholm Convention, each Party is required to develop a National Implementation Plan (NIP) demonstrating how it will implement its obligations under the Convention.

Note: Text that appears in blue shading (except that in square brackets) directly quotes the Stockholm Convention.

Article 7 (Implementation plans) states:

1. Each Party shall:
   (a) Develop and endeavour to implement a plan for the implementation of its obligations under this Convention;
   (b) Transmit its implementation plan to the Conference of the Parties within two years of the date on which this Convention enters into force for it; and
   (c) Review and update, as appropriate, its implementation plan on a periodic basis and in a manner to be specified by a decision of the Conference of the Parties.
2. The Parties shall, where appropriate, cooperate directly or through global, regional and subregional organizations, and consult their national stakeholders, including women's groups and groups involved in the health of children, in order to facilitate the development, implementation and updating of their implementation plans.
3. The Parties shall endeavour to utilize and, where necessary, establish the means to integrate national implementation plans for persistent organic pollutants in their sustainable development strategies where appropriate.

By Decision SC-2/7 of the Conference of the Parties to the Stockholm Convention, Parties are also required to submit updates to their NIP within two years of the entry into force of any amendments to the Convention.

Canada submitted its first NIP to the Stockholm Convention Secretariat in 2006, covering POPs listed to the Convention in 2004. In 2013, Canada submitted an update to the NIP, covering nine new POPs listed to the Convention in 2009.[1]

[1] Canada's NIPs available at: http://chm.pops.int/Implementation/NIPs/NIPTransmission/tabid/253/Default.aspx

Since that time, the Stockholm Convention has been amended to list several new POPs. In May 2022, Canada ratified another five POPs: hexachlorobutadiene (HCBD), polychlorinated naphthalenes (PCNs), short-chain chlorinated paraffins (SCCPs), technical endosulfan and its related isomers (endosulfan) and dicofol. The amendments entered into force on August 1, 2022. Canada's plan for implementing its obligations for these five additional POPs is addressed in this NIP update.

Adoption of amendments listing new POPs

The five new POPs are listed under Annex A to the Convention, meaning that Parties are required to eliminate all production and use of these POPs, except in areas where specific exemptions have been claimed (see Chapter 4). Two of these POPs (HCBD and PCNs) are also listed under Annex C to the Convention, and Parties are therefore required to reduce their unintentional release through implementation of best available techniques (BAT) and to promote best environmental practices (BEP). An overview of the five newly ratified POPs is provided below, identifying the Annex(es) in which each POP is listed, noting any exemptions and describing its global principal use(s).

Overview of the five POPs

Dicofol (pesticide)

- Listed in Annex A
- No exemptions
- Previously used as a miticidal pesticide and in the production of dichlorodiphenyltrichloroethane (DDT) in a closed-loop system

Endosulfan (pesticide)

- Listed in Annex A
- Specific exemptions expired
- Previously used as pesticide for various crop-pest complexes

HCBD (industrial chemical)

- Listed in Annexes A and C
- No exemptions
- Previously used as a solvent for other chlorine-containing compounds, but primarily created as a by-product in the manufacture of chlorinated compounds

PCNs (industrial chemicals)

- Listed in Annexes A and C
- Specific exemptions for the production and use of polyfluorinated naphthalenes, including octafluoronaphthalene
- Intentional production is assumed to have ended

SCCPs (industrial chemicals)

- Listed in Annex A

- Specific exemptions for production and use for the following:
    - Additives in the production of transmission belts in the natural and synthetic rubber industry;
    - Spare parts of rubber conveyor belts in the mining and forestry industries;
    - Leather industry, in particular fatliquoring in leather;
    - Lubricant additives, in particular for engines of automobiles, electric generators and wind power facilities, and for drilling in oil and gas exploration, petroleum refinery to produce diesel oil;
    - Tubes for outdoor decoration bulbs;
    - Waterproofing and fire-retardant paints;
    - Adhesives;
    - Metal processing;
    - Secondary plasticizers in flexible polyvinyl chloride, except in toys and children's products.

Why POPs continue to be a Canadian issue

POPs are toxic substances, predominantly human-made, that persist in the environment and accumulate within living organisms, including humans. Within the environment, POPs can concentrate in environmental media and biota. POPs can also be transported great distances, and subsequently be deposited in remote regions, especially in colder climates. Humans and wildlife can be exposed to POPs through food webs and the POPs can then be passed on from mother to offspring across the placenta and through milk.

Environmental conditions can significantly impact the release of POPs and their environmental fate. Changes to these conditions and greater variability in them due to climate change can affect POPs concentrations due to changes in, for instance, degradation pathways, sources of emissions, transport processes and pathways, and uptake and bioaccumulation in biota.[2]

As a northern country, Canada continues to be particularly impacted by POPs. While all Canadians are potentially exposed to POPs, inhabitants of the far North are at an increased risk due to the tendency of POPs to settle and accumulate in colder environments, as well as a diet and culture that relies on foods harvested from those environments. Three groups of Indigenous Peoples are found in Canada's Arctic region: Inuit, Métis, and First Nations, which in the Arctic include Dene and Yukon First Nations[3].

[2] AMAP, 2021. AMAP Assessment 2020: POPs and Chemicals of Emerging Arctic Concern: Influence of Climate Change. Arctic Monitoring and Assessment Programme (AMAP), Tromsø, Norway. viii+134pp. https://www.amap.no/documents/doc/amap-assessment-2020-pops-and-chemicals-of-emerging-arctic-concern-influence-of-climate-change/3580

[3] Information regarding POPs exposure of Indigenous Peoples in Canada's Arctic is drawn from the Northern Contaminants Program (NCP). The NCP co-ordinates Canada's action on northern contaminants, and as such, monitors environmental levels, wildlife and human exposure to contaminants (including "new" or emerging POPs), particularly in wildlife species that are important to the traditional diets of Northern Indigenous Peoples. See Chapter 7 for more on the NCP.

The northern Indigenous communities are the most highly exposed people in Canada's North, because their traditional foods include mammals with a high fat content, such as seal, narwhal whale, walrus, and polar bear. In contrast, recent studies show that the Dene, Métis, and Yukon First Nations of the western Arctic are thought to have a lower exposure to POPs as their traditional diet is based on freshwater fish (such as whitefish and trout) and terrestrial mammals (such as caribou and moose). These animals are typically less fatty and their diets are usually associated with shorter food webs, limiting the biomagnification of POPs. However, certain POPs, such as perfluoroalkyl substances (e.g., perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA)), partition preferentially to proteins in liver and blood rather than lipids (i.e., fatty tissue) and may accumulate in patterns unlike those normally associated with POPs[1].

As national boundaries do not stop the movement of contaminants through the environment, domestic action alone cannot eliminate the exposure to and impacts of POPs on Canadians and the environment. International agreements like the Stockholm Convention help to reduce emissions from all countries, which otherwise could ultimately end up in Canada.

Chapter 2 – Canada's key legislation and policies related to Stockholm Convention obligations

Prior to their ratification under the Stockholm Convention, Canada had already taken significant steps to reduce domestic sources of the five POPs through federal actions under the Chemicals Management Plan (CMP), and using authorities under the *Canadian Environmental Protection Act, 1999* (CEPA) and the *Pest Control Products Act* (PCPA).

Canada's initiatives outlined in this update include legislation, regulations, voluntary programs and standards, policies, programs and other related measures, including actions by Canadians to manage and eliminate these new POPs in the environment. Continued domestic actions are important to further reduce levels of POPs in Canada and to address emerging chemical issues. At the same time, effective implementation by all Parties to the Stockholm Convention is of vital interest to Canada because it will reduce Canada's exposure to foreign sources of POPs.

Chemicals Management Plan

Since the publication of Canada's original 2006 NIP, Canada launched its CMP[4] , which sets out to improve the degree of protection for Canadians and the environment against harmful chemicals, including a number of proactive measures to ensure that substances are managed appropriately.

The CMP is the Government of Canada's principal policy tool for the assessment and management of substances of concern. Since the beginning of the CMP in 2006, the Government of Canada has completed assessments on approximately 4300 existing substances and 6300 new substances.

[4] Information about the CMP can be found at https://www.canada.ca/en/health-canada/services/chemical-substances/chemicals-management-plan.html

Risk management actions have been developed to address key sources of exposure for about 500 substances found harmful to health or the environment.

The Government of Canada renewed the CMP in 2021 for a fourth phase. The CMP continues to focus on:

- Risk Assessment, Research, Monitoring and Surveillance - continuing the assessment, monitoring and surveillance of substances of concern (including POPs) to protect Canadians, including vulnerable populations, and the environment.
- Risk Management - taking risk management actions to address key sources of exposure for substances (including POPs) found harmful to health or the environment and managing risks using the most appropriate legislation: for example, CEPA and the PCPA, as well as measuring the progress and performance of risk management actions applied.
- Compliance Promotion and Enforcement - including site visits, providing information sessions to improve awareness and understanding of requirements under risk management instruments among regulated communities, undertaking enforcement actions when suspected non-compliance and carrying out investigations on cases of suspected non-compliance.
- Engagement and Outreach: fostering consumer confidence and a well-informed, engaged community of industry and civil society on chemicals management.
- International Collaboration – Canada participating as a Party in international treaties such as the Stockholm Convention, as well as a member at various international fora on the sound management of chemicals.

Canadian Environmental Protection Act, 1999

The Government of Canada has many laws and programs dedicated to protecting human health and the natural environment from chemical risks[5]. Its primary legal tool for assessing and managing substances is CEPA. Jointly administered by Environment and Climate Change Canada (ECCC) and Health Canada, CEPA is an important part of Canada's CMP. The goal of CEPA is to contribute to sustainable development – development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs[6].

CEPA provides means to manage substances, such as POPs, in the following ways:

- makes pollution prevention the cornerstone of national efforts to reduce toxic substances in the environment;
- sets out processes to assess the risks to the environment and human health posed by substances in commerce;
- imposes timeframes for assessing and managing toxic substances;

[5] Canadian provinces and territories also have laws addressing these issues within their respective jurisdictions.
[6] https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/general-information/overview.html

- provides that toxic substances of highest risk should be managed by giving priority to prohibition;
- provides a wide range of tools to manage toxic substances, other pollution and wastes, including regulations respecting a wide range of requirements (e.g., prohibitions);
- ensures the most harmful substances are phased out or not released into the environment in any measurable quantity;
- includes provisions to regulate vehicle, engine, equipment and other emissions;
- contains strong measures for the enforcement of CEPA and its regulations;
- provides opportunities for citizen input into decision-making;
- allows for more effective cooperation and partnership with other governments and Indigenous Peoples.

Since Canada's original NIP was submitted in 2006, Part 1 and Part 2 of the list of toxic substances in Schedule 1 and the Export Control List in Schedule 3 of CEPA have been updated to include the newly ratified POPs (where applicable). Consequently, domestic controls for these POPs have been introduced under CEPA, such as, the *Prohibition of Certain Toxic Substances Regulations, 2012* (PCTSR), the *Solvent Degreasing Regulations, 2003* and the *Export of Substances on the Export Control List Regulations* (ESECLR). For more information on CEPA, please see the CEPA Registry website[7].

Pest Controls Products Act

The PCPA is administered by Health Canada's Pest Management Regulatory Agency (PMRA) with the primary objective of preventing unacceptable risks to individuals and the environment from the use of pest control products. The PCPA and its regulations provide a comprehensive framework legislating pesticides imported into, sold, or used in Canada.

The PCPA provides for the strong protection of human health and the environment. Risk assessments take into account different sensitivities to pest control products of major identifiable subgroups, such as pregnant women, infants, children, women and seniors, as well as pesticide exposure from all sources, including food and water. The Act also supports pesticide risk reduction, for example, by ensuring that only pesticides that make a useful contribution to pest management are registered and by expediting evaluations of products that are expected to pose lower health and environmental risk. These activities are essential in protecting human health and the environment. The Act also requires that all pest control products be re-evaluated on a 15-year cycle; includes the powers of inspection for the purpose of verifying compliance or preventing non-compliance; and requires incident and sales reporting.

Great Lakes Water Quality Agreement

The Great Lakes Water Quality Agreement (GLWQA) establishes a comprehensive shared vision and common objectives and commitments to science, governance and action that will help to restore

[7] https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry.html

and protect Great Lakes water quality and ecosystem health. SCCPs have been designated as a Chemical of Mutual Concern (CMC) under Annex 3 of the Agreement and a Great Lakes Binational Strategy for SCCP Risk Management was finalized in 2021. This strategy outlines actions aimed at reducing SCCPs in the Great Lakes basin.

Key provincial/territorial legislation and policies

All Canadian provinces and territories have legislation and regulations to manage air quality, toxic substances and/or pesticides. Most provinces and territories have statutes dealing with environmental protection, with regulations and/or permitting or approvals systems for stationary point sources that discharge pollutants to the atmosphere.

Chapter 3 – Measures to reduce or eliminate releases from production and use, import and export

Article 3 of the Convention obliges Parties to *prohibit* and/or take the legal and administrative measures necessary to eliminate the production, use, import and export of POPs that are listed in Annex A of the Convention, subject to the provisions of that annex in the case of production and use, and in accordance with the provisions of Article 3, paragraph 2 for imports and exports. It also obliges Parties to *restrict* the production, use, import and export of chemicals listed in Annex B, subject to the provisions of that annex in the case of production and use, and in accordance with the provisions of Article 3, paragraph 2 for imports and exports. Annexes A and B include exemptions for use and/or production and articles in use – these are discussed in Chapter 4. Article 3, paragraph 2 provides for the limited conditions according to which imports and exports of the chemicals listed to Annexes A and B are permitted.

Prohibition and/or elimination of chemicals listed in Annex A

Article 3 provides information on measures to reduce or eliminate releases from intentional production and use and states:

1. Each Party shall:
   (a) Prohibit and/or take the legal and administrative measures necessary to eliminate:
      (i) Its production and use of the chemicals listed in Annex A subject to the provisions of that Annex; and
      (ii) Its import and export of the chemicals listed in Annex A in accordance with the provisions of paragraph 2 [as follows]
   (b) Restrict its production and use of the chemicals listed in Annex B in accordance with the provisions of that Annex.
2. Each Party shall take measures to ensure:
   (a) That a chemical listed in Annex A or Annex B is imported only:
      (i) For the purpose of environmentally sound disposal as set forth in paragraph 1 (d) of Article 6; or
      (ii) For a use or a purpose which is permitted for that Party under Annex A or Annex B;
   (b) That a chemical listed in Annex A for which any production or use specific exemption is in effect or a chemical listed in Annex B for which any production or use specific exemption

or acceptable purpose is in effect, taking into account any relevant provisions in existing international prior informed consent instruments, is exported only:

(i) For the purpose of environmentally sound disposal as set forth in paragraph 1(d) of Article 6;

(ii) To a Party which is permitted to use that chemical under Annex A or Annex B; or

(iii) To a State not Party to this Convention which has provided an annual certification to the exporting Party. Such certification shall specify the intended use of the chemical and include a statement that, with respect to that chemical, the importing State is committed to:

a. Protect human health and the environment by taking the necessary measures to minimize or prevent releases;

b. Comply with the provisions of paragraph 1 of Article 6; and

c. Comply, where appropriate, with the provisions of paragraph 2 of Part II of Annex B.

The certification shall also include any appropriate supporting documentation, such as legislation, regulatory instruments, or administrative or policy guidelines. The exporting Party shall transmit the certification to the Secretariat within sixty days of receipt.

(c) That a chemical listed in Annex A, for which production and use specific exemptions are no longer in effect for any Party, is not exported from it except for the purpose of environmentally sound disposal as set forth in paragraph 1 (d) of Article 6;

(d) For the purposes of this paragraph, the term "State not Party to this Convention" shall include, with respect to a particular chemical, a State or regional economic integration organization that has not agreed to be bound by the Convention with respect to that chemical.

Dicofol

Production and use: Dicofol has never been produced in Canada. Under the PCPA, dicofol was voluntarily discontinued by the Canadian registrant in December 2008, with its registration expiring in December 2011. Since that time, dicofol products can no longer be lawfully sold or used in Canada.

Import: Dicofol is not registered or otherwise authorized under the PCPA and consequently cannot be lawfully imported as a pesticide.

Export: The manufacture and import of dicofol are prohibited and no known stockpiles remain. Therefore, any export of this POP from Canada for use as a pesticide in other jurisdictions is not likely to occur.

Endosulfan

Production and use: Under the PCPA and its regulations, registrants ceased production and sale of products containing endosulfan in December 2014. At the end of 2016, products containing endosulfan ceased to be registered under the PCPA. Since that time the use of these products in Canada is prohibited.

Import: Endosulfan is not registered or otherwise authorized under the PCPA and consequently cannot be lawfully imported as a pesticide.

Export: The manufacture and import of endosulfan are prohibited and no known stockpiles remain, therefore export of this POP from Canada for use as a pesticide cannot occur. Endosulfan is listed to Schedule 3 of the Export Control List under CEPA, and is controlled under the ESECLR.

HCBD

Production and use: HCBD has never been intentionally produced in Canada. HCBD was previously imported into Canada for use as a solvent. Since February 2005, the manufacture, use, sale and offer for sale of HCBD and products that contain HCBD have been prohibited in Canada under the PCTSR.

Import: HCBD has not been imported into Canada since 2000. The import of HCBD has been prohibited under the PCTSR since February 2005, with certain minor exceptions (e.g., laboratory use and incidental presence—in line with Stockholm Convention exemptions).

Export: The manufacture and import of HCBD are prohibited and no known stockpiles remain, therefore export of this POP from Canada is not likely to occur.

PCNs

Production and use: PCNs have likely never been produced in Canada but have previously been imported into Canada for uses including cable insulation, capacitors, gauge and heat exchange fluids, instrument seals, and solvents. Since March 2013, the manufacture, use, sale and offer for sale of PCNs and products that contain PCNs have been prohibited in Canada under the PCTSR.

Import: The import of PCNs has been prohibited under the PCTSR since March 2013, with certain minor exceptions (e.g., laboratory use and incidental presence—in line with Stockholm Convention exemptions).

Export: The manufacture and import of PCNs are prohibited and no known stockpiles remain, therefore export of these POPs from Canada is not likely to occur.

SCCPs

SCCPs are referred to as short-chain chlorinated alkanes (SCCAs) in Canada.

Production and use: SCCPs have never been produced in Canada. Since March 2013, the manufacture, use, sale and offer for sale of SCCPs and products that contain SCCPs have been prohibited in Canada under the PCTSR. Annual reporting is required if the total annual quantity of SCCPs contained incidentally in a product, including other chlorinated paraffin mixtures, is manufactured in Canada or imported into Canada and is equal to or greater than 1 kg, and its annual weighted average concentration in the product is equal to or greater than 0.5% (w/w). No reports have been received since 2015.

Import: The import of SCCPs has been prohibited under the PCTSR since March 2013 with certain minor exceptions (e.g., laboratory use and incidental presence—in line with Stockholm Convention exemptions).

Export: The manufacture and import of SCCPs are prohibited and no known stockpiles remain, therefore export of these POPs from Canada is not likely to occur.

Preventing the production and use of chemicals exhibiting POPs characteristics

Article 3 further states:

Article 3: Measures to reduce or eliminate releases from intentional production and use

3. Each Party that has one or more regulatory and assessment schemes for **new** pesticides or **new** industrial chemicals shall take measures to regulate with the aim of preventing the production and use of new pesticides or new industrial chemicals which, taking into consideration the criteria in paragraph 1 of Annex D[8], exhibit the characteristics of persistent organic pollutants.
4. Each Party that has one or more regulatory and assessment schemes for pesticides or industrial chemicals shall, where appropriate, take into consideration within these schemes the criteria in paragraph 1 of Annex D when conducting assessments of pesticides or industrial chemicals **currently in use** [*emphasis added*].

Canada has assessment and regulatory schemes in place for both new and existing (currently in use) substances, including pesticides and industrial chemicals. Federal actions on chemical controls are coordinated under the CMP and rely primarily on the PCPA, CEPA, and related regulations.

Pest control products are regulated and assessed under the PCPA, which includes consideration of POPs-related characteristics (persistence, bioaccumulation, toxicity) and criteria in determining whether to deny or cancel a registration.

“Existing” substances are listed on the Domestic Substances List, Canada’s inventory of industrial chemicals in use. Canada has been assessing existing substances on a priority basis since the inception of CEPA.

“New” substances are not listed on the Domestic Substances List. Since 1994, Canada has been assessing all new industrial substances that have been notified for introduction into Canadian commerce at early stages of their manufacture or import.

[8] Annex D to the Convention details the information requirements and screening criteria for Parties wishing to submit a proposal to list a chemical under the Convention. This Annex lists criteria for persistence, bioaccumulation, long-range environmental transport and adverse effects.

New Substances

CEPA: Under the New Substances Notification regime[9] established under CEPA, Canada's Ministers of the Environment and of Health are obligated to assess all new substances to determine if they 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 *New Substances Notification Regulations* (Chemicals and Polymers) and the *New Substances Notification Regulations* (Organisms) specify the information to be submitted if a new substance is intended for import or manufacture in Canada. When ECCC receives a notification from a company or individual proposing to import or manufacture a new substance, a joint assessment process is carried out by ECCC and Health Canada to determine the potential adverse effects of the substance to the environment and/or human health. This assessment takes into consideration the criteria of paragraph 1 of Annex D of the Convention and Canada's *Persistence and Bioaccumulation Regulations*. When this process identifies a new substance that may pose a risk to human health or the environment, CEPA provides the legal mechanism to intervene prior to or during the earliest stages of its introduction into Canada.

New substances suspected of being harmful to human health and/or the environment may be addressed by one of the measures laid out in CEPA, including:

- conditions on import and manufacture;
- prohibition of import and manufacture;
- request for additional information, resulting in a prohibition pending submission and assessment of this information; or
- re-notification and assessment prior to a significant new activity involving the substance.

PCPA: The PCPA and its associated regulations provide a comprehensive federal legislative framework for the importation, manufacture, sale and use of pesticides in Canada. The PCPA is administered by Health Canada's PMRA, with the mandate to protect human health and safety and the environment by preventing unacceptable risks to individuals and the environment from the use of pest control products, while supporting sustainable development and promoting public awareness. The PMRA's key responsibilities are pre-market review of products proposed for registration and the re-evaluation of registered products.

Before making a registration decision regarding a new pest control product, the PMRA conducts a comprehensive assessment of the risk and value specific to the proposed use(s). Risk assessments consider the inherent toxicity, persistence and bioaccumulative nature of the pest control product.

[9] New Substances Program, available at: https://www.canada.ca/en/health-canada/services/chemical-substances/chemicals-management-plan/initiatives/new-substances.html

It addresses human health and environmental concerns and, for each of these, considers the possible hazards associated with the product as well as the degree to which humans and the non-target environment may be exposed. Only when there is sufficient evidence to show that a product does not pose unacceptable health or environmental risks, and has value, will it be registered.

Existing Substances

CEPA: With respect to existing substances, CEPA required the Ministers of the Environment and of Health to (i) categorize by September 2006 all 23,000 substances on the Domestic Substances List, and (ii) conduct screening assessments on those substances that met the categorization criteria set out in the Act to determine whether such substances are harmful to human health and/or the environment. The first phase of the CMP included the screening assessment of approximately 200 high priority substances, based on their categorization criteria. The second and third phases of the CMP included continued assessment of those substances that met the Government of Canada's categorization criteria, in addition to other substances identified as potential concerns (e.g., Identification of Risk Assessment Priorities[10]). Following Royal Ascent of Bill S-5 on June 13, 2023, the Ministers of ECCC and Health Canada will publish a Plan of Chemicals Management Priorities by June 2025, which will set out a multi-year integrated plan for the assessment of substances and initiatives to support chemicals management, moving forward. Screening assessments take into consideration the criteria of paragraph 1 of Annex D of the Convention and Canada's *Persistence and Bioaccumulation Regulations*.

Screening assessments of new and existing substances result in one of the following:

- no further action is taken in respect to the substance; for example if the screening assessment indicates that the substance does not pose a risk to the environment or human health;
- adding the substance to the Watch List, a list of substances of potential concern, and requires monitoring;
- the substance is recommended to be added to Part 1 or Part 2 of Schedule 1 of the list of toxic substances[11] in Schedule 1 of CEPA. Substances on Part 1 or Part 2 of Schedule 1 can be considered for regulatory actions or other controls, with priority given to prohibition for substances on Part 1, and priority given to pollution prevention (which could include prohibition), for substances on Part 2.

PCPA: In addition to assessing new pesticides for registration, the PMRA is also responsible for the re- evaluation of registered pesticide products. The PCPA requires that all registered pesticide products be re-evaluated on a 15-year cycle. However, re-evaluation of a pesticide product can be initiated before a pesticide is due for its 15-year re-evaluation. Additionally, a special review of a pesticide product can be triggered at any time (as per criteria outlined in the PCPA). The re-evaluation and special review provisions of the Act provide the authority to remove a pesticide from the market

[10] The identification of risk assessment priorities, available at: https://www.canada.ca/en/health-canada/services/chemical-substances/fact-sheets/identification-risk-assessment-priorities.html

[11] List of toxic substances, available at: https://laws-lois.justice.gc.ca/eng/acts/c-15.31/page-34.html#h-1404724

if it poses unacceptable risk to human health or the environment, or to amend its conditions for continued use such that it would no longer pose unacceptable risks.

Chapter 4 – Chemicals subject to restricted use: Specific exemptions and articles in use

Specific Exemptions

The Stockholm Convention provides a phase-out period for substances for which alternatives do not yet exist or are not readily available by including specific exemptions. The time period for an exemption, unless otherwise determined, is five years after the date of entry into force of the amendment for a Party for the particular chemical. Upon request and in special circumstances, the Conference of the Parties may choose to extend the expiry date of a specific exemption for up to an additional five years.

Parties may, at any time, withdraw an entry from the Register if and when the POP is no longer used or produced in that country.

Canada does not require any specific exemptions for dicofol, endosulfan, HCBD, PCNs or SCCPs.

Articles in use prior to the date of entry into force

The Stockholm Convention also allows registration for exemptions for articles in use before or on the date of entry into force of the Convention's obligations for a particular substance.

Annex A: Elimination / Annex B: Restriction
Note (ii): This note shall not be considered as a production and use specific exemption for purposes of paragraph 2 of Article 3. Quantities of a chemical occurring as constituents of articles manufactured or already in use before or on the date of entry into force of the relevant obligation with respect to that chemical, shall not be considered as listed in this Annex, provided that a Party has notified the Secretariat that a particular type of article remains in use within that Party. The Secretariat shall make such notifications publicly available.

Pursuant to note (ii) of Annexes A and B, Parties to the Stockholm Convention can notify the Secretariat that they wish to have specific articles in use (i.e. articles with a chemical constituent listed to Annex A or B to the Convention that were manufactured or already in use before or on the date of entry into force of the particular amendment for them; August 1, 2022 for Canada's five newly ratified substances) considered as not being listed in Annex A or B. Consequently, this would relieve that Party of the relevant Stockholm obligations for these articles.

Canada does not require any exemptions for articles in use for dicofol, endosulfan, HCBD, PCNs or SCCPs.

Chapter 5 – National Action Plan on Unintentionally Produced POPs

This chapter constitutes Canada's update to its 2006 National Action Plan (NAP) on Unintentionally Produced Persistent Organic Pollutants (UPOPs)[12]. It identifies Canada's plans for meeting its obligations with respect to newly ratified POPs under Annex C, HCBD and PCNs, as outlined in the Convention. The Plan presents information on current releases, laws and policies, and the strategies that Canada has adopted in its domestic programs to reduce and virtually eliminate releases of unintentionally produced HCBD and PCNs.

Measures to reduce total releases from unintentional sources

Under Article 5 of the Stockholm Convention, Parties are required to take measures to reduce total releases of by-product emissions of Annex C chemicals from anthropogenic sources "with the goal of their continuing minimization and, where feasible, ultimate elimination".

Article 5 (a) requires the development of an action plan designed to identify, characterize and address the release of UPOPs and to facilitate implementation of other aspects of Article 5, as noted below. See Annex C of the Convention for a list of the sectors or categories that are generally identified as sources of the UPOPs.

Article 5: Measures to reduce or eliminate releases from unintentional production

(a) Develop an action plan or, where appropriate, a regional or subregional action plan within two years of the date of entry into force of this Convention for it, and subsequently implement it as part of its implementation plan specified in Article 7, designed to identify, characterize and address the release of the chemicals listed in Annex C and to facilitate implementation of subparagraphs (b) to (e). The action plan shall include the following elements:

(i) An evaluation of current and projected releases, including the development and maintenance of source inventories and release estimates, taking into consideration the source categories identified in Annex C;

(ii) An evaluation of the efficacy of the laws and policies of the Party relating to the management of such releases;

(iii) Strategies to meet the obligations of this paragraph, taking into account the evaluations in (i) and (ii);

(iv) Steps to promote education and training with regard to, and awareness of, those strategies;

(v) A review every five years of those strategies and of their success in meeting the obligations of this paragraph; such reviews shall be included in reports submitted pursuant to Article 15;

(vi) A schedule for implementation of the action plan, including for the strategies and measures identified therein;

[12] 2006 NAP. Available at: http://chm.pops.int/Implementation/NIPs/NIPTransmission/tabid/253/Default.aspx

Current and projected releases of HCBD and PCNs in Canada

HCBD may be generated unintentionally as a by-product of various industrial processes, such as during the production of chlorinated chemicals (e.g., tetrachloroethylene, trichloroethylene, carbon tetrachloride, vinyl chloride, allyl chloride, and epichlorohydrin)[13]. Canadian production of these chemicals has ceased and it was estimated that these were only minor sources of HCBD releases in Canada in the past.

Furthermore, unintentional formation and release of HCBD are often associated with that of dioxins and furans. Most measures taken to reduce dioxin and furan releases, as described in the Stockholm Convention's Best Available Techniques and Best Environmental Practices (BAT/BEP) guidelines for incinerators and other thermal processes[14], are expected to provide co-benefit reductions in unintentional releases of HCBD.

PCNs could be produced unintentionally as a by-product of industrial processes involving chlorine, especially in the presence of heat. Currently, the most significant of the known sources of PCNs is combustion (mainly waste incineration)[15]. PCNs are also generated through mechanisms similar to those of dioxins and furans produced during industrial processes, such as smelting in the secondary non-ferrous metal industry, cement and magnesium production, aluminum refining and coking. Since unintentional production of PCNs is often associated with releases of dioxins and furans[16], reduction in the release of PCNs is expected to parallel reductions in dioxin and furan emissions. Most measures taken to reduce dioxin and furan releases, as described in the Stockholm Convention's BAT/BEP guidelines for incinerators and other thermal processes, will help continue to prevent and minimize unintentional production of PCN releases.

Data on the annual releases (to air, water and land), disposal and recycling of dioxins and furans in Canada are available through the NPRI website[17] for certain activities. Reporting on releases of dioxins and furans, including a breakdown by source categories identified in Annex C, Part III of the Convention, is also included in Canada's 2022 National Report under Article 15 of the Stockholm Convention[18]. In addition, comprehensive inventories of dioxin and furan releases to the air are prepared annually by ECCC for reporting under the United Nations Economic Commission for Europe's Convention on Long-range Transboundary Air Pollution (LRTAP) POPs Protocol[19].

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[13] HCBD Web page (Canada), available at: https://www.canada.ca/en/health-canada/services/chemical-substances/fact-sheets/chemicals-glance/hexachlorobutadiene.html

[14] BAT/BEP guidelines for incinerators and other thermal processes, available at: https://chm.pops.int/Implementation/BATandBEP/ReleasesfromunintentionalPOPs/BATandBEPGuidance/tabid/9647/Default.aspx

[15] Risk Management Evaluation for PCNs, available at: http://chm.pops.int/TheConvention/POPsReviewCommittee/Meetings/POPRC9/Overview/tabid/3280/mctl/ViewDetails/EventModID/871/EventID/407/xmid/10326/Default.aspx

[16] Risk Management Evaluation for PCNs, see link above.

[17] The NPRI is Canada's legislated, publicly accessible inventory of pollutant releases (to air, water and land), disposals and transfers for recycling, available at: https://www.canada.ca/en/services/environment/pollution-waste-management/national-pollutant-release-inventory.html

[18] Canada's Fifth National Report to the Stockholm Convention pursuant to Article 15, available at: http://chm.pops.int/Countries/NationalReports/FourthRoundPartyReports/tabid/9026/Default.aspx

[19] Convention on the Long-range Transboundary Air Pollution (LRTAP) and its Protocol on POPs, available at https://unece.org/environment-policy/air/protocol-persistent-organic-pollutants-pops

Evaluation of Efficacy of Laws and Policies

The efficacy of Canada's legislation and policies related to chemicals is founded on the protection of the environment and human health. Federal, provincial, territorial and municipal laws provide the basis for management strategies and tools appropriate for a particular source sector:

- **CEPA** provides the legislative authority to manage UPOPs federally. This legislation contains provisions for the prevention, control and virtual elimination of persistent, bioaccumulative and toxic substances.
- The **Compliance and Enforcement Policy**[20] for CEPA outlines the guiding principles for enforcement of CEPA, including the principles of mandatory compliance with the Act and its regulations and the application of the Act in a fair, predictable and consistent manner. It also defines the roles of the various authorities responsible for implementing the Act and measures to promote compliance as a tool in securing conformity with the law. Federal and provincial laws related to **environmental assessment** provide for comprehensive consideration of new projects, which include potential new sources of UPOPs.
- Most provinces and territories have legislation or regulations requiring the owners/operators of industrial facilities to obtain operating **permits or approvals** that can contain emission limits or requirements for any atmospheric pollutant, including hazardous air pollutants such as UPOPs. In many cases, permits or approvals are issued for a set length of time and must be renewed. For new facilities, most provinces and territories require comprehensive environmental assessments and the equivalent of BAT.
- The **Chemicals Management Plan** is the Government of Canada's program for the assessment, monitoring and surveillance of substances of concern (including UPOPs) and for taking risk management actions to address key sources of exposure for substances (including UPOPs)found harmful to health or the environment.
- The **Canadian Council of Ministers of the Environment** (CCME) is Canada's mechanism for federal-provincial-territorial government cooperation for the promotion and adoption of Canada-wide Standards on the control of releases of dioxin and furans to the environment. The 2009 Progress Report[21] indicates that the Canada-wide Standards for dioxins and furans have been successfully implemented and achieved the desired outcome of reducing the release of dioxins and furans to the atmosphere.

Strategies to reduce releases of HCBD and PCNs

Management of UPOPs in Canada has focused largely on releases of dioxins and furans. Reductions in HCBD and PCNs are expected to parallel reductions in dioxin and furan emissions since the

[20] The Compliance and Enforcement Policy for CEPA 1999, available at: https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/enforcement-compliance.html
[21] To access the 2009 CCME Progress Report, please contact the CCME at: https://ccme.ca/en/contact

unintentional formation and release of HCBD[22] and PCNs[23] are often associated with the sources of dioxin and furan releases to air. Most measures taken to reduce dioxin and furan releases to air, as described in the Stockholm Convention's BAT/BEP guidelines for incinerators and other thermal processes, will lead to prevention and minimization of the releases of HCBD and PCNs. Obligations to take these control measures for other UPOPs under the Convention (dioxins, furans, polychlorinated biphenyls (PCBs), hexachlorobenzene (HCB) and pentachlorobenzene (PeCB)) will also prevent, minimize or reduce HCBD and PCN releases. In Canada, measures to reduce dioxins and furans from the main source categories identified under Annex C will also control by-product (unintentional) emissions of HCBD and PCNs.

Canada-wide Standards for dioxins and furans[24] have been implemented for five sectors: waste incineration (municipal solid waste, hazardous waste, sewage sludge and medical waste); burning salt laden wood in coastal pulp and paper boilers; iron sintering; electric arc furnace steel manufacturing; and conical municipal waste combustion. They are:

- Canada-wide Standards for dioxins and furans emissions from waste incinerators and from coastal pulp and paper boilers;
- Canada-wide Standard for dioxins and furans from iron sintering plants;
- Canada-wide Standard for dioxins and furans from steel manufacturing arc furnaces;
- Canada-wide Standard for dioxins and furans from waste incineration;
- Canada-wide Standard for dioxins and furans from conical waste combustion of municipal waste.

Under the CCME, there is a chronic exposure quality guideline of 0.0013 mg/L for HCBD for the protection of aquatic life. In addition, cross-border movement of wastes producing a leachate containing more than 0.50 parts per million of HCBD and movement of waste containing various naphthalenes at 100 parts per million are controlled under the *Cross-border Movement of Hazardous Wastes and Hazardous Recyclable Materials Regulations* (2021)[25].

Use of Best Available Techniques and Best Environmental Practices (BAT/BEP)

Canadian federal and provincial/territorial environmental legislation and policies embody overarching BAT and BEP, pollution prevention and the precautionary principle. BAT is, in general, taken into consideration during the development of control measures to address pollutant releases,

[22] The Persistent Organic Pollutants Review Committee of the Stockholm Convention concluded in the Risk Management Evaluation of HCBD that for HCBD formed as by-product in combustion processes, there is a clear relation to dioxin and furan releases formed by combustion. Risk Management Evaluation for hexachlorobutadiene available at: http://chm.pops.int/Implementation/Alternatives/AlternativestoPOPs/ChemicalslistedinAnnexA/HCBD/tabid/5863/Default.aspx

[23] The Persistent Organic Pollutants Review Committee of the Stockholm Convention concluded in the Risk Management Evaluation of PCNs that for PCNs formed as by-product in combustion processes, there is a clear relation to dioxin and furan releases formed by combustion. Risk Management Evaluation for polychlorinated naphthalenes available at: http://chm.pops.int/Implementation/Alternatives/AlternativestoPOPs/ChemicalslistedinAnnexA/PCNs/tabid/5872/Default.aspx

[24] To access the Canada-wide Standard for Dioxins and Furans, please contact the CCME at: https://ccme.ca/en/contact

[25] Cross-border Movement of Hazardous Waste and Hazardous Recyclable Material Regulations available at: https://pollution-waste.canada.ca/environmental-protection-registry/regulations/view?Id=80

such as regulations, environmental Codes of Practice, Canada-wide Standards, etc., in addition to other factors, such as socioeconomics, and environmental co-benefits and impacts.

Environmental assessment processes for projects that could have significant impact on the environment, such as new industrial facilities or significant modifications to existing facilities, will also provide opportunity for the consideration of the application or requirement of BAT. The environmental assessment process may require project proponents to find ways to minimize negative impacts resulting from the undertaking and to review alternatives. The outcome of an environmental assessment process is often a decision whether or not to approve of the project. When a project is approved, conditions are often applied to reduce the environmental impact of the project.

Measures requiring BAT to control unintentional emissions of dioxins and furans from industrial and waste incineration sources are already in place (i.e. emission limits set out in the incineration-related Canada-wide Standards for dioxins and furans are based on BAT environmental performance). Given the frequent association between unintentional production of dioxins and furans and both HCBD and PCNs, BAT requirements for dioxins and furans will also prevent and reduce emissions of these substances. These BAT requirements for controlling releases of dioxins and furans currently cover the main source categories identified under Annex C of the Convention. In particular, environmental assessments and permitting processes require the use of BAT where possible. In addition, BAT is also incorporated through provincial and territorial licensing and assessment processes.

Use of substitute or modified materials, products and processes

Pollution prevention, as embodied in Canada's domestic laws and policies, promotes the development and "use of substitute or modified materials, products and processes to prevent the formation and release of substances listed in Annex C" (Article 5 (c) of the Stockholm Convention).

A key principle of CEPA is pollution prevention. The CCME, its Canada-wide Accord on Environmental Harmonization, and the CCME Canada-wide Standards for dioxins and furans are also guided by this principle. Sector strategies for waste incineration, pulp and paper boilers burning salt-laden wood, iron sintering plants and steel manufacturing electric arc furnaces present recommended options and tools for minimizing air pollutants for consideration by jurisdictions[26]. Since unintentional production of HCBD and PCNs is associated with releases of dioxins and furans, these strategies are anticipated to reduce HCBD and PCN emissions.

[26] To access the pollution prevention strategies for these sectors, e.g., Waste Incineration Pollution Prevention Strategy, please contact the CCME at: https://ccme.ca/en/contact

Education, training and awareness building

Figure 1 - Demonstrating education, training and awareness building, Environmental Technology Students at the Nunavut Arctic College in Iqaluit learn how to process wildlife samples for contaminant knowledge at the Wildlife Contaminants Workshop. Three students use hand mixers on samples within beakers, while two Environment and Climate Change Canada employees take notes and guide the students in a science laboratory.

Information on legislation, regulations, policies, management strategies and the effects of substances that are harmful to human health and/or the environment, continue to be made available to members of the public and other stakeholders such as industry, through various media, including the internet. Promotional materials have been made available to the regulated community as tools to help support compliance with published regulations. Education and training programs are used to inform and influence behaviour in specific areas where individual citizens can contribute to the avoidance or minimization of toxic substance releases (e.g., onsite residential waste combustion).

Awareness continues to be built through the development and implementation of management strategies. The Canada-wide standards process employed multi-stakeholder advisory groups, including representatives of industry, environmental non-governmental organizations, labour groups and provincial, territorial and federal governments, to provide input and advice on the targets and substance of each standard.

Implementation schedule and strategy review

Schedules for implementation of the action plan have been established where appropriate through the strategies to reduce releases. Canada will continue to review its strategy for reducing and eliminating unintentional releases of HCBD and PCNs and to report on those reviews through its National Report, as per Article 15.

Chapter 6 – Measures to identify and manage stockpiles and waste

Article 6 of the Convention relates both to chemicals listed in Annexes A and B (POPs that are intentionally produced) and wastes (including products and articles upon becoming wastes) that consist of, contain or are contaminated with chemicals listed in Annexes A, B or Annex C.

Identifying and managing stockpiles and waste

Parties to the Convention are required to develop and implement strategies to identify and manage stockpiles and wastes in a safe, efficient and environmentally sound manner. Specifically, Article 6.1 states that Parties are obliged to:

Article 6(1): Measures to reduce or eliminate releases from stockpiles and waste

(a) Develop appropriate strategies for identifying:
  (i) Stockpiles consisting of or containing chemicals listed either in Annex A or Annex B; and
  (ii) Products and articles in use and wastes consisting of, containing or contaminated with a chemical listed in Annex A, B or C;

(b) Identify, to the extent practicable, stockpiles consisting of or containing chemicals listed either in Annex A or Annex B on the basis of the strategies referred to in subparagraph (a);

(c) Manage stockpiles, as appropriate, in a safe, efficient and environmentally sound manner. Stockpiles of chemicals listed either in Annex A or Annex B, after they are no longer allowed to be used according to any specific exemption specified in Annex A or any specific exemption or acceptable purpose specified in Annex B, except stockpiles which are allowed to be exported according to paragraph 2 of Article 3, shall be deemed to be waste and shall be managed in accordance with subparagraph (d)

Substances used as pesticides

Neither dicofol nor endosulfan were ever manufactured in Canada, and their use as pesticides has been discontinued for many years pursuant to the PCPA[27]. Any stocks that existed at the time that their registrations were discontinued or withdrawn were to be sold, used or disposed of within a specified time frame, after which their sale or use became a contravention of the PCPA. Therefore, no known stockpiles exist.

Dicofol: There are no known stockpiles of dicofol as a pest control product in Canada and no significant quantities of waste containing dicofol are known to exist in Canada.

Endosulfan: There are no known stockpiles of endosulfan as a pest control product in Canada and no significant quantities of waste containing endosulfan are known to exist in Canada.

[27] Please see Chapter 1 or visit the PCPA website, available at: https://www.canada.ca/en/health-canada/services/consumer-product-safety/reports-publications/pesticides-pest-management/fact-sheets-other-resources/new-pest-control-products-act.html

Substances used as Industrial Chemicals

HCBD: The manufacture, use and import of HCBD were prohibited through the PCTSR in February 2005. Accordingly, there are no known stockpiles of this substance.

PCNs: PCNs have likely never been manufactured in Canada, and their use and import were prohibited through the PCTSR in March 2013. Accordingly, there are no known stockpiles of these substances.

SCCPs: SCCPs have never been manufactured in Canada, and their use and import were prohibited through the PCTSR in March 2013. Accordingly, there are no known stockpiles of these substances.

Environmentally sound handling, collection, transport, storage and disposal of waste

Under Article 6, paragraph 1(d) of the Convention states that each Party shall:

Article 6(1)

(d) Take appropriate measures so that such wastes, including products and articles upon becoming wastes, are:

(i) Handled, collected, transported and stored in an environmentally sound manner;

(ii) Disposed of in such a way that the persistent organic pollutant content is destroyed or irreversibly transformed so that they do not exhibit the characteristics of persistent organic pollutants or otherwise disposed of in an environmentally sound manner when destruction or irreversible transformation does not represent the environmentally preferable option or the persistent organic pollutant content is low, taking into account international rules, standards, and guidelines, including those that may be developed pursuant to paragraph 2, and relevant global and regional regimes governing the management of hazardous wastes;

(iii) Not permitted to be subjected to disposal operations that may lead to recovery, recycling, reclamation, direct reuse or alternative uses of persistent organic;

(iv) Not transported across international boundaries without taking into account relevant international rules, standards and guidelines.

Canada implements obligations in respect of Article 6 of the Stockholm Convention through existing domestic legislation and regulations, including those aimed at meeting obligations under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal[28] (the Basel Convention). Canada recognizes the Basel Convention as the appropriate body for setting criteria, standards and other provisions for environmentally sound management of wastes, including recycling, storage and disposal operations.

[28] The Basel Convention, available at: www.basel.int

Handling and disposal

In Canada, hazardous waste management facilities are primarily a provincial and territorial responsibility. Provinces and territories regulate the management and control of the majority of treatment facilities and disposal operations, including landfill sites. As part of the cross-border hazardous waste regime, provinces and territories provide consent for the disposal or recycling of imported hazardous waste within their jurisdictions. Most provinces and territories have established programs to control or restrict the storage, use and disposal of hazardous substances in an environmentally sound manner. The provinces and territories also grant authorizations (i.e., permits, licenses and certificates) for carriers that transport hazardous wastes. The federal government works together with the provincial and territorial governments in developing national waste management systems and establishing national objective standards.

There are also other elements to Canada's approach to POPs and waste management policies, including pollution prevention. Pollution prevention is a cornerstone of federal policies and legislation addressing POPs and waste management. Pollution prevention promotes continuous improvement through the use of processes, practices, materials, products or energy that avoid or minimize the creation of pollutants and wastes at the source. While incineration and other POP-destruction technologies[29] continue to be viewed as environmentally sound methods for the destruction of waste (including POPs waste) in Canada, the use of pollution prevention techniques is promoted wherever they are applicable and effective.

Transboundary movement

Further to the discussion in Chapter 3 on measures to control exports and imports, Canada controls and tracks the export and import of hazardous wastes and hazardous recyclable material as required by the Basel Convention, through the *Cross-border Movement of Hazardous Waste and Hazardous Recyclable Material Regulations* (XBR). The XBR requires that the Canadian exporter or importer of hazardous waste or hazardous recyclable material notify the Minister of the Environment and receive a permit before any transboundary shipments can take place. As part of the notification process, an exporter or importer is required to identify POPs contained in the hazardous waste or hazardous recyclable material consistent with the requirements of the technical guidelines on POPs wastes, adopted by the Conference of the Parties to the Basel Convention[30]. The actual shipments are tracked through a movement document.

Dicofol, endosulfan, HCBD and some PCNs are controlled under the XBR.

Identifying and managing contaminated sites

Under Article 6, paragraph 1 (e), Parties to the Convention agree to:

[29] Basel Convention General Technical Guidelines on the Environmentally Sound Management of Wastes Consisting of, Containing or Contaminated with Persistent Organic Pollutants (POPs) (2022), available at: Technical Guidelines (basel.int)

[30] Reports and Decisions, available at: http://www.basel.int/TheConvention/ConferenceoftheParties/ReportsandDecisions/tabid/3303/Default.aspx

(e) Endeavour to develop appropriate strategies for identifying sites contaminated by chemicals listed in Annex A, B or C; if remediation of those sites is undertaken it shall be performed in an environmentally sound manner.

Canada began the identification and management of contaminated sites many years ago. Regulation and management of contaminated sites in Canada are both federal and provincial/territorial responsibilities. The federal government is primarily responsible for federal lands.

The CCME *National Classification System for Contaminated Sites*[31],[32] (NCSCS), published in 1992 and revised most recently in 2016, presents a method for evaluating contaminated sites according to their current or potential adverse impact on human health and the environment. It was developed to establish a rational and scientifically defensible system for comparable assessment of contaminated sites across Canada. The newly ratified POPs under the Stockholm Convention would be classified as high-concern contaminants using this classification tool. In addition to the classification system and a number of other technical and scientific documents, the CCME published a comprehensive *Guidance Document on the Management of Contaminated Sites in Canada*[33]. The guidance document sets out a strategy for contaminated site management, including site identification and assessment, and development and implementation of remediation action.

Between 2000 and 2002, the Treasury Board of Canada approved a policy framework for the management of federal contaminated sites[34]. The framework was a collection of policies and best practices to guide custodians (agencies and consolidated Crown corporations) in the management of federal contaminated sites and was accompanied by the public release of the Federal Contaminated Sites Inventory[35]. Currently, policy direction for the management of federal contaminated sites is contained in the Treasury Board *Policy on the Planning and Management of Investments*[36] and the *Directive on the Management of Real Property*[37], in effect since May 2021 (previously, *Policy on the Management of Real Property,* 2006*)*. The objective of the policy is to ensure that the Government of Canada has the necessary assets and services in place to support program delivery to Canadians. The Directive outlines a number of requirements for real property practitioners in departments responsible for contaminated sites (also referred to as custodians), including requirements related to the management of federal contaminated sites.

The Federal Contaminated Sites Action Plan (FCSAP)[38] was established in 2005 as a 15-year program with funding of $4.54 billion from the Government of Canada. The objective of this program is to

[31] CCME NCSCS worksheet, available at: https://ccme.ca/en/res/ncscs_e_1.3.xlsx
[32] CCME NCSCS guidance, available at: https://ccme.ca/en/res/ncscs_guidance_e.pdf
[33] CCME Guidance Document on the Management of Contaminated Sites in Canada, available at: https://ccme.ca/en/res/guuidance_management_cs_e.pdf
[34] Publications on the program and approach are available at: https://www.canada.ca/en/environment-climate-change/services/federal-contaminated-sites/publications.html and the Federal Contaminated Sites Management Framework is available at : https://www.canada.ca/en/environment-climate-change/services/federal-contaminated-sites/policy-framework.html
[35] The Federal Contaminated Sites Inventory, available at: www.tbs-sct.gc.ca/fcsi-rscf/home-accueil-eng.aspx
[36] The *Policy on the Planning and Management of Investments* is available at: https://www.tbs-sct.canada.ca/pol/doc-eng.aspx?id=32593
[37] The *Directive on the Management of Real Property* is available at: https://www.tbs-sct.canada.ca/pol/doc-eng.aspx?id=32691
[38] The FCSAP, available at: https://www.canada.ca/en/environment-climate-change/services/federal-contaminated-sites/action-plan.html

reduce environmental and human health risks from known federal contaminated sites and associated federal financial liabilities. Since 2005, the federal contaminated site custodians made significant progress in assessing and remediating sites. As of March 2022, custodians have conducted remediation activities at 2,600 sites and completed remediation at 1,800 sites. Assessment activities were conducted on over 11,000 sites and completed on 8,400. FCSAP Phase IV (2020-2024) allows this work to continue, with a focus on remediating the highest priority sites. Sites contaminated with POPs, may pose a human health and/or environmental risk, and are classified as high priority for action (using the CCME NCSCS classification tool) among the sites being funded for risk management/remediation.

Chapter 7 – Other commitments

Information Exchange

Article 9 of the Convention states:

Article 9: Information exchange

1. Each Party shall facilitate or undertake the exchange of information relevant to:
   (a) The reduction or elimination of the production, use and release of persistent organic pollutants; and
   (b) Alternatives to persistent organic pollutants, including information relating to their risks as well as to their economic and social costs.
2. The Parties shall exchange the information referred to in paragraph 1 directly or through the Secretariat.
3. Each Party shall designate a national focal point for the exchange of such information.
4. The Secretariat shall serve as a clearing-house mechanism for information on persistent organic pollutants, including information provided by Parties, intergovernmental organizations and nongovernmental organizations.
5. For the purposes of this Convention, information on health and safety of humans and the environment shall not be regarded as confidential. Parties that exchange other information pursuant to this Convention shall protect any confidential information as mutually agreed.

Since the Convention's entry into force, Canada has shared information with other countries and has responded to their requests for information, as well as those from the Secretariat, and will continue to do so with respect to the five newly ratified chemicals. Canada has programs and initiatives in place that address the exchange of information between national governments and can readily comply with this obligation through continuation of existing strategies.

In addition, CEPA specifically allows for the exchange of information with the government of a foreign state or an international organization with the condition that the information be kept confidential. The PCPA similarly allows the sharing of information, including confidential test data and confidential business information, with another government provided that there is an agreement in place relating to the exchange of information about pesticides. Under both Acts, the responsible Minister must be satisfied that the law of the jurisdiction to which the information would be communicated enables the recipient of the information to prevent public disclosure of the information and the unfair use of the

information by third parties for commercial purposes. Such a law would have to be consistent with the provisions of the PCPA, which prohibit public disclosure of confidential business information, prevent third parties from obtaining copies of confidential test data and establish a data protection/ compensation policy governing the use of or reliance on such test data by third parties.

Under the CMP, the Government of Canada has established a Chemical Substances website[39] and works through other communication tools (for example, social media) to educate and support information sharing with stakeholders and the public. An email subscription service is available to keep stakeholders and the public informed of new information and actions being taken by the Government of Canada to assess and manage chemicals under the CMP[40].

Canada also provides information and supports demonstration projects that illustrate practical methods to control POPs (such as pollution abatement technologies) and to find alternatives to their use (such as integrated pest management). These programs are sponsored and delivered by Canadian government agencies, often in partnership with Canada's academic and private sectors. Canada also provides information and services on the internet (e.g. through the ECCC website[41]) and makes available relevant government databases to other governments and to the public.

Figure 2 - Demonstrating information exchange and public information, awareness and education, Magali Houde, a research scientist with Environment and Climate Change Canada, and three young Inualthuyak School students examine ringed seal samples under a magnifying glass during a workshop in Sachs Harbour, Northwest Territories.

[39] Chemical Substances website, available at https://www.canada.ca/en/health-canada/services/chemical-substances.html
[40] CMP subscription service, available at: http://www.chemicalsubstanceschimiques.gc.ca/listserv/index-eng.php
[41] ECCC website, available at: https://www.canada.ca/en/environment-climate-change.html

Public information, awareness and education

Article 10 of the Convention states:

Article 10: Public information, awareness and education

1. Each Party shall, within its capabilities, promote and facilitate:
   (a) Awareness among its policy and decision makers with regard to persistent organic pollutants;
   (b) Provision to the public of all available information on persistent organic pollutants, taking into account paragraph 5 of Article 9;
   (c) Development and implementation, especially for women, children and the least educated, of educational and public awareness programmes on persistent organic pollutants, as well as on their health and environmental effects and on their alternatives;
   (d) Public participation in addressing persistent organic pollutants and their health and environmental effects and in developing adequate responses, including opportunities for providing input at the national level regarding implementation of this Convention;
   (e) Training of workers, scientists, educators and technical and managerial personnel;
   (f) Development and exchange of educational and public awareness materials at the national and international levels; and
   (g) Development and implementation of education and training programmes at the national and international levels.
2. Each Party shall, within its capabilities, ensure that the public has access to the public information referred to in paragraph 1 and that the information is kept up-to-date.
3. Each Party shall, within its capabilities, encourage industry and professional users to promote and facilitate the provision of the information referred to in paragraph 1 at the national level and, as appropriate, subregional, regional and global levels.
4. In providing information on persistent organic pollutants and their alternatives, Parties may use safety data sheets, reports, mass media and other means of communication, and may establish information centres at national and regional levels.
5. Each Party shall give sympathetic consideration to developing mechanisms, such as pollutant release and transfer registers, for the collection and dissemination of information on estimates of the annual quantities of the chemicals listed in Annex A, B or C that are released or disposed of.

Canada makes environmental and human health information on POPs available to the public through a variety of sources, including federal, provincial and territorial Internet sites. The Chemical Substances website provides, among other things, information on POPs being managed under the CMP[42]. Substance assessments under CEPA and the CMP are made available to the public through the publication of these assessments,[43] along with risk management scopes, approaches and strategies[44] developed and implemented for those substances posing a hazard to human health and/or the environment.

[42] Chemicals Management Plan, available at: https://www.canada.ca/en/health-canada/services/chemical-substances/chemicals-management-plan.html
[43] Completed assessments of existing substances, available at: https://www.canada.ca/en/health-canada/services/chemical-substances/canada-approach-chemicals/risk-assessment.html
[44] Risk management documents, available at: https://www.canada.ca/en/health-canada/services/chemical-substances/canada-approach-chemicals/risk-management.html

The Northern Contaminants Program (NCP) conducts and supports education, engagement, training/capacity building and awareness activities to ensure that individuals and communities in Canada's North receive the information needed to assist informed decision making in their food use.

Information is shared with stakeholders through bilateral meetings with Industry, Civil Society Organizations and Indigenous groups and through ad-hoc multi-stakeholder gatherings. There are also funding mechanisms in place for effective engagement and public outreach.

Information is received by the Government of Canada through the public comment process associated with the CMP.

Additionally, Great Lakes-specific environmental and human health information is made available through a variety of mechanisms associated with the GLWQA. These include, but may not be limited to, triennial progress reporting, a triennial Great Lakes Public Forum, State of the Great Lakes reporting, Lakewide Action and Management Plans, Great Lakes Binational Strategies for Risk Management, and public webinars.

Article 11: Research, development and monitoring

Article 11 of the Convention states:

Article 11: Research, development and monitoring

1. The Parties shall, within their capabilities, at the national and international levels, encourage and/or undertake appropriate research, development, monitoring and cooperation pertaining to persistent organic pollutants and, where relevant, to their alternatives and to candidate persistent organic pollutants, including on their:
   (a) Sources and releases into the environment;
   (b) Presence, levels and trends in humans and the environment;
   (c) Environmental transport, fate and transformation;
   (d) Effects on human health and the environment;
   (e) Socio-economic and cultural impacts;
   (f) Release reduction and/or elimination; and
   (g) Harmonized methodologies for making inventories of generating sources and analytical techniques for the measurement of releases.
2. In undertaking action under paragraph 1, the Parties shall, within their capabilities:
   (a) Support and further develop, as appropriate, international programmes, networks and organizations aimed at defining, conducting, assessing and financing research, data collection and monitoring, taking into account the need to minimize duplication of effort;
   (b) Support national and international efforts to strengthen national scientific and technical research capabilities, particularly in developing countries and countries with economies in transition, and to promote access to, and the exchange of, data and analyses;
   (c) Take into account the concerns and needs, particularly in the field of financial and technical resources, of developing countries and countries with economies in transition and cooperate in improving their capability to participate in the efforts referred to in subparagraphs (a) and (b);
   (d) Undertake research work geared towards alleviating the effects of persistent organic pollutants on reproductive health;

(e) Make the results of their research, development and monitoring activities referred to in this paragraph accessible to the public on a timely and regular basis; and
(f) Encourage and/or undertake cooperation with regard to storage and maintenance of information generated from research, development and monitoring.

Canada has a number of domestic programs dealing with research, development and monitoring of POPs that also contribute to international knowledge. Among these are POPs research and monitoring activities carried out by ECCC's air quality monitoring programs and in relation to Canada's NPRI[45]. Monitoring is also an important element of Canada's CMP and NCP. POPs human biomonitoring activities in Canada have been carried out as part of the Canadian Health Measures Survey (CHMS), the Maternal-Infant Research on Environmental Chemicals (MIREC) Research Platform, as well as through human health and biomonitoring projects funded through the NCP.

ECCC delivers ecosystem monitoring and surveillance programs in the Great Lakes watershed that include contaminant monitoring in many media. Great Lakes-specific data from ECCC monitoring programs such as the Freshwater Quality and Sediment Monitoring and Surveillance Programs is available via State of the Great Lakes (SOGL) reporting[46]. Monitoring data exist for all of the five newly ratified chemicals to some extent, but in some cases the data are limited. These coordinated monitoring and surveillance activities provide information on status and trends of Chemicals of Mutual Concern (CMCs), as well as priority chemicals identified through Canada's CMP (including endosulfan and PCNs).

Through the CMP, the Water Quality Monitoring and Surveillance Program also conducts intermittent surveillance of SCCPs in whole fish. Also under the CMP, gull eggs and starling eggs have been monitored across Canada starting in 2008 and 2009, respectively, for certain flame retardants and other POPs, on a biennial basis. On a non-routine basis, chlorinated naphthalenes, chlorinated paraffins, and other POPs are sometimes measured.

In addition, Canada supports international POPs research and monitoring activities and assists capacity building in developing countries and countries with economies in transition. For example, Canada provides support for the Global Environment Facility (GEF), which has carried out a number of projects to manage chemicals and hazardous chemical wastes in developing and transitioning countries. Canada also participates in POPs-related work conducted by the Arctic Council's Arctic Monitoring and Assessment Programme (AMAP) through the NCP, and participates in work of the Commission on Environmental Cooperation, an agency under the North American Free Trade Agreement, and its Sound Management of Chemicals program.

The NCP[47] co-ordinates Canada's action on northern contaminants, including POPs, both nationally and internationally. The NCP was established in 1991 and has remained a program of Crown-Indigenous Relations and Northern Affairs Canada. The program monitors levels of contaminants in

[45] National Pollutant Release Inventory, available at: https://www.canada.ca/en/services/environment/pollution-waste-management/national-pollutant-release-inventory.html
[46] State of the Great Lakes, available from: https://binational.net/2022/07/29/sogl-edgl-2022/
[47] Northern Contaminants Program: https://science.gc.ca/site/science/en/northern-contaminants-program

the northern environment, wildlife and people, with the goal of reducing, and wherever possible, eliminating contaminants in traditionally harvested foods, while providing information that assists informed decision making by individuals and communities in their food use. Early studies found a variety of contaminants, many of which had no Arctic or Canadian sources, but which were, nevertheless, reaching unexpectedly high levels in Arctic wildlife and people. The NCP allocates funds for trend monitoring and research and related communications activities in five main areas:

- Environmental monitoring and research;
- Human health biomonitoring and research[48];
- Community-based monitoring and research;
- Communication, capacity and outreach; and
- National/international coordination and Indigenous partnerships.

Under NCP, long-term air monitoring at ECCC's Dr. Neil Trivett Global Atmosphere Watch Observatory in Alert, Nunavut, includes measurements of many POPs, including endosulfan, HCBD, and many others, such as PCB, PBDEs, and certain per- and polyfluoroalkyl substances (PFAS) and their precursors[49]. Additionally, some air samples collected from Alert in 2011 were retrospectively screened for SCCPs to investigate their occurrence and levels in Arctic air.[50]

A sub-Arctic station, Little Fox Lake, was established in 2007 in Canada's Yukon to measure endosulfan and other POPs (e.g., HCHs and PBDEs) in air in western Canada. Measurements of these chemicals continued at this site and are ongoing. This research station is supported by ECCC and the NCP and measures a broader range of organic contaminants of concern.[51]

Since 2007, ArcticNet a Network of Centres of Excellence, with co-funding from NCP, has supported the research and monitoring of POPs (especially HCHs, Lindane, HCB, endosulfan, toxaphene, dieldrin, dicofol, chlordane, and heptachlor, in addition to new and emerging compounds of concern). Samples of air, water and sediment are collected yearly in the Canadian Archipelago from Baffin Bay to the Beaufort Sea.

Through the NCP, long-term wildlife monitoring of existing and new POPs (including HCBD, endosulfan, PCNs, SCCPs) has been on-going in ringed seals in four regions of the Canadian Arctic (Nain, Labrador; Arviat and Resolute, Nunavut; Sachs Harbour, Northwest Territories) since the 1990s, through ECCC and the NCP. This project has relied on local hunters to collect ringed seal samples over time. Since 2016, outreach activities in communities involved in the project have been

[48] The Human Health subprogram of the Northern Contaminants Program (NCP) addresses priorities and activities in the areas of human biomonitoring, health effects and benefit/risk evaluation so that Northerners can assess, understand and better manage the health risks in Northern Canada related to the long-range transport of contaminants and their presence in people and traditional/country foods.

[49] Wong, F., Dryfhout-Clark, H., Hung, H., Aas, W., Bohlin-Nizzetto, P., Brevik, K., Nerentorp Mastromonaco, M., Brorström Lundén, E., Ólafsdóttir, K., Sigurðsson, Á, Vorkamp, K., Bossi, R., Skov, H., Hakola, H., Barresi, E., Sverko, E., Zapevalov, M., Samsonov, D., Wilson, S. (2021) Time trends of persistent organic pollutants (POPs) and chemicals of emerging arctic concern (CEAC) in Arctic air from 25 years of monitoring. Science of the Total Environment, 775:145109.

[50] Vorkamp, K., Balmer, J., Hung, H., Letcher, R. J., Rigét, F. F. (2019) A review of chlorinated paraffin contamination in Arctic ecosystems. Emerging Contaminants, 5: 219-231. doi: 10.1016/j.emcon.2019.06.001.

[51] Yu, Y., Hung, H., Alexandrou, N., Roach, P., Nordin, K. (2015) Multiyear measurements of flame retardants and organochlorine pesticides in air in Canada's western sub-arctic. Environ. Sci. Technol., 49 (14): 8623 – 8630.

integrated into this monitoring work in order to address a shared interest among Inuit and scientific researchers in enhancing communications on contaminants and community capacity building related to contaminant research. In fish, lake trout are monitored at Lake Laberge and Kusawa Lake in the Yukon and at Hay River and Lutsel K'e on Great Slave Lake in the NWT; burbot at Fort Resolution on Great Slave Lake and the Mackenzie River at Fort Good Hope; and landlocked char at Resolute on Cornwallis Island and on Ellsemere Island. Polar Bear are also monitored from two locations in Hudson Bay; beluga from Hendrickson Island in the Beaufort Sea, Sanikiluaq in southern Hudson Bay and Pangnirtung on Baffin Island; caribou from various herds; and sea bird eggs at Prince Leopold Island and Coats Island. Furthermore, since 1975, dicofol, endosulfan, HCBD and PCNs have been monitored through a long-term seabirds contaminants monitoring program. While most of the annual monitoring at this site started in the 1980s, retrospective analyses using archived tissues dating back to 1975 has been carried out for some of these contaminants[52]. These samples are primarily from seabird eggs collected at Prince Leopold Island in the High Arctic.

Canadian air monitoring programs that have provided temporal and spatial information on legacy POPs have begun to address monitoring and surveillance needs for the newly listed POPs and CMP priority chemicals. In the Great Lakes region, the CMP's Great Lakes Basin (GLB) Monitoring and Surveillance Program has been monitoring endosulfan and HBCD among other chemicals (e.g., PBDEs, HCHs).[53] In addition, some air samples collected at the Point Petre station on the shore of Lake Ontario in 2011 were sent for SCCP analysis retrospectively to assess their atmospheric levels in the GLB.

Canada also continues to operate the only global-scale air monitoring network for POPs, the Global Atmospheric Passive Sampling (GAPS) Network. Since 2005, GAPS has been operating at more than 50 sites on all seven continents, transferring technology to other countries and regions as a cost-effective and simple approach for monitoring POPs in air. Improvements to the passive sampling approach under GAPS have led to the first global-scale datasets of many of POPs, including a new method for measuring dicofol in air based on its stable degradation product. GAPS has also reported on PCNs, endosulfan, HCBD, and is currently developing a new high resolution method for measuring SCCPs in air using a newly acquired LC-Orbitrap system. These datasets are unique as they allow for the testing of regional and global transport models for POPs. Data from the GAPS network are also being reported for new priority chemicals, which will aid risk assessment and consideration of these chemicals as candidate POPs. Furthermore, as part of the global passive water monitoring network (Aqua-GAPS/MONET) samplers are deployed in the Canadian Arctic and Great Lakes regions.

[52] Bianchini, K, Mallory, M.L., Braune, B.M., Muir, D.C.G., Provencher, J.F. (2021) Why do we monitor? Using seabird eggs to track trends in Arctic environmental contamination. Environmental Reviews, 30: 245-267.
[53] UNEP, 2021. Global Monitoring Plan for Persistent Organic Pollutants under the Stockholm Convention Article 16 on Effectiveness Evaluation 3rd Regional Monitoring Report Western Europe and Others Group (WEOG) Region, Annex 8.1a, Environment and Climate Change Canada's Great Lakes Basin (GLB) Monitoring and Surveillance Program, p.54-62.

Figure 3 - Two passive samplers used in the Global Atmospheric Passive Sample (GAPS) Megacities project, located at a background site on top of a mountain in Whistler, British Columbia. The samplers are located high in the air attached to a metal frame, in order to collect air particles on a polyurethane foam disk. The disks are contained in metal traps designed using two metal bowl-like structures fastened together with a small space in between to allow air circulation.

In 2018, activities under the GAPS Network were extended to include the GAPS Megacities Project to consider highly exposed urban populations to new POPs, trace metals, and emerging chemicals in air. The role and presence of transformation products of parent POPs is also being explored in terms of how this contributes to the mixture of chemicals and cumulative toxicity associated with air. Assay-based methods are also being applied to link the mixture of chemicals in air with various toxicity endpoints and indicators. As of 2022, 23 cities were included in the GAPS Megacities Project with multiple representation in each of the five United Nations regions.

Article 12: Technical assistance

Under Article 12, Parties shall:

Article 12: Technical assistance

2. … cooperate to provide timely and appropriate technical assistance to developing country Parties and Parties with economies in transition, to assist them, taking into account their particular needs, to develop and strengthen their capacity to implement their obligations under this Convention.
3. …include, as appropriate and as mutually agreed, technical assistance for capacity-building relating to implementation of the obligations under this Convention. Further guidance in this regard shall be provided by the Conference of the Parties.
4. …establish, as appropriate, arrangements for the purpose of providing technical assistance and promoting the transfer of technology to developing country Parties and Parties with economies in transition relating to the implementation of this Convention. These arrangements shall include regional and subregional centres for capacity-building and

transfer of technology to assist developing country Parties and Parties with economies in transition to fulfil their obligations under this Convention. Further guidance in this regard shall be provided by the Conference of the Parties.

5. ...in the context of this Article, take full account of the specific needs and special situation of least developed countries and small island developing states in their actions with regard to technical assistance.

Canada continues to provide technical assistance to developing countries and countries with economies in transition for capacity building in the fields of chemical management and alternatives to POPs use. Support for these activities is provided through the GEF.

Article 13: Financial resources and mechanisms

Article 13 of the Convention states that each Party:

Article 13: Financial resources and mechanisms

1. ...undertakes to provide, within its capabilities, financial support and incentives in respect of those national activities that are intended to achieve the objective of this Convention in accordance with its national plans, priorities and programmes.

Canada continues to participate in the financial provisions of the Convention on an ongoing basis through its financial contribution to the GEF. Canada, through Global Affairs Canada, is one of the largest donors to the GEF and contributed $219 million in the GEF-8 Replenishment. In total, the GEF-8 Replenishment approved US$5.33 billion in pledges from 29 donors to the GEF for the July 2022 – June 2026. The GEF has designated 7.7% of this total funding for the Stockholm Convention.

Through the Great Lakes Protection Initiative, Government of Canada funding is available to develop, implement, assess and promote the use of innovative approaches to reduce releases of Chemicals of Mutual Concern (CMCs).

Article 15: Reporting

Article 15 of the Convention states:

Article 15: Reporting

1. Each Party shall report to the Conference of the Parties on the measures it has taken to implement the provisions of this Convention and on the effectiveness of such measures in meeting the objectives of the Convention.
2. Each Party shall provide to the Secretariat:
    (a) Statistical data on its total quantities of production, import and export of each of the chemicals listed in Annex A and Annex B or a reasonable estimate of such data; and
    (b) To the extent practicable, a list of the States from which it has imported each such substance and the States to which it has exported each such substance.
3. Such reporting shall be at periodic intervals and in a format to be decided by the Conference of the Parties at its first meeting.

Canada reports under Article 15 of the Convention in the format and at intervals decided by the Conference of the Parties. In accordance with its obligations, Canada submitted its first National Report on March 15, 2007, second report on November 8, 2010[54], third report on August 31, 2014[55], fourth report on August 28, 2018[56] and fifth report[57], which addresses the five newly ratified substances, on August 26, 2022.

Article 16: Effectiveness Evaluation – Canada's involvement in the Global Monitoring Plan

Article 16 of the Convention outlines that:

Article 16: Effectiveness Evaluation

2. In order to facilitate such [effectiveness] evaluation, the Conference of the Parties shall, at its first meeting, initiate the establishment of arrangements to provide itself with comparable monitoring data on the presence of the chemicals listed in Annexes A, B and C as well as their regional and global environmental transport. These arrangements:
    (a) Should be implemented by the Parties on a regional basis when appropriate, in accordance with their technical and financial capabilities, using existing monitoring programmes and mechanisms to the extent possible and promoting harmonization of approaches;
    (b) May be implemented where necessary, taking into account the differences between regions and their capabilities to implement monitoring activities; and
    (c) Shall include reports to the Conference of the Parties on the results of the monitoring activities on a regional and global basis at intervals to be specified by the Conference of the Parties.

As a Party to the Convention, and as called for under Article 16, Canada participates in evaluating the effectiveness of the Convention. The Global Monitoring Plan (GMP) report is one of three elements that contribute to the effectiveness evaluation of the Convention (Article 16). The other two elements are the national reports submitted pursuant to Article 15 and compliance information submitted pursuant to Article 17 of the Convention.

The first GMP report was completed in 2009 and provided a baseline for legacy POPs (i.e., listed in 2001) concentrations in core media - air and human tissues (milk and blood). The second GMP report provided a baseline for POPs listed 2009 and explored temporal trends of POPs in core media and the association of these trends to effectiveness of control measures implemented as a result of the Convention. Canadian long-term data sets for the 2001 and 2009 listed POPs are unique and contributed to this report.

[54] Canada's second National Report available at:
http://chm.pops.int/Countries/NationalReports/SecondRoundofPartyReports/tabid/1315/Default.aspx
[55] Canada's third National Report available at:
http://chm.pops.int/Countries/Reporting/NationalReports/ThirdRoundPartyReports/tabid/4470/Default.aspx
[56] Canada's fourth National Report available at:
http://chm.pops.int/Countries/Reporting/NationalReports/FourthRoundPartyReports/tabid/6346/Default.aspx
[57] Canada's fifth National Report available at:
http://chm.pops.int/Countries/NationalReports/FourthRoundPartyReports/tabid/9026/Default.aspx

Canadian monitoring program data (e.g., NCP, GLB program, GAPS and the National Air Pollution Surveillance Program) and expertise were prominent in the implementation of the GMP. Canada is the coordinator of the Western Europe and Others regional working group and also serves on the global coordination group. The regional working groups and global coordination group are responsible for implementation for the GMP and reporting.

Capacity building efforts under the GAPS Network continue to address data gaps in several UN regions identified in GMP reports. Canadian scientists are also actively involved in the revision of UNEP's Guidance Document for the GMP and the development of new sampling and analytical methods for addressing the newly listed POPs and other priority chemicals (e.g., candidate POPs).

At the time of writing of this NIP, the third GMP report for the Western Europe and Others Group (WEOG) region has been completed, and benefited from substantial contributions of Canadian scientists who were part of the drafting team. The third WEOG report for the GMP highlighted new science topics that have relevance to the future reporting and sustainability of the GMP. These include, *inter alia*: i.) the need to consider broader chemical mixtures (e.g., transformation products of listed POPs) which may have POP-like characteristics and contribute to increased toxicity burden to human health and the environment; ii.) improving coordination among programs and implementing efficiencies in monitoring approaches to address the growing list of POPs; passive sampling methods were highlighted as a cost-effective approach to address regional data gaps; iii.) linking the work under the GMP to the broader environment including urban areas and waste sectors; iv.) enhancing cooperation to integrate GMP data with numerical models, and v.) enhancing cooperation with other monitoring efforts under the Basel Convention, the Rotterdam Convention, the Minamata Convention, the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity.

Canadian experts will continue to support the next stage of the GMP process, with the third GMP global report recently completed in November 2022, brought forward at COP11, in 2023. The third global report reflects many of the recommendations advanced by the WEOG region report and provides a global baseline for many newer POPs, while noting that challenges with the growing list of POPs is resulting in data gaps for many new POPs and in several regions and sub-regions, particularly those with developing countries. The report further explores temporal trends of POPs in core media and the association of these trends to effectiveness of control measures implemented as a result of the Convention. Canadian long-term data sets for legacy and new POPs contribute to this process and include data on newly ratified substances. For the five chemicals covered under this NIP (i.e., dicofol, endosulfan, HCBD, PCNs, and SCCPs), Canadian long-term programs are reporting declining trends of endosulfan, since its listing under the Convention, however, trend data for the others is more scarce as analytical methods continue to be developed to deal with these challenges.