

**Canada’s Input on Priorities for further work and potential further international action on issues of concern related to chemicals and waste management**

Contents

Arsenic ..... 2

Bisphenol A ..... 7

Cadmium ..... 13

Glyphosate ..... 18

Lead ..... 23

Microplastics ..... 28

Neonicotinoids ..... 32

Organotins ..... 38

Phthalates ..... 42

Polycyclic aromatic hydrocarbons (PAHs) ..... 47

Triclosan ..... 53

Chemicals in Products (CiP) ..... 58

Endocrine Disrupting Chemicals (EDCs) ..... 62

Environmentally Persistent Pharmaceutical Pollutants (EPPPs) ..... 72

Hazardous Substances within the Life cycle of Electrical and Electronic Products (HSLEEP) ..... 79

Highly Hazardous Pesticides (HHPs) ..... 85

Lead in Paint ..... 91

Nanotechnology and Manufactured Nanomaterials ..... 96

Per- and polyfluoroalkyl substances (PFASs) ..... 102

Final Questions ..... 109

## Arsenic

*Arsenic is a naturally occurring metalloid that is ubiquitous in the Earth's crust. It is present in various inorganic and organic forms. Arsenic and arsenic compounds are used intentionally in wood preservatives, pesticides, animal feed additives, pharmaceuticals, glass production, alloy manufacturing, electronics, and semiconductor manufacturing.*

Please visit the two-page factsheet on [Arsenic](#) for more information on the topic.

1. Do you agree with the assessment report that further international action is necessary?  
(Yes/No/Don't know)

*If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9.*

- 1a. Please provide a brief explanation for your response.

There are some tools and guidance at the international level to address arsenic (e.g. the Basel Convention controls wastes containing arsenic waste and arsenic compounds as hazardous waste). Perhaps a voluntary partnership arrangement, similar to those that exist for mercury and lead, would be useful to further encourage action on sources such as wood preservatives, pesticides and animal feed. While some additional incentivization could occur at the international level through resolutions encouraging action on key sources, the resulting activities should be taken at the national or regional levels.

While Canada has been successful in managing the human health and environmental risks linked to arsenic emissions through the implementation of various measures, we acknowledge that the implementation of such measures can be challenging and that other countries may face varying levels of capacity, resources, and regulatory frameworks and could require support to achieve effective implementation.

2. What types of international actions should be taken?

*Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options*

- Legally binding
- Soft law
- Information sharing and awareness / Voluntary initiatives
- No international actions are needed
- Other: \_\_\_\_\_

- 2a. Please provide a brief explanation for your response.

Some awareness building and voluntary partnerships, as well as soft law actions such as group resolutions could help to spur further action on key global sources of arsenic.

By actively participating in information sharing, awareness campaigns, and other voluntary initiatives, countries can foster mutual learning from shared experiences, best practices, mistakes, and solutions. Moreover, these strategies can equip countries with the necessary knowledge and skills to effectively monitor emissions and construct comprehensive inventories of releases which is key to understanding if more concrete international actions are ultimately pursued.

3. Which type of approach or measure would you see as appropriate to address Arsenic at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures
- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))
- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other:

- 3a. Please explain your response, including examples if possible

Support to national and regional organizations in the form of guidance, information-sharing and scientific and technical knowledge could be useful. This would perhaps be best accomplished through a partnership-based approach.

4. What factors prevent action/progress on addressing Arsenic in your country/ organization?
- Lack of technical capacity
  - Lack of scientific knowledge
  - Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors
  - Difficulty with resource mobilization
  - Lack of economically feasible green and sustainable alternatives
  - Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
  - None, there are no factors preventing action or progress
  - Other:

- 4a. Please explain your response, including examples if possible

Canada regulates the sale and use of arsenic containing wood preservatives ([chromium copper arsenate \(CCA\)](#); ammoniacal copper zinc arsenate (ACZA)) under the *Pest Control Products Act*. In the early 2000s, industry voluntarily withdrew residential uses these wood preservatives. Arsenic containing drugs are prohibited for sale under the *Food and Drugs Regulations* and

arsenic is prohibited as an ingredient in cosmetics and various consumer products. Effluents from metal mines are subject to arsenic concentration limits.

5. Can you point to existing initiatives that could be replicated or scaled up at the international level?

*Please share a weblink to the suggestion(s) if available.*

The Government of Canada, in collaboration with industry, drafted a revised *Recommendations for the Design and Operation of Wood Preservation Facilities (2013) - Technical Recommendations Document (TRD)* (<https://www.canada.ca/en/environment-climate-change/services/management-toxic-substances/publications/environmental-recommendations-wood-preservation-facilities.html>). Adherence to the TRD became a legal requirement for arsenic-containing and certain other wood preservatives in Canada. This document also became a major component of the *Guidance on best available techniques and best environmental practices for the production and use of pentachlorophenol listed with specific exemptions* under the Stockholm Convention (<http://chm.pops.int/Implementation/NationalImplementationPlans/GuidanceArchive/NewlyDevelopedGuidance/DraftguidanceonBATBEPforPCP/tabid/7962/Default.aspx>).

The treated wood industry, via Wood Preservation Canada (WPC), has implemented an industry program for the tagging of treated wood and continues to work with its member companies and standards organizations to ensure consistent practices within the industry. PTW-SafetyInfo.ca is a website created by WPC to identify safety information and offer user guidance on pressure treated wood products.

6. Which sectors/value chains need to be closely involved in developing solutions?

*Please visit the two-page factsheet on [Arsenic](#) for more information on the topic. If you select "Other", please elaborate your response.*

- Agriculture and Food Production
- Construction
- Electronics
- Energy
- Health
- Labour
- Pharmaceuticals
- Public, private or blended finance
- Retail
- Textiles
- Transportation
- Waste
- Other:

7. Which international forum or instrument would be best placed to take the lead on international action on Arsenic?

*Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...*

Canada considers that next steps internationally to help address arsenic related issues could be housed under the SAICM beyond 2020 Instrument. Initiatives involving information sharing, awareness building, and the development of voluntary measures are well suited with the New Framework's mandate. Canada further recommends that the New Framework considers the model established and the work undertaken by the UNEP Global Mercury Partnership since there are similarities between mercury, arsenic, cadmium and lead related issues and potential international actions to address those issues.

- 7a. Which international agendas have important linkages with Arsenic?

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

- Agriculture and food
- Biodiversity
- Climate Change
- Health
- Human Rights
- Sustainable Consumption and Production
- World of work
- Other

- 7b. Please elaborate on the important linkages with Arsenic, including examples if possible.

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

Arsenic's toxicity depends on its chemical form. Inorganic arsenic is of greater concern to human health than organic forms of arsenic. Long-term exposure (over many years or decades) to very high levels of inorganic arsenic is associated with an increased risk of cancer and other adverse health effects. Exposure to high levels of inorganic arsenic in utero or during childhood may affect development and increase the risk of cancer in adulthood.

Workers in the farming and construction industries need to know when they are being exposed to sources of arsenic in preserved wood so they can take appropriate precautions.

Alternatives to arsenic containing products should be researched, manufactured and promoted where possible. Labelling of consumer products containing arsenic should also be considered.

When released into the environment, arsenic can cause reduction in growth and photosynthesis in plants, behavioural effects, death, and can adversely affect species reproduction.

8. What priority level do you attach to Arsenic for international action?

- Very high
- High
- Medium
- Low
- Very low

9. Is there any priority further work you would like to suggest at the national level?

*Please share a weblink to the suggestion(s) if available.*

Nil

10. Is there any priority further work you would like to suggest at the regional level?

*Please share a weblink to the suggestion(s) if available.*

Canada would encourage input from other regions that may identify particular arsenic management issues and challenges, as well as challenges related to overall regulatory capacity.

## Bisphenol A

*Bisphenols are a group of dozens of organic compounds that have been used as building blocks in the production of polycarbonate plastics, epoxy resins and other products since the 1960s. The variety of products include water bottles, sports equipment, medical devices, household electronics, thermal paper receipts, and food and beverage cans.*

*Among the bisphenols, bisphenol A (BPA) has attracted the most attention. The consumption of BPA and related products is widespread and estimated to continue to grow in the foreseeable future, driven mainly by increasing demand for polycarbonates and other plastics.*

Please visit the two-page factsheet on [Bisphenol-A](#) for more information on the topic.

1. Do you agree with the assessment report that further international action is necessary?  
(Yes/No/Don't know)

*If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9.*

- 1a. Please provide a brief explanation for your response.

Only limited number of individual countries have put in place measures to manage risks to human health and the environment, with some reduction of risks from BPA.

In addition, many alternatives to BPA are being used or are being developed, and some of these alternatives may be as toxic or more toxic to health and environment than BPA.

2. What types of international actions should be taken?

*Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options*

- Legally binding
- Soft law
- Information sharing and awareness / Voluntary initiatives
- No international actions are needed
- Other:

- 2a. Please explain your response, including examples if possible.

Many alternatives to BPA are increasingly being used and some of these alternatives may be as toxic or more toxic to health and environment than BPA. More coordinated research and information sharing is needed to support individual countries in identifying and assessing toxic effects, sources, and possible measures to effectively manage these substances.

Also, chemical effects occur in a complex environment and so there is a need for increased research on both the cumulative impact of chemicals that include BPA and BPA alternatives, and on the effects of climate change on exposure in the environment.

3. Which type of approach or measure would you see as appropriate to address Bisphenol A at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures
- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))
- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other:

- 3a. Please explain your response, including examples if possible.

There is a need for shared research on toxic effects of BPA alternatives, effects on sensitive species, effects of temperature on BPA exposure, and methodologies for testing cumulative effects.

Countries need information on sources of risk for BPA and BPA alternatives, and how to manage these risks within their own jurisdictions.

4. What factors prevent action/progress on addressing Bisphenol A in your country/organization?

- Lack of technical capacity
- Lack of scientific knowledge
- Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors
- Difficulty with resource mobilization
- Lack of economically feasible green and sustainable alternatives
- Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
- None, there are no factors preventing action or progress
- Other: Lack of scientific knowledge on BPA alternatives

- 4a. Please explain your response, including examples if possible.



The Government of Canada has successfully managed risks to the environment and human health from BPA through implementation of various measures. Specifically, Canada assessed BPA under the Chemical Management Plan (CMP) and proposed that BPA was a concern to both human health and the environment in Canada.

Subsequently, the government of Canada took a number of actions on BPA to protect the health of Canadians and the environment. These include managing risks from various sources such as baby bottles, food packaging, cosmetics, and certain industrial sources. For example, Canada has prohibited the manufacture, importation, sale or advertising of polycarbonate baby bottles; requires the Evaluation of pre-market submissions for infant formula to ensure the lowest achievable levels of BPA in the food packaging for these products; and prohibits the use as a cosmetic ingredient. Subsequently, in 2020, the government of Canada assessed whether the risk management actions were effective and concluded that no further risk management action is required at this time based on the exposures evaluated in the 2008 risk assessment.

More recently however, regulatory action on BPA, as well as consumer and market shifts toward "BPA-free" products, have led to a rise in the use of some BPA alternatives. While Canada has not assessed BPA alternatives under the CMP, existing literature indicates that some of these substances may be potentially as toxic or more toxic to health an environment as BPA. Therefore, more information is needed on their toxic effects. It is important to mention that a number of bisphenols were identified in Canada as future priorities for assessment by the Identification and Risk Assessment Priorities 2017-18.

5. Can you point to existing initiatives that could be replicated or scaled up at the international level?

*Please share a weblink to the suggestion(s) if available.*

The USEPA is considering gathering environmental effects data (TSCA section 4(a)).

A list of safe alternatives to health and the environment would be helpful. For example, France proposed to restrict the use of BPA in thermal papers and launched a website to support companies in finding safer alternatives. Collecting information on BPA to support information on human exposure and BPA in various products is needed. For example, Canada conducted surveys to measure concentrations of BPA in canned and bottled foods included infant formulas, and collected information on human exposure will through research projects and studies (e.g. Maternal-Infant Research on Environmental Chemicals (MIREC) and the P4 study: Plastics and Personal Care Product use in Pregnancy).

6. Which sectors/value chains need to be closely involved in developing solutions?

Please visit the two-page factsheet on [Bisphenol A](#) for more information on the topic. If you select "Other", please elaborate your response.

- Agriculture and food production
- Construction
- Electronics
- Energy
- Health
- Labour
- Pharmaceuticals
- Public, private or blended finance
- Retail
- Textiles
- Transportation
- Waste
- Other:

7. Which international forum or instrument would be best placed to take the lead on international action on Bisphenol A?

*Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...*

Canada considers that next steps internationally to help address BPA related issues could be housed under the SAICM beyond 2020 Instrument. Initiatives involving information sharing, awareness building, and the development of voluntary measures are well suited with the New Framework's mandate. Canada further recommends that the New Framework considers the model established and the work undertaken by the UNEP Global Mercury Partnership.

- 7a. Which international agendas have important linkages with Bisphenol A?

For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)

- Agriculture and Food
- Biodiversity
- Climate Change
- Health
- Human Rights
- Sustainable Consumption and Production

- World of Work
- Other

7b. Please elaborate on the important linkages with Bisphenol A, including examples if possible.

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

BPA poses health and environmental concerns for humans as well as aquatic and terrestrial organisms as it can adversely affect reproduction, growth, development, and tolerance to heat. Among freshwater organisms, fish appear to be the most sensitive species.

BPA can also pass into an infant's formula or milk from certain types of plastic baby bottles. During pregnancy, BPA can reach the baby if the mother consumes BPA that has passed from a can or plastic container.

This [report](#) summarizes the Joint FAO/WHO expert meeting reviewing toxicological and health aspects of bisphenol A, as well as the stakeholder meeting on bisphenol A, 1-5 November 2010, Ottawa, Canada. The main topics are:

- chemistry and analytical methods;
- occurrence of BPA in food, including possible migration from food contact materials;
- exposure to BPA from different sources, including specifically exposure through food as a result of migration from food contact materials;
- biochemistry and toxicity of BPA;
- review of epidemiological studies (human data);
- dose–response assessment;
- human health risk characterization, including consideration of sensitive subpopulations and sensitive life stages; and
- consideration of alternatives to BPA.

As climate exacerbates water scarcity and disrupts precipitation patterns and the entire water cycle, the use of plastic bottles to meet human needs for freshwater could increase in the decades to come. This could lead to higher releases of BPA into the environment.

8. What priority level do you attach to Bisphenol A for international action?

- Very high
- High
- Medium
- Low
- Very low

9. Is there any priority further work you would like to suggest at the national level?  
*Please share a weblink to the suggestion(s) if available.*

Assessment of BPA alternatives under the chemical management plan.

[Technical consultation: proposed subgrouping of bisphenol A \(BPA\) structural analogues and functional alternatives - Canada.ca](#)

10. Is there any priority further work you would like to suggest at the regional level?  
*Please share a weblink to the suggestion(s) if available.*

Countries and industry could work together towards developing voluntary labelling initiatives to empower consumers to identify products containing BPA and assist them in making informed decisions.

Canada would encourage input from other regions that may identify particular BPA management issues and challenges, as well as challenges related to overall regulatory capacity.

## Cadmium

*Cadmium is a toxic metal that is naturally found in the Earth's crust, generally at low levels. Cadmium and cadmium compounds are mainly used in nickel-cadmium batteries, alloys, coatings and plating, pigments in plastics, glasses, ceramics and paints, solar cells, PVC stabilisers and others. It has been produced, used and released in large quantities, and thus intentional human uses have caused widespread, persistent contamination and exposure.*

*Please visit the two-page factsheet on [Cadmium](#) for more information on the topic.*

Please answer the questions below that are relevant to your organization/ country/ region:

1) Do you agree with the assessment report that further international action is necessary?

(Yes/No/Don't know)

If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9

1a) Please provide a brief explanation for your response.

Cadmium does not undergo global long-range transport similar to POPs or gaseous mercury and there are already tools and guidance available at the international level to address cadmium pollution (e.g. the Basel Convention controls wastes containing cadmium and cadmium compounds as hazardous waste). Perhaps a voluntary partnership arrangement, similar to those that exist for mercury and lead in paint, would be useful to further encourage action on sources such as batteries, electronics, and pigments and coatings. While some additional incentivization could occur at the international level through resolutions encouraging action on key sources or funding for pollution prevention projects, the resulting activities should be taken at the national or regional levels.

2) What types of international actions should be taken?

*Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options*

- Legally binding
- Soft law
- Information sharing and awareness / Voluntary initiatives
- No international actions are needed
- Other:

2a) Please explain your response, including examples if possible.

Some awareness building and voluntary initiatives, as well as soft law actions such as group resolutions could help to spur further action on key global sources of cadmium pollution.

3) Which type of approach or measure would you see as appropriate to address Cadmium at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures
- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))
- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other:

3a) Please explain your response, including examples if possible.

Support to national and regional organizations in the form of guidance and information-sharing could be useful. This would perhaps be best accomplished through a partnership-based approach.

4) What factors prevent action/progress on addressing Cadmium in your country/ organization?  
Lack of technical capacity

- Lack of scientific knowledge
- Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors
- Difficulty with resource mobilization
- Lack of economically feasible green and sustainable alternatives
- Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
- None, there are no factors preventing action or progress
- Other:

4a) Please explain your response, including examples if possible.

Regulations under the *Canada Consumer Product Safety Act* limit levels of cadmium in consumer products, including those meant for children. Canada has established national guidelines for cadmium in drinking water and cadmium and its compounds are prohibited for use in cosmetic products. Cadmium is measured in the environment and in humans through national environmental and biomonitoring surveys. Releases to the environment are reported to the National Pollutant Release Inventory by facilities that release, process, or otherwise use cadmium and cadmium compounds. Effluents from metal mines are subject to cadmium concentration limits.

Cadmium use in batteries and solar panels could result in a need for some trade-offs with measures designed to address climate change, however.

5) Can you point to existing initiatives that could be replicated or scaled up at the international level?

Please share a weblink to the suggestion(s) if available.

Since cadmium pollution to air is primarily a regional issue, regional agreements like the UNECE Convention on Long-Range Transboundary Air Pollution could be useful to scale up. As noted, other partnership groups like the Global Mercury Partnership could be useful to replicate for cadmium and other metals like lead and arsenic.

6) Which sectors/value chains need to be closely involved in developing solutions?

Please visit the two-page factsheet on [Cadmium](#) for more information on the topic. If you select "Other", please elaborate your response.

- Agriculture and food production
- Construction
- Electronics
- Energy
- Health
- Labour
- Pharmaceuticals
- Public, private or blended finance
- Retail
- Textiles
- Transportation
- Waste
- Other:

7) Which international forum or instrument would be best placed to take the lead on international action on Cadmium?

Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...

Canada considers that next steps internationally to help address cadmium related issues could be housed under the SAICM beyond 2020 Instrument. Initiatives involving information sharing, awareness building, and the development of voluntary measures are well suited with the New Framework's mandate. Canada further recommends that the New Framework considers the model established and the work undertaken by the UNEP Global Mercury Partnership since there are similarities between mercury, arsenic, cadmium and lead related issues and potential international actions to address those issues.

In regions where countries have taken limited action to reduce the use and emissions of cadmium, regional scale actions, ranging from cooperation on national regulations or trade agreements all the way to a regional agreement to reduce emissions (similar to the UNECE LRTAP Convention), could be considered

7a) Which international agendas have important linkages with Cadmium?

For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)

- Agriculture and Food
- Biodiversity

- Climate Change
- Health
- Human Rights
- Sustainable Consumption and Production
- World of Work
- Other:

7b) Please elaborate on the important linkages with Cadmium, including examples if possible.

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

Biodiversity due to the impacts of cadmium releases on species and the environment. Climate change as a result of potential benefits of cadmium's use in solar panels and subsequent reduction in coal-fired energy. Sustainable consumption and production to raise awareness of cadmium in batteries and incentivize consideration of alternatives. Agriculture and food due to the use of fertilizers containing high levels of cadmium resulting in accumulation of cadmium by plants and runoff into the environment. Health is also linked as cadmium is known to be toxic to human health. Levels of cadmium in humans in Canada are highly correlated with cigarette smoking.

8) What priority level do you attach to Cadmium for international action?

- Very high
- High
- Medium
- Low
- Very low

9) Is there any priority further work you would like to suggest at the national level?

*Please share a weblink to the suggestion(s) if available.*

At the national level, actions to reduce releases from key industrial sectors like base metals smelting and refining would be most useful. Daily intake/consumption and environmental guidelines would also be helpful as would limits for cadmium allowed in consumer products. Additionally, monitoring of the environment and humans will help to assess risks.

10) Is there any priority further work you would like to suggest at the regional level?

*Please share a weblink to the suggestion(s) if available.*

Effective implementation of existing international and regional treaties or agreements and other domestic measures to reduce emissions and releases of toxic substances would help to reduce cadmium pollution as a co-benefit. For example, efforts to control emissions of particulate matter from coal-fired boilers, furnaces, or electric generation facilities would greatly reduce cadmium pollution as most cadmium would be present in particulate matter.

For example, regions wishing to take action on transboundary cadmium releases could work together to address pollution from certain sectors (e.g. coal fired power generation, base metals



smelting and refining) through agreements like the Convention on Long-range Transboundary Air Pollution Heavy Metals Protocol.

# Glyphosate

*Glyphosate is an organophosphorus herbicide for agricultural, forestry and residential weed control that kills or suppresses all plant types, with the exception of those genetically modified to be tolerant to it. Since its introduction in 1974, glyphosate has become the most widely used herbicide worldwide. The largest use of glyphosate has been in agriculture, however glyphosate use in urban settings can also be a significant source of contamination.*

Please visit the two-page factsheet on [Glyphosate](#) for more information on the topic.

1) Do you agree with the assessment report that further international action is necessary?

(Yes/No/**Don't know**)

If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9

1a) Please provide a brief explanation for your response.

In Canada and other jurisdictions, the regulation of pesticides, including glyphosate follows a scientific risk-based approach. This approach, which is consistent with international standards, requires a comprehensive set of scientific data to form the basis for hazard and risk assessments. Further, Canada employs a post-market surveillance system which includes compliance and enforcement capacity and regulatory mechanisms for the reporting and assessment of new scientific information or potential adverse effects.

Glyphosate products registered in Canada are subject to legally binding conditions of use, under the authority of the *Pest Control Products Act* (PCPA). A recent re-evaluation and other subsequent reviews have determined that registered glyphosate products in Canada continue to meet the current scientific health and safety standards, consistent with the requirements of the PCPA (see links below).

- Statement from Health Canada on Glyphosate (<https://www.canada.ca/en/health-canada/news/2019/01/statement-from-health-canada-on-glyphosate.html>)
- Glyphosate in Canada (<https://www.canada.ca/en/health-canada/services/consumer-product-safety/reports-publications/pesticides-pest-management/fact-sheets-other-resources/glyphosate.html>)

Canada notes that different national pesticide regulatory systems may have different approaches to, and legal requirements for, achieving the shared goals of protecting human health and the environment. While the PCPA is largely based on scientific risk assessment and value (i.e., efficacy), other systems may prioritize hazard-based classification schemes, or risk-benefit approaches. Most major science-based regulatory agencies have concluded that glyphosate can be used safely under prescribed use conditions.

Canada also notes that not all countries and regions have the same degree of regulatory capacity, and therefore supports international actions to identify particular capacity deficiencies, and to implement a broad range of regionally appropriate approaches to effectively manage specific pesticide issues.

2) What types of international actions should be taken?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Legally binding
- Soft law
- Information sharing and awareness / Voluntary initiatives
- No international actions are needed
- Other:

2a) Please explain your response, including examples if possible.

Under the authority of the PCPA, legally binding conditions of registration and use are in place in Canada for all pesticides, including glyphosate. Similar legally binding conditions are in place in other jurisdictions as well.

Canada supports “information sharing and awareness / voluntary initiatives” to promote sound scientific risk assessment and management practices. Such “Information sharing and awareness / voluntary initiatives” may also facilitate increases in regulatory and risk assessment capacity in jurisdictions where deficiencies can be identified. This may also lead to national or regionally appropriate expansion of legally binding measures within certain jurisdictions.

3) Which type of approach or measure would you see as appropriate to address Glyphosate at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures
- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))
- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other:

3a) Please explain your response, including examples if possible.

As per the PCPA, Canada’s comprehensive approach to pesticides regulation and use includes: (1) domestic regulatory control measures, including scientific risk-based assessments for determining approved use conditions; (2) education, compliance, enforcement and incident reporting frameworks; and (3) consideration and support of voluntary sustainable pest management strategies such as integrated pest management (IPM). Canada sees the further adoption or adaptation of such measures as potentially appropriate means to address glyphosate at the international level.

4) What factors prevent action/progress on addressing Glyphosate in your country/ organization?

- Lack of technical capacity
- Lack of scientific knowledge
- Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors
- Difficulty with resource mobilization
- Lack of economically feasible green and sustainable alternatives
- Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
- None, there are no factors preventing action or progress
- Other:

4a) Please explain your response, including examples if possible.

Canada has subjected glyphosate to significant regulatory scrutiny which includes the continuous monitoring of its safety, based on emerging science and the recent re-evaluation and other subsequent reviews which have determined that registered glyphosate products continue to meet modern health and safety standards, consistent with the requirements of the PCPA (see links below).

- Statement from Health Canada on Glyphosate (<https://www.canada.ca/en/health-canada/news/2019/01/statement-from-health-canada-on-glyphosate.html>)
- Glyphosate in Canada (<https://www.canada.ca/en/health-canada/services/consumer-product-safety/reports-publications/pesticides-pest-management/fact-sheets-other-resources/glyphosate.html>)

5) Can you point to existing initiatives that could be replicated or scaled up at the international level?

*Please share a weblink to the suggestion(s) if available.*

Nil

6) Which sectors/value chains need to be closely involved in developing solutions?

*Please visit the two-page factsheet on [Glyphosate](#) for more information on the topic. If you select "Other", please elaborate your response.*

- Agriculture and food production
- Construction
- Electronics
- Energy
- Health
- Labour
- Pharmaceuticals
- Public, private or blended finance
- Retail

- Textiles
- Transportation
- Waste
- Other:

7) Which international forum or instrument would be best placed to take the lead on international action Glyphosate?

*Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...*

The Organisation for Economic Co-operation and Development (OECD), perhaps through its Working Party on Pesticides, may be the best placed international instrument to lead a scientific and risk-based identification of any particular regional issues pertaining to the management of glyphosate (as opposed to policy-based issues).

The strategic approach and sound management of chemicals and waste beyond 2020 process (i.e., SAICM beyond 2020) may be the best placed international instrument to identify and address generalized national and regional deficiencies in regulatory capacity and opportunities for capacity building.

Though the *UNEP assessment paper on linkages with other clusters related to chemicals and waste* is presented in this survey for consideration, it *does not* establish significant operational level linkages between the various chemicals and waste cluster multilateral agreements (MEAs), particularly in the context of glyphosate. The paper is also not specifically relevant to glyphosate.

Many individual MEAs are discrete, legally binding instruments, each designed to address particular chemical or environmental issues. Where operational linkages do exist they are clearly specified in the texts of the Conventions, (e.g., cross-references between the Stockholm Convention and Basel Convention).

Further, glyphosate is not a listed chemical under the major MEAs (e.g., Basel, Rotterdam, Stockholm, Montreal Protocol) as it has not been demonstrated to meet the conventions' respective criteria. As such, these conventions are of no direct relevance to glyphosate. The potential relevance of glyphosate under other conventions (e.g., Convention on Biological Diversity) has yet to be comprehensively established.

7a) Which international agendas have important linkages with Glyphosate?

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

- Agriculture and Food
- Biodiversity
- Climate Change
- Health
- Human Rights
- Sustainable Consumption and Production
- World of Work
- Other:

7b) Please elaborate on the important linkages with Glyphosate, including examples if possible.

For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)

As per response to Question 7, though the *UNEP assessment paper on linkages with other clusters related to chemicals and waste* is presented in this survey for consideration, it does not establish clear operational linkages between the various chemicals and waste cluster MEAs, nor is it of particular relevance to glyphosate. (See response to question 7 for more detail.) Similarly, the potential relevance of glyphosate to many of the “international agendas” items presented above has yet to be comprehensively established, with the exception of “Agriculture and Food”.

Additionally, it is suggested that distinctions should be made regarding the relevance of glyphosate itself to these “international agendas”, versus the significance of global agricultural production systems themselves, in which glyphosate is a tool.

8) What priority level do you attach to Glyphosate for international action?

- Very high
- High
- Medium
- Low
- Very low

9) Is there any priority further work you would like to suggest at the national level?

*Please share a weblink to the suggestion(s) if available.*

Nil

10) Is there any priority further work you would like to suggest at the regional level?

*Please share a weblink to the suggestion(s) if available.*

Nothing to suggest at Canada’s regional level. But Canada would encourage input from other regions that may identify particular glyphosate management issues and challenges, as well as challenges related to overall regulatory capacity.

## Lead

*Lead is a toxic metal that occurs naturally in the Earth's crust. It may exist in both inorganic and organic forms. The current global uses of lead are in batteries, rolled and extruded products, pigments and other product additives (e.g. for paints, cathode ray tubes, enamels and ceramics, PVC stabilisers), ammunition, alloys, cable sheathing and other uses*

*Please visit the two-page factsheet on [Lead](#) for more information on the topic.*

1) Do you agree with the assessment report that further international action is necessary?

(Yes/No/Don't know)

If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9

1a) Please provide a brief explanation for your response.

There are already sufficient tools and partnerships at the international level to address the major sources of lead (e.g. guidance under the Basel Convention on lead-acid batteries, partnerships to promote leaded gasoline phase-outs, and soft law instruments to promote action on lead in products). Any strong action should be taken at the national or regional levels.

2) What types of international actions should be taken?

*Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options*

- Legally binding
- Soft law
- Information sharing and awareness / Voluntary initiatives
- No international actions are needed
- Other:

2a) Please explain your response, including examples if possible.

Lead does not undergo global long-range transport similar to POPs or gaseous mercury. Given that existing international actions address the major sources of international concern (e.g. hazardous waste), regional and national actions would be best suited to address lead pollution rather than international actions. These may be facilitated through improving existing international initiatives such as SAICM and regional agreements like the UNECE Convention on Long-range Transboundary Air Pollution. An additional example of a regional initiative is the Canada-US Great Lakes Water Quality agreement, where lead has recently been nominated as a chemical of mutual concern. If both parties agree to list the substance as a chemical of mutual concern, then additional actions will be taken to address lead pollution in the Great Lakes which are areas of shared jurisdiction.

3) Which type of approach or measure would you see as appropriate to address lead at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures
- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))
- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other:

3a) Please explain your response, including examples if possible.

For example, efforts noted in the G7 ministers' communique and outcomes from 2022 G7 workshop on lead. Additional sharing of guidelines and best practices could be helpful, including those intended to support enforcing provisions implemented to fulfill obligations under existing international agreements and national regulatory frameworks.

4) What factors prevent action/progress on addressing lead in your country/ organization?

- Lack of technical capacity
- Lack of scientific knowledge
- Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors
- Difficulty with resource mobilization
- Lack of economically feasible green and sustainable alternatives
- Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
- None, there are no factors preventing action or progress
- Other:

4a) Please explain your response, including examples if possible.

Despite lead still being used in products like batteries, roofing materials, ammunition and fishing tackle, its use has already been banned in many areas, including fuels, paints and jewellery, due to its known toxicity.

Many alternatives to lead are available and used in many applications where lead contamination is a concern. However, in some applications the substitution of lead is currently very difficult due to the lack of feasible, affordable, and/or accessible alternatives and raw materials.

5) Can you point to existing initiatives that could be replicated or scaled up at the international level?

Please share a weblink to the suggestion(s) if available.



The Global Mercury Partnership could be a good model for additional information gathering and awareness raising on metal issues, such as lead. The SAICM beyond 2020 framework would be a well placed forum to undertake this work, and could use the Partnership as a model. SAICM could include lead in paint, lead overall, and also other similar substances like cadmium and arsenic.

For regional air quality issues, the Convention on Long-range Transboundary Air Pollution could be a good model to replicate outside of the UNECE.

The Basel Convention has initiated work to update the technical guidelines on the environmentally sound management of waste lead-acid batteries.

6) Which sectors/value chains need to be closely involved in developing solutions?

*Please visit the two-page factsheet on [Lead](#) for more information on the topic. If you select "Other", please elaborate your response.*

- Agriculture and food production
- Construction
- Electronics
- Energy
- Health
- Labour
- Pharmaceuticals
- Public, private or blended finance
- Retail
- Textiles
- Transportation
- Waste
- Other: Recreational Hunting and Fishing Organizations

7) Which international forum or instrument would be best placed to take the lead on international action lead?

*Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...*

Canada considers that next steps internationally to help address lead related issues could be housed under the SAICM beyond 2020 Instrument. Initiatives involving information sharing, awareness building, and the development of voluntary measures are well suited with the New Framework's mandate. Canada further recommends that the New Framework considers the model established and the work undertaken by the UNEP Global Mercury Partnership since there are similarities between mercury, arsenic, cadmium and lead related issues and potential international actions to address those issues.

7a) Which international agendas have important linkages with lead?

For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)

- Agriculture and Food
- Biodiversity
- Climate Change
- Health
- Human Rights
- Sustainable Consumption and Production
- World of Work
- Other:

7b) Please elaborate on the important linkages with lead, including examples if possible.

For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)

Elevated lead in the environment can result in decreased growth and reproduction in plants and animals, and neurological effects in vertebrates.

A [report](#) by the Centre for International Environmental Law explores the human rights impacts of lead pollution, particularly on the right to life, right of children and adults to the highest attainable standard of health, right to adequate housing, right to access information, access to effective remedy, and workers' rights.

8) What priority level do you attach to lead for international action?

- Very high
- High
- Medium
- Low
- Very low

9) Is there any priority further work you would like to suggest at the national level?

Please share a weblink to the suggestion(s) if available.

At the national level, actions to implement guidelines/regulations on hazardous waste and releases from key industrial sectors like base metals smelting and refining would be most useful. Additionally, the use of guidelines for lead limits in foods and products would contribute to reducing exposure. Support for monitoring of lead levels in the environment and human health would also be useful at the national level.

10) Is there any priority further work you would like to suggest at the regional level?

*Please share a weblink to the suggestion(s) if available.*

Effective implementation of existing international and regional treaties or agreements and other domestic measures to reduce emissions and releases of toxic substances would help to reduce lead pollution as a co-benefit. For example, efforts to control emissions of particulate matter from coal-fired boilers, furnaces, or electric generation facilities would greatly reduce lead pollution as most lead would be present in particulate matter.

For example, regions wishing to take action on transboundary lead releases could work together to address pollution from certain sectors (e.g. coal fired power generation, base metals smelting and refining) through agreements like the Convention on Long-range Transboundary Air Pollution Heavy Metals Protocol. Additionally, regional coordination on hazardous waste disposal may be helpful if not all countries have facilities available for environmentally safe disposal of lead or lead-containing products.

Canada would also welcome further research and collaboration across jurisdictions and industry to develop feasible, affordable, and sustainable alternatives for all products and applications in which lead is still being used.

## Microplastics

*Microplastics are solid particles made of synthetic polymers, typically defined as smaller than 5 mm. Microplastics have been intentionally added to a wide range of products and application areas for diverse technical functions. For example, they are added in cosmetics and personal care products, detergents and maintenance products, agriculture and horticulture, medical devices and in vitro diagnostic medical devices, medicinal products for human and veterinary use, food supplements, paints, coatings and inks, oil and gas drilling and production, plastics, technical ceramics, media for abrasive blasting, adhesives, 3D printing materials and printing inks.*

Please visit the two-page factsheet on [Microplastics](#) for more information on the topic.

1) Do you agree with the assessment report that further international action is necessary?

(Yes/**No**/Don't know)

If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9

1a) Please provide a brief explanation for your response.

Urgent action is needed at the local, national, regional and global level to reduce plastic pollution, which includes microplastics. Pursuant to resolution 5/14, adopted at the fifth resumed session of the United Nations Environment Assembly (UNEA-5) in March 2022, an intergovernmental negotiating committee (INC) has been established to develop a new international legally binding instrument on plastic pollution by 2024. Discussions on international measures to address plastic pollution, including microplastics, are underway through the INC and the UNEP Executive Director will report on the INC progress at UNEA-6. Given that plastic pollution will already be discussed at UNEA-6, microplastics should not be put forward as a separate area of focus.

Canada is implementing a comprehensive, evidence-based and lifecycle approach to advance complementary solutions across the plastics lifecycle to prevent plastic pollution, improve how plastics are made, used and managed, and enable a circular plastics economy where plastics stay in the economy and out of the environment. This includes specific efforts to address microplastics, such as advancing science to detect, characterize and assess the impacts of microplastics as well as Canada's *Microbeads in Toiletries* regulations that prohibit the manufacture, import and sale of certain plastic microbead containing toiletries, including non-prescription drugs and natural health products.

Globally, Canada continues to work with international partners, including as a member of the High Ambition Coalition to End Plastic Pollution, on the negotiation of a new, ambitious, and effective legally binding international instrument on plastic pollution. We look forward to bringing the world together for the fourth session of these negotiations in Ottawa in April 2024.

2) What types of international actions should be taken?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Legally binding
- Soft law
- Information sharing and awareness / Voluntary initiatives
- No international actions are needed
- Other:

2a) Please explain your response, including examples if possible.

3) Which type of approach or measure would you see as appropriate to address microplastics at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures
- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))
- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other:

3a) Please explain your response, including examples if possible.

4) What factors prevent action/progress on addressing microplastics in your country/ organization?

- Lack of technical capacity
- Lack of scientific knowledge
- Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors
- Difficulty with resource mobilization
- Lack of economically feasible green and sustainable alternatives
- Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
- None, there are no factors preventing action or progress
- Other:

4a) Please explain your response, including examples if possible.

5) Can you point to existing initiatives that could be replicated or scaled up at the international level?

*Please share a weblink to the suggestion(s) if available.*

6) Which sectors/value chains need to be closely involved in developing solutions?

*Please visit the two-page factsheet on [Microplastics](#) for more information on the topic. If you select "Other", please elaborate your response.*

- Agriculture and food production
- Construction
- Electronics
- Energy
- Health
- Labour
- Pharmaceuticals
- Public, private or blended finance
- Retail
- Textiles
- Transportation
- Waste
- Other:

7) Which international forum or instrument would be best placed to take the lead on international action on microplastics?

*Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...*

7a) Which international agendas have important linkages with microplastics?

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

- Agriculture and Food
- Biodiversity
- Climate Change
- Health

- Human Rights
- Sustainable Consumption and Production
- World of Work
- Other:

7b) Please elaborate on the important linkages with microplastics, including examples if possible.

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

8) What priority level do you attach to microplastics for international action?

- Very high
- High
- Medium
- Low
- Very low

9) Is there any priority further work you would like to suggest at the national level?

*Please share a weblink to the suggestion(s) if available*

.

10) Is there any priority further work you would like to suggest at the regional level?

*Please share a weblink to the suggestion(s) if available.*

## Neonicotinoids

*Neonicotinoids are a class of neuroactive insecticides chemically related to nicotine. Since the first neonicotinoid (imidacloprid) was commercialized in the 1990s, seven main compounds (acetamiprid, clothianidin, dinotefuran, imidacloprid, nitenpyram, thiamethoxam and thiacloprid) are now available on the global market. Today, neonicotinoids are used in protecting plants, livestock and pets from pest insects, as well as for malaria vector control, i.e., mosquitos, to protect humans, in more than 100 countries. Neonicotinoids are also used as biocides.*

Please visit the two-page factsheet on [Neonicotinoids](#) for more information on the topic.

1) Do you agree with the assessment report that further international action is necessary?

(Yes/No/**Don't know**)

If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9

1a) Please provide a brief explanation for your response.

In many jurisdictions, including Canada, several neonicotinoid insecticides are registered for use under the authority of robust and well-resourced regulatory regimes. Further, Canada employs a post-market surveillance system which includes compliance and enforcement capacity and regulatory mechanisms for the reporting and assessment of new scientific information or potential adverse effects.

Neonicotinoid products registered in Canada are subject to legally binding conditions of use, under the authority of the *Pest Control Products Act* (PCPA). The main neonicotinoids registered in Canada include imidacloprid, clothianidin and thiamethoxam. After significant regulatory scrutiny, including formal re-evaluations and special reviews, Health Canada's Pest Management Regulatory Agency (PMRA) has demonstrated that these products continue to meet the modern health and safety standards, consistent with the requirements of the PCPA (see link below).

- Neonicotinoid insecticides (<https://www.canada.ca/en/health-canada/services/consumer-product-safety/pesticides-pest-management/growers-commercial-users/neonicotinoid-insecticides.html>)

In addition, PMRA is active in providing education on pollinators and best practices for pollinator protection. The PMRA is involved in a number of international activities related to neonicotinoids, including contribution to the development of OECD guidance related to toxicity testing and contribution to the ICPPR (International Commission for Plant Pollinator Relationships) in pollinator testing guidelines. (See links below.)

- Pollinator Protection (<https://www.canada.ca/en/health-canada/services/consumer-product-safety/pesticides-pest-management/growers-commercial-users/pollinator-protection.html>)



- OECD Work Related to Bees/Pollinators  
(<https://www.oecd.org/chemicalsafety/pesticides-biocides/work-related-beespollinators.htm>)

Canada notes that different national pesticide regulatory systems may have different approaches to, and legal requirements for, achieving the shared goals of protecting human health and the environment. While the PCPA is largely based on scientific risk assessment and value (i.e., efficacy), other systems may prioritize hazard-based classification schemes, or risk-benefit approaches.

Canada also notes that not all countries and regions have the same degree of regulatory capacity, and therefore supports international actions to identify particular capacity deficiencies, and to implement a broad range of regionally appropriate approaches to effectively manage specific pesticide issues.

## 2) What types of international actions should be taken?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Legally binding
- Soft law
- Information sharing and awareness / Voluntary initiatives
- No international actions are needed
- Other:

### 2a) Please explain your response, including examples if possible.

Under the authority of the PCPA, legally binding conditions of registration and use are in place in Canada for all pesticides, including registered neonicotinoids (imidacloprid, clothianidin, and thiamethoxam). Similar legally binding conditions are in place in other jurisdictions.

Canada supports “information sharing and awareness / voluntary initiatives” to promote education and best practices for the responsible use of neonicotinoids and pollinator protection, as well as broader human health and environmental protection objectives. “Information sharing and awareness / voluntary initiatives” may also facilitate increases in regulatory capacity in jurisdictions where deficiencies can be identified. This may also lead to national or regionally appropriate expansion of legally-binding measures within certain jurisdictions.

## 3) Which type of approach or measure would you see as appropriate to address neonicotinoids at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures
- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))

- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other:

3a) Please explain your response, including examples if possible.

As per the PCPA, Canada's comprehensive approach to pesticides regulation and use includes: (1) domestic regulatory control measures, including scientific risk-based assessments for determining approved use conditions; (2) education, compliance, enforcement and incident reporting frameworks; and (3) consideration and support of voluntary sustainable pest management strategies such as integrated pest management (IPM) and best practices for pollinator protection and the use of neonicotinoid treated seed (see links below).

- Pollinator Protection (<https://www.canada.ca/en/health-canada/services/consumer-product-safety/pesticides-pest-management/growers-commercial-users/pollinator-protection.html>)
- Protecting pollinators when using treated seed - best management practices (<https://www.canada.ca/en/health-canada/services/consumer-product-safety/reports-publications/pesticides-pest-management/fact-sheets-other-resources/pollinator-treated-seed/best-management-practices.html>)

4) What factors prevent action/progress on addressing neonicotinoids in your country/ organization?

- Lack of technical capacity
- Lack of scientific knowledge
- Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors
- Difficulty with resource mobilization
- Lack of economically feasible green and sustainable alternatives
- Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
- None, there are no factors preventing action or progress
- Other:

4a) Please explain your response, including examples if possible.

Canada has subjected neonicotinoids to significant regulatory scrutiny and has determined that registered neonicotinoid products continue to meet current scientific, health and safety standards, consistent with the requirements of the PCPA. (See response to Question 1a) for more detail.)

5) Can you point to existing initiatives that could be replicated or scaled up at the international level?

Please share a weblink to the suggestion(s) if available.

Health Canada's PMRA is active in providing education on pollinators and best management practices for pollinator protection and the use of neonicotinoid treated seed (see links below). Such initiatives may be adopted or adapted internationally where similar activities are not already in place.

- Pollinator protection (<https://www.canada.ca/en/health-canada/services/consumer-product-safety/pesticides-pest-management/growers-commercial-users/pollinator-protection.html>)
- Protecting pollinators when using treated seed - best management practices (<https://www.canada.ca/en/health-canada/services/consumer-product-safety/reports-publications/pesticides-pest-management/fact-sheets-other-resources/pollinator-treated-seed/best-management-practices.html>)

6) Which sectors/value chains need to be closely involved in developing solutions?

Please visit the two-page factsheet on [Neonicotinoids](#) for more information on the topic. If you select "Other", please elaborate your response.

- Agriculture and food production
- Construction
- Electronics
- Energy
- Health
- Labour
- Pharmaceuticals
- Public, private or blended finance
- Retail
- Textiles
- Transportation
- Waste
- Other: Note, apiculturists should be involved as part of the broader involvement of the agriculture and food production sector.

7) Which international forum or instrument would be best placed to take the lead on international action on neonicotinoids?

Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...

The Organisation for Economic Co-operation and Development (OECD), perhaps through its Working Party on Pesticides, may be the best placed international instrument to lead a scientific and risk-based identification of any particular regional issues pertaining to the management of neonicotinoids (as opposed to policy-based issues).

The strategic approach and sound management of chemicals and waste beyond 2020 process (i.e., SAICM beyond 2020) may be the best placed international instrument to identify and address generalized national and regional deficiencies in regulatory capacity and opportunities for capacity building.

Though the UNEP assessment paper on linkages with other clusters related to chemicals and waste is presented in this survey for consideration, it does not establish significant operational level linkages between the various chemicals and waste cluster multilateral agreements (MEAs), particularly in the context of neonicotinoids. Though the criteria for listing chemicals under some MEAs (e.g., Rotterdam Convention, Stockholm Convention) includes consideration of risk evaluations or adverse effects, there are no criteria explicitly relating to specific chemical classes of pesticides, nor are there direct references to neonicotinoids within the convention texts. Therefore, these MEAs are not directly relevant instruments for addressing neonicotinoids. In other cases, the potential relevance of neonics under other conventions (e.g., Convention on Biological Diversity) has yet to be comprehensively established.

7a) Which international agendas have important linkages with neonicotinoids?

For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)

- Agriculture and Food
- Biodiversity
- Climate Change
- Health
- Human Rights
- Sustainable Consumption and Production
- World of Work
- Other:

7b) Please elaborate on the important linkages with neonicotinoids, including examples if possible.

For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)

As per response to Question 7, though the UNEP assessment paper on linkages with other clusters related to chemicals and waste is presented in this survey for consideration, it does not establish clear operational linkages between the various chemicals and waste cluster MEAs, particularly in the context of neonics. (See response to Question 7 for more detail.) Similarly, the potential relevance of neonicotinoids to many of the “international agendas” items presented above has yet to be comprehensively established.

8) What priority level do you attach to neonicotinoids for international action?

- Very high
- High

Medium

Low

Very low

9) Is there any priority further work you would like to suggest at the national level?

*Please share a weblink to the suggestion(s) if available.*

Nil

10) Is there any priority further work you would like to suggest at the regional level?

*Please share a weblink to the suggestion(s) if available.*

Nothing to suggest with respect to Canada's regional levels. But Canada would encourage input from other regions that may identify particular neonicotinoid management issues and challenges, as well as challenges related to overall regulatory capacity.

## Organotins

*Organotins are organic compounds that contain at least one tin-carbon bond. There are four main groups of organotin compounds, which are used in various applications. Mono- and di-organotins are mainly used as heat stabilisers in polyvinyl chloride (PVC) in a wide range of applications, including window frames and house siding, PVC pipes, food contact blister packs and water bottles. Tri-organotins are mainly used as biocides (e.g. in wood preservatives, in anti-fouling paints for boats and in textiles) and as pesticides. Tetra-organotins have been used as intermediates in the preparation of other organotins and as oil stabilisers.*

Please visit the two-page factsheet on [Organotins](#) for more information on the topic.

1) Do you agree with the assessment report that further international action is necessary?

(Yes/No/**Don't know**)

If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9

1a) Please provide a brief explanation for your response.

In 2008, the fourth meeting of the Conference of the Parties (COP 4) of the Rotterdam Convention on the Prior Informed Consent Procedure (PIC) for Certain Hazardous Chemicals and Pesticides in International Trade adopted the decision to add tributyltin compounds to Annex III of the Convention (Chemicals subject to the PIC procedure). In 2012, tributyltin compounds were fully phased out in Canada following comprehensive risk assessments. These substances are subject to the Prohibition of Certain Toxic Substances Regulations, 2012. The Regulations prohibit the manufacture, use, sale, offer for sale or import of certain toxic substances, and products containing them, with a limited number of exemptions.

2) What types of international actions should be taken?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Legally binding
- Soft law
- Information sharing and awareness / Voluntary initiatives
- No international actions are needed
- Other:

2a) Please explain your response, including examples if possible.

3) Which type of approach or measure would you see as appropriate to address organotins at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures
- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))
- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other:

3a) Please explain your response, including examples if possible.

4) What factors prevent action/progress on addressing organotins in your country/ organization?

- Lack of technical capacity
- Lack of scientific knowledge
- Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors
- Difficulty with resource mobilization
- Lack of economically feasible green and sustainable alternatives
- Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
- None, there are no factors preventing action or progress
- Other:

4a) Please explain your response, including examples if possible.

5) Can you point to existing initiatives that could be replicated or scaled up at the international level?

*Please share a weblink to the suggestion(s) if available.*

6) Which sectors/value chains need to be closely involved in developing solutions?

*Please visit the two-page factsheet on [Organotins](#) for more information on the topic. If you select "Other", please elaborate your response.*

- Agriculture and food production
- Construction
- Electronics
- Energy
- Health
- Labour
- Pharmaceuticals
- Public, private or blended finance
- Retail
- Textiles
- Transportation
- Waste
- Other:

7) Which international forum or instrument would be best placed to take the lead on international action organotins?

*Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...*

7a) Which international agendas have important linkages with organotins?

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

- Agriculture and Food
- Biodiversity
- Climate Change



- Health
- Human Rights
- Sustainable Consumption and Production
- World of Work
- Other:

7b) Please elaborate on the important linkages with organotins, including examples if possible.

For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)

8) What priority level do you attach to organotins for international action?

- Very high
- High
- Medium
- Low
- Very low

9) Is there any priority further work you would like to suggest at the national level?

*Please share a weblink to the suggestion(s) if available.*

10) Is there any priority further work you would like to suggest at the regional level?

*Please share a weblink to the suggestion(s) if available.*

## Phthalates

*Phthalates are a large family of semi-volatile organic compounds. They are a group of plasticizers with softening and elastic effects, and they are produced in high volumes to be used in products such as vinyl flooring, adhesives, detergents, lubricating oils, automotive plastics, plastic clothing and personal care products. Phthalates accounted for 65 per cent of global consumption of plasticizers in 2017.*

Please visit the two-page factsheet on [Phthalates](#) for more information on the topic.

1) Do you agree with the assessment report that further international action is necessary?

(Yes/No/Don't know)

If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9

1a) Please provide a brief explanation for your response.

Phthalates are semi-volatile organic compounds produced in high volumes, have a widespread use, and have been detected in a variety of media (air, water, sediment, soil) around the globe, including in remote Arctic air. They are generally not persistent and not bioaccumulative. However, some phthalates like DEHP can be considered pseudo-persistent because of their continual release into the environment. Some phthalates also have a potential for long-range transport when associated with fine particles. Many phthalates, including DEHP, are highly hazardous because of their potential for effects on the endocrine system (refer to the endocrine disrupting chemicals section on page 61). The Canadian assessment determined that DEHP has the potential to cause adverse effects in populations of aquatic organisms at concentration considerably lower than the predicted Canadian environmental concentrations. Regulatory measures are being developed in Canada to address this concern.

2) What types of international actions should be taken?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Legally binding
- Soft law
- Information sharing and awareness / Voluntary initiatives
- No international actions are needed
- Other:

2a) Please explain your response, including examples if possible.

Canada is of the view that phthalates that meet the main criteria of POPs such as persistence, long range transportability, ability to bioaccumulate, and high toxicity could be addressed at the international level by listing them under the Stockholm Convention.

For phthalates that do not comply with such criteria, Canada supports information sharing and awareness / voluntary initiatives” to promote education and best practices for the responsible use and disposal of those substances for the protection of human health and the environment. This could be done under the New Framework replacing SAICM.

Recognizing that legally binding instruments (e.g. bans, restrictions) already exist in some countries (e.g. U.S. EU, Australia), Canada does not support the establishment of a new legally binding Multilateral Environmental Agreement (MEA) focused on phthalates that do not comply with the POPs criteria. Information sharing and awareness / voluntary initiatives” may also facilitate increases in regulatory capacity in jurisdictions where deficiencies can be identified. This may also lead to national or regionally appropriate expansion of legally-binding measures within certain jurisdictions.

Comprehensive and robust frameworks and legally binding instruments at the national level are needed to ensure fair and equitable trade, as well as a consistent actions and pressure on producers/suppliers to achieve global reduction of hazardous phthalates.

3) Which type of approach or measure would you see as appropriate to address phthalates at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures
- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))
- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other:

3a) Please explain your response, including examples if possible.

Canada recognizes that robust regulatory control measures at the national level are key to prevent an influx of producers and suppliers to countries with the lowest environmental standards, and to promote fair and equitable trade.

The risks of concern, identified by Canada, are based on the release of DEHP from off-site wastewater treatment systems (e.g., industrial facilities manufacturing plastic products, as well as residential and commercial users) and disperse releases from consumer products (e.g., landfill leachates). Phthalates are not chemically bound to polymer matrices, so they can migrate out of products over time and then possibly enter the environment. and disperse releases from consumer products (e.g., landfill leachates). Phthalates are not chemically bound to polymer matrices, so they can migrate out of products over time and then possibly enter the environment. Domestic regulatory measures are needed to protect aquatic organisms in the environment (i.e., biodiversity) as they are not a priority as compared to human health for most countries.

4) What factors prevent action/progress on addressing phthalates in your country/ organization?

- Lack of technical capacity
- Lack of scientific knowledge
- Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors
- Difficulty with resource mobilization
- Lack of economically feasible green and sustainable alternatives
- Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
- None, there are no factors preventing action or progress
- Other:

4a) Please explain your response, including examples if possible.

Lack of up to date data on total quantity of DEHP manufactured, imported and used in Canada. Need to develop analytical methods to monitor DEHP in water, wastewater, sediments and landfill leachate (e.g., current method detection limit is higher than the Predicted No-Effect Concentration for aquatic organisms due to high background levels of DEHP in blanks, ubiquitous). Lack of resources (staff and money) to proceed with monitoring program.

5) Can you point to existing initiatives that could be replicated or scaled up at the international level?

*Please share a weblink to the suggestion(s) if available.*

Most current regulatory measures (e.g., Canada, US, Australia, EU) either ban or restricts concentrations of phthalates (e.g., maximum concentration for DEHP in products of 0.1% (w/w)) in consumer products.

Examples:

- Section 7 of the [Risk management approach for 1,2-Benzenedicarboxylic acid, bis\(2-ethylhexyl\) ester \(DEHP\) - Canada.ca](#)
- Table B-9-1 of the UNEP [Annexes to the Assessment Report on Issues of Concern](#).

A phased-approach to implementation may be necessary to consider industry factors (e.g., production cycles) and additional information gathered with respect to DEHP in consumer and commercial products.

A system with permit application to allow certain uses while others are prohibited may also be considered.

6) Which sectors/value chains need to be closely involved in developing solutions?

*Please visit the two-page factsheet on [Phthalates](#) for more information on the topic. If you select "Other", please elaborate your response.*

- Agriculture and food production
- Construction
- Electronics
- Energy
- Health
- Labour
- Pharmaceuticals
- Public, private or blended finance
- Retail
- Textiles
- Transportation
- Waste
- Other: manufacturers of chemicals; polymer compounding companies; material science consultants; parts manufacturers

7) Which international forum or instrument would be best placed to take the lead on international action on phthalates?

*Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...*

The Stockholm Convention addresses POPs and, as pointed, could be used as the instrument to address phthalates if they meet the main criteria in Annex D of the Convention. DEHP does not meet the persistence and bioaccumulation criteria as defined in the *Persistence and Bioaccumulation Regulations* made under the *Canadian Environmental Protection Act, 1999*. However, it is ubiquitous in the Canadian environment, possibly due to continual release in high loadings from the manufacture, use and disposal of a wide range of commercial and consumer products.

Work would be needed by the Basel Convention to assess if wastes containing DEHP are hazardous waste and if the current scope of the Convention includes DEHP.

7a) Which international agendas have important linkages with phthalates?

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

- Agriculture and Food
- Biodiversity
- Climate Change
- Health
- Human Rights
- Sustainable Consumption and Production
- World of Work
- Other:

7b) Please elaborate on the important linkages with phthalates, including examples if possible.

For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)

DEHP is not chemically bound into polymer matrices during manufacturing/processing activities and can migrate to the surface of polymer products over time. Therefore, it has the potential to leach out of primary or recycled products and wastes (e.g., landfill leachates).

8) What priority level do you attach to phthalates for international action?

- Very high
- High
- Medium
- Low
- Very low

9) Is there any priority further work you would like to suggest at the national level?

*Please share a weblink to the suggestion(s) if available.*

Nil

10) Is there any priority further work you would like to suggest at the regional level?

*Please share a weblink to the suggestion(s) if available.* Nil

Nothing to suggest with respect to Canada's regional levels. But Canada would encourage input from other regions that may identify particular phthalates management issues and challenges, as well as challenges related to overall regulatory capacity

## Polycyclic aromatic hydrocarbons (PAHs)

*Polycyclic aromatic hydrocarbons (PAHs) are a class of more than 100 organic compounds. They occur naturally in coal and crude oil, but are also formed as a by-product during the incomplete combustion from both natural (e.g. volcanic eruptions, burning of coal, oil and gas) or anthropogenic (e.g. vehicle emissions, industrial processes, food preparation) sources. PAHs may also be present in consumer products (e.g. plastic components, footwear); however, they are never intentionally added during manufacturing. Plant-based foods may contain PAHs as a result of pollutant deposition before harvest.*

Please visit the two-page factsheet on [Polycyclic Aromatic Hydrocarbons](#) for more information on the topic.

1) Do you agree with the assessment report that further international action is necessary?

(Yes/No/Don't know)

If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9

1a) Please provide a brief explanation for your response.

Canada has recently reviewed scientific evidence about PAHs in the environment from domestic and international sources. Evidence suggests that previous management actions have had only limited success, that climate change will exacerbate environmental burdens, and that existing information is based on a suite of compounds that is not sufficiently broad to fully evaluate risks to human and environmental health. Due to the transboundary nature of this substance class, and the increase in global forest fires, international action to reduce these substances would be warranted.

2) What types of international actions should be taken?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Legally binding
- Soft law
- Information sharing and awareness / Voluntary initiatives
- No international actions are needed
- Other:

2a) Please explain your response, including examples if possible.

Some PAHs show long-range transport potential and are persistent, bioaccumulative and toxic to humans and other organisms, thus meeting the main criteria of POPs. Canada is of the view that these PAHs could be addressed at the international level by listing them under the Stockholm Convention.

Recognizing that the full extent of PAH-induced harm is not yet known, Canada does not support the establishment of a new legally binding framework/ Multilateral Environmental Agreement (MEA) focused on PAHs that do not comply with the POPs criteria. Instead, Canada supports information sharing and awareness / voluntary initiatives” to promote education and best practices for the responsible use and disposal of those substances for the protection of human health and the environment. This could be done under the New Framework replacing SAICM.

Information sharing and awareness / voluntary initiatives” may also facilitate increases in regulatory capacity in jurisdictions where deficiencies can be identified. This may also lead to national or regionally appropriate expansion of legally-binding measures within certain jurisdictions.

3) Which type of approach or measure would you see as appropriate to address PAHs at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures
- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))
- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other:

3a) Please explain your response, including examples if possible.

From a scientific point of view, it would be useful to (1) evolve environmental PAH management away from emission reductions toward consideration of environmental targets, and (2) expand the suite of compounds considered/tracked. The full extent of PAH-induced harm is not yet known. Furthermore, several new studies have shown that the existing priority PAH list may be outdated and does not include the transformed PAHs.

From a pragmatic approach, multi-tiered targets, particularly if the focus is broad (point/area/mobile sources and products) should be considered, e.g., reductions in releases/product concentrations and desired environmental presence (i.e., environmental quality guidelines) and/or exposure levels.

4) What factors prevent action/progress on addressing PAHs in your country/ organization?

- Lack of technical capacity
- Lack of scientific knowledge
- Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors



- Difficulty with resource mobilization
- Lack of economically feasible green and sustainable alternatives
- Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
- None, there are no factors preventing action or progress
- Other:

4a) Please explain your response, including examples if possible.

Lack of technical capacity: Too many complex mixtures exist. The toxicological science has failed to develop tools and techniques that are capable of evaluating the effects of complex mixtures

Lack of scientific knowledge: Gaps and discrepancies in and among inventories (facilities versus vehicles versus natural sources such as wildfires). Links to human and environmental health effects are still evolving for both cancer and non-cancer endpoints.

Difficulties in sharing knowledge and coordinating action: This difficulty arises from scientific knowledge gaps associated with source inventory issues. Integrating concerns of Indigenous peoples and vulnerable populations is still evolving.

Difficulty with resource mobilization: This is due to limitation in funding and people power.

Lack of economically feasible green and sustainable alternatives: Infrastructure for public transit, emission control strategies for key industrial sources

Only coordinated international action can address the issue: Transboundary contributions can be significant depending on location. Climate connections for wildfires and permafrost thaw/glacier melt require global action.

5) Can you point to existing initiatives that could be replicated or scaled up at the international level?

*Please share a weblink to the suggestion(s) if available.*

Nil

6) Which sectors/value chains need to be closely involved in developing solutions?

*Please visit the two-page factsheet on [Polycyclic Aromatic Hydrocarbons](#) for more information on the topic. If you select "Other", please elaborate your response.*

- Agriculture and food production
- Construction
- Electronics
- Energy
- Health
- Labour

- Pharmaceuticals
- Public, private or blended finance
- Retail
- Textiles
- Transportation
- Waste
- Other: Mining and metals

7) Which international forum or instrument would be best placed to take the lead on international action on PAHs?

*Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...*

The Stockholm Convention addresses POPs and, as pointed, could be used as the instrument to address PAHs if they meet the main criteria in Annex D of the Convention.

The Basel Convention addresses PAHs at the end of products' life cycles, but does not directly address consumer products that contain PAHs during their production and use.

Canada considers that next steps internationally to help address PHAs related issues could be housed under the SAICM beyond 2020 Instrument. Initiatives involving information sharing, awareness building, and the development of voluntary measures are well suited with the New Framework's mandate. Canada further recommends that the New Framework considers the model established and the work undertaken by the UNEP Global Mercury Partnership.

7a) Which international agendas have important linkages with PAHs?

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

- Agriculture and Food
- Biodiversity
- Climate Change
- Health
- Human Rights
- Sustainable Consumption and Production
- World of Work
- Other:

7b) Please elaborate on the important linkages with PAHs, including examples if possible.

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

Agriculture and food: Indoor exposure from food cooking in developing nations. Biomass burning of crop residues.

Biodiversity: Impacts from climate-related factors in pristine areas (e.g., global Arctic).

Climate change: Wildfires. Releases from permafrost thaw and glacier melting. Because climate change is linked to increases in forest fires, there are more PAHs emanating from this source.

Health: Links to a variety of adverse health impacts in humans and wildlife. Also, some PAHs such as Benzo[a]pyrene are classified by the International Agency for Research on Cancer (IARC) as an IARC Group 1 carcinogen 'carcinogenic to humans'.

Human Rights: Right to a healthy environment. Rights of Indigenous peoples and vulnerable populations. Historically, poorer communities have been disproportionately affected by the emissions from cars and industry, making PAHs an environmental justice concern.

Sustainable consumption and production: Other issues noted here touch on this agenda as well.

World of work: Occupational exposures in industrial and domestic settings continue to add to PAH burdens among some human populations.

8) What priority level do you attach to PAHs for international action?

- Very high
- High
- Medium
- Low
- Very low

9) Is there any priority further work you would like to suggest at the national level?

*Please share a weblink to the suggestion(s) if available.*

Priorities for scientific research in Canada have been articulated in Section 6 of Galarneau (2021).

[Editorial to “Polycyclic aromatic compounds \(PACs\) in the Canadian environment: Overview of results and knowledge gaps from the special issue” - ScienceDirect](#)

With respect to global action, its recommended that collective review of key sources of PAHs to the environment and to people be conducted, followed by prioritization of those where global action would be warranted. For example:

- Industrial emissions
- Mobile emissions
- Consumer products
- Complex mixture toxicology
- Etc.

10) Is there any priority further work you would like to suggest at the regional level?

*Please share a weblink to the suggestion(s) if available.*

Nothing to suggest with respect to Canada's regional levels. But Canada would encourage input from other regions that may identify particular PAHs management issues and challenges, as well as challenges related to overall regulatory capacity.

## Triclosan

*Triclosan is a synthetic, broad-spectrum antibacterial chemical used as an additive in thousands of consumer and medical antibacterial products and plastics. It has been used commercially across the globe since the 1970s. Major global use is in cosmetics and personal care products (68%, particularly deodorants) followed by disinfection and medical use (16%) and lower amounts in paints (8%), and in plastic materials, toys and appliances (8%).*

Please visit the two-page factsheet on [Triclosan](#) for more information on the topic.

1) Do you agree with the assessment report that further international action is necessary?

(Yes/No/Don't know)

If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9

1a) Please provide a brief explanation for your response.

Canada regulates cosmetics, non-prescription drugs and natural health products. The maximum amount of triclosan allowed is:

- 0.03% in mouthwashes
- 1.0% in non-prescription drugs
- 0.3% in cosmetics and natural health products

<https://www.canada.ca/en/health-canada/services/chemicals-product-safety/triclosan.html>

Canada assessed the potential health and environmental risks of triclosan through a [chemical risk assessment](#). From the assessment, we found that triclosan is not a health risk at current levels of exposure. In addition, there is a [pollution prevention planning notice](#) for Triclosan

At the international level, however, current instruments and management actions are not aligned and have limited scope and local benefits. Sharing assessment results, management measures, and lessons learned with other countries will benefit the international community, especially developing countries and countries with economies in transition.

2) What types of international actions should be taken?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Legally binding
- Soft law
- Information sharing and awareness / Voluntary initiatives
- No international actions are needed
- Other:

2a) Please explain your response, including examples if possible.

Sharing information on assessment, risk management results and lessons learned with other countries will benefit the international community, especially developing and countries with economies in transition. Canada's regulations could serve as a model for countries that are lacking comprehensive frameworks to regulate Triclosan.

3) Which type of approach or measure would you see as appropriate to address triclosan at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures
- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))
- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other:

3a) Please explain your response, including examples if possible.

There is a need for shared information, knowledge, and experience from assessment and risk management for triclosan with other countries. Other needs include research on toxic effects of triclosan alternatives and methodologies for testing cumulative effects from all potential sources of triclosan.

Countries need information on sources of risk for triclosan and triclosan alternatives, and how to manage these risks within their own jurisdictions.

4) What factors prevent action/progress on addressing triclosan in your country/ organization?

- Lack of technical capacity
- Lack of scientific knowledge
- Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors
- Difficulty with resource mobilization
- Lack of economically feasible green and sustainable alternatives
- Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
- None, there are no factors preventing action or progress
- Other:

4a) Please explain your response, including examples if possible.

Triclosan is of low risk in Canada based on exposure levels.

As a result of the final screening assessment, a pollution prevention planning notice for triclosan was published to reduce the quantities of triclosan released to the environment. Reporting under the P2 Notice shows the risks have significantly diminished since the assessment with only 3 companies that met the reporting threshold. In addition, notification of non engagement forms were submitted indicating some companies have voluntarily removed triclosan from their products since the 2013 section 71 notice

5) Can you point to existing initiatives that could be replicated or scaled up at the international level?

*Please share a weblink to the suggestion(s) if available.*

Canada issued a [Pollution Prevention Planning Notice](#) to reduce quantities of triclosan in products manufactured in or imported into the country.

In Canada, the label on cosmetics, over-the-counter drugs and natural health products must indicate if they contain triclosan. Labeling of products containing triclosan as informing consumers about chemicals of concern in products is key for sustainable consumption and production.

In the US, the Food and Drug Administration issued a final rule stating that over-the-counter consumer antiseptic wash products (including hand soaps formulated as liquids, foams, and gels; bar soaps; and body washes) containing certain active ingredients (including triclosan) will no longer be permitted to be marketed. Banning substance and potential alternatives from over-the-counter products as could reduce releases of triclosan into the environment and protect aquatic biodiversity.

6) Which sectors/value chains need to be closely involved in developing solutions?

*Please visit the two-page factsheet on [Triclosan](#) for more information on the topic. If you select "Other", please elaborate your response.*

- Agriculture and food production
- Construction
- Electronics
- Energy
- Health
- Labour
- Pharmaceuticals
- Public, private or blended finance
- Retail
- Textiles
- Transportation
- Waste

- Other:

7) Which international forum or instrument would be best placed to take the lead on international action on triclosan?

*Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...*

Canada considers that next steps internationally to help address Triclosan related issues could be housed under the SAICM beyond 2020 Instrument. Initiatives involving information sharing, awareness building, and the development of voluntary measures are well suited with the New Framework's mandate. Canada further recommends that the New Framework considers the model established and the work undertaken by the UNEP Global Mercury Partnership

7a) Which international agendas have important linkages with triclosan?

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

- Agriculture and Food
- Biodiversity
- Climate Change
- Health
- Human Rights
- Sustainable Consumption and Production
- World of Work
- Other:

7b) Please elaborate on the important linkages with triclosan, including examples if possible.

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

**Biodiversity:** Triclosan is highly toxic to a variety of aquatic organisms, such as algae and fish. Adverse effects observed include reduced growth, reproduction and survival, and there is evidence of effects on the endocrine system of aquatic organisms at environmentally relevant concentrations. This substance is also highly toxic to certain soil organisms.

**Human Health:** The Government of Canada conducted an assessment to address the potential for harm to Canadians and the environment from [triclosan](#). Available information from laboratory studies indicates that triclosan may have effects on liver function. This was considered to be the important or critical effect used for determining the risk to human health in this assessment. Effects on the endocrine system, specifically on the thyroid, were also considered. A review of available information on the potential for triclosan to cause [antimicrobial resistance](#) was conducted. Based on available information, there is no clear link between products containing triclosan and increased antimicrobial resistance. As a result of the assessment, the Government concluded that triclosan is not harmful to human health at levels of exposure current at the time



of the assessment. However, the Government also concluded that triclosan is entering or may enter the environment at levels that are harmful to the environment.

Sustainable Consumption and Production: Triclosan is an ingredient added to many consumer products intended to reduce or prevent bacterial contamination. It is added to some antibacterial soaps and body washes, toothpastes, and some cosmetics Human exposure to triclosan occurs primarily through the skin or mouth during the use of triclosan-containing products, with only a minor contribution via environmental exposures.

8) What priority level do you attach to triclosan for international action?

- Very high
- High
- Medium
- Low
- Very low

9) Is there any priority further work you would like to suggest at the national level?

*Please share a weblink to the suggestion(s) if available.*

Labeling of products containing triclosan as informing consumers about chemicals of concern in products is key for Sustainable Consumption and Production. No other suggestions apart from this for the national level as there is a pollution prevention planning notice in effect for triclosan to address the ecological risk in Canada.

10) Is there any priority further work you would like to suggest at the regional level?

*Please share a weblink to the suggestion(s) if available.*

Nothing to suggest with respect to Canada's regional levels. But Canada would encourage input from other regions that may identify particular triclosan management issues and challenges, as well as challenges related to overall regulatory capacity.

## Chemicals in Products (CiP)

*Chemicals may be released at any stage of a product's life cycle (including production, use, recycling or reuse, end-of-life disposal), resulting in potential exposures for humans and the environment. Information exchange in the value chain is fundamental for manufacturers, brands, retailers, end-consumers, waste managers and regulators in identifying and soundly managing any chemicals of technical, environmental or human health concerns in products.*

*CiP was identified as an issue of concern under SAICM at ICCM2 in 2009, "with a view of taking appropriate cooperative actions, to consider the need to improve the availability of and access to information on chemicals in products in the supply chain and throughout their life cycle". SAICM stakeholders also identified four priority sectors: textiles, toys, building products and electronics.*

*Please visit the two-page factsheet on [Chemicals in Products](#) for more information on the topic.*

1) Do you agree with the assessment report that further international action is necessary?  
(Yes/No/Don't know)

If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9

1a) Please provide a brief explanation for your response.

2) What types of international actions should be taken?

*Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options*

- Legally binding
- Soft law
- Information sharing and awareness / Voluntary initiatives
- No international actions are needed
- Other:

2a) Please explain your response, including examples if possible.

3) Which type of approach or measure would you see as appropriate to address CiP at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures
- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))
- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other:

3a) Please explain your response, including examples if possible.

4) What factors prevent action/progress on addressing CiP in your country/ organization?

- Lack of technical capacity
- Lack of scientific knowledge
- Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors
- Difficulty with resource mobilization
- Lack of economically feasible green and sustainable alternatives
- Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
- None, there are no factors preventing action or progress
- Other:

4a) Please explain your response, including examples if possible.

5) Can you point to existing initiatives that could be replicated or scaled up at the international level?

Please share a weblink to the suggestion(s) if available.

6) Which sectors/value chains need to be closely involved in developing solutions?

Please visit the two-page factsheet on [Chemicals in Products](#) for more information on the topic. If you select "Other", please elaborate your response.

- Agriculture and food production
- Construction
- Electronics
- Energy
- Health
- Labour
- Pharmaceuticals
- Public, private or blended finance
- Retail
- Textiles
- Transportation
- Waste
- Other:

7) Which international forum or instrument would be best placed to take the lead on international action on CiP?

Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...

7a) Which international agendas have important linkages with CiP?

For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)

- Agriculture and Food
- Biodiversity
- Climate Change
- Health
- Human Rights
- Sustainable Consumption and Production
- World of Work
- Other:

7b) Please elaborate on the important linkages with CiP, including examples if possible.

For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)

8) What priority level do you attach to CiP for international action?

- Very high
- High
- Medium
- Low
- Very low

9) Is there any priority further work you would like to suggest at the national level?

*Please share a weblink to the suggestion(s) if available.*

10) Is there any priority further work you would like to suggest at the regional level?

*Please share a weblink to the suggestion(s) if available.*

## Endocrine Disrupting Chemicals (EDCs)

*An EDC is an exogenous substance or mixture that alters the function(s) of the endocrine system and consequently causes adverse health effects in an intact organism, or its progeny, or (sub)populations. Substantial efforts have been made over the past two decades to develop a better scientific understanding of EDCs and their characteristics, to test and identify EDCs, and to develop scientific approaches in order to support risk management measures.*

*In 2012, at ICCM3, EDCs were identified as an issue of concern under SAICM, and SAICM stakeholders decided “to implement cooperative actions on endocrine-disrupting chemicals with the overall objective of increasing awareness and understanding among policymakers and other stakeholders” and invited IOMC organisations to lead and facilitate a series of cooperative actions on EDCs, which was renewed in a Resolution at ICCM4.*

Please visit the two-page factsheet on [Endocrine Disrupting Chemicals](#) for more information on the topic.

1) Do you agree with the assessment report that further international action is necessary?

(Yes/No/Don't know)

If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9

1a) Please provide a brief explanation for your response.

Further international action is necessary. This is based on:

- 1) the increasing number of new chemicals in our waterways and overall environment (whether from new use, new manufacture or new importation);
- 2) the breadth of negative effects known to be associated with Endocrine Disrupting Chemicals (EDCs) (reproductive, neurological, developmental, feminizing, metabolic, carcinogenic, etc.);
- 3) the very low concentrations at which EDCs may lead to deleterious effects on organisms, their progeny, or future generations and hence population dynamics;
- 4) the simultaneous increases of data of various forms (chemical, *in vitro*, *in vivo*, laboratory animal, wild animal and human) at a time when ways to integrate these data in order to evaluate relevance is evolving.
- 5) the complexity associated with EDCs in relation to understanding the modes of action and adverse effects. There exist a lot of data gaps, and generally only the EATS (estrogen, androgen, thyroid, and steroidogenesis) pathways are best studied/developed. The plausible links between key events in Adverse Outcome Pathways (AOPs) require further work as well as identification of a broader suite of biomarkers and a better understanding of cumulative and mixture effects

Since exposures to EDCs have been shown to have adverse health effects across multiple lines of evidence (e.g., MIREC), on-going research and coordination on international level and strategic collaborations can enable advancements in science by reducing data gaps and

uncertainties, contributions to scientific approaches to assessment of EDCs, and consensus among jurisdictions.

Consideration of endocrine-related effects continues to be an important aspect of chemicals management. Under the *Canadian Environmental Protection Act, 1999* (CEPA) and the *Pest Control Products Act* (PCPA), the Government of Canada employs a scientific risk-based approach for all chemicals, regardless of their mode of action, for the protection of human health (including vulnerable sub-populations such as pregnant women, infants, and children) and the environment. This includes consideration of all available scientific evidence, including published scientific data, required studies conducted to international standards, and any epidemiological evidence on potential endocrine disrupting properties of chemicals, including pesticides.

Canada notes that different national chemical and pesticide regulatory systems may have different approaches to, and legal requirements for, achieving the shared goals of protecting human health and the environment. While the CEPA and PCPA is largely based on scientific risk assessment and value (i.e., efficacy), other systems may prioritize hazard-based classification schemes, or risk-benefit approaches.

In Canada, a science-based risk assessment and risk management approach are used to determine the acceptability of risks to human health and the environment posed by pesticides, including those with endocrine disrupting modes of action. This approach, which is consistent with international standards, requires a comprehensive set of scientific data to form the basis for hazard and risk assessments. Further, Canada employs a post-market surveillance system which includes compliance and enforcement capacity and regulatory mechanisms for the reporting and assessment of new scientific information or potential adverse effects.

Canada also notes that not all countries and regions have the same degree of regulatory capacity, and therefore supports international actions to identify particular capacity deficiencies, and to implement a broad range of regionally appropriate approaches to effectively manage specific pesticide issues.

## 2) What types of international actions should be taken?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Legally binding
- Soft law
- Information sharing and awareness / Voluntary initiatives
- No international actions are needed
- Other:

### 2a) Please explain your response, including examples if possible.

Under the authority of Canada's *Pest Control Products Act* (PCPA), legally binding conditions of registration and use are in place in Canada for all pesticides including those with endocrine disrupting modes of action.

Canada supports “information sharing and awareness / voluntary initiatives” to promote sound scientific risk assessment and management practices for chemicals with modes of action involving potential endocrine disruption. Such “Information sharing and awareness / voluntary initiatives” may also facilitate increases in regulatory and risk assessment capacity in jurisdictions where deficiencies can be identified. Scientific approaches, studies, guidance, development of case studies etc. are important tools for regulators in risk assessment and risk management of EDCs and may also lead to national or regionally appropriate expansion of legally binding measures within certain jurisdictions.

One solid example of voluntary initiative consists of increased reporting of use, manufacture or import of EDCs and of their transboundary movements. This would support and guide another advance: the increased likelihood of successful detection activities of EDCs relevant to human and environmental health in the environment, as investigators (biologists, toxicologists and regulators) would be looking in all the right places or at least many of them. It is still early in the timeline of understanding EDCs; it is for this reason that perhaps legally binding international actions may be inappropriate.

National agencies having the responsibilities of surveillance and research and innovation, among others, under their purview, could coordinate and collaborate to make sure that:

- 1) efforts are streamlined;
- 2) labours are not duplicated needlessly;
- 3) resources are bundled; and
- 4) novel findings are made known early, especially those with detrimental impacts.

3) Which type of approach or measure would you see as appropriate to address EDCs at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures
- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))
- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other:

3a) Please explain your response, including examples if possible.

All of the above are important and useful depending on the particular substance(s) and context. As per the PCPA, Canada’s comprehensive approach to pesticides regulation and use includes: (1) domestic regulatory control measures, including scientific risk-based assessments for determining approved use conditions; (2) education, compliance, enforcement and incident reporting frameworks; and (3) consideration and support of voluntary sustainable pest management strategies such as integrated pest management (IPM). Canada sees the further



adoption or adaptation of such measures as potentially appropriate means to address EDCs at the international level.

Canada has also been and will continue to be an active contributor to OECD test guideline and guidance document working groups, which have resulted updates to test guidelines and guidance documents such as including additional endocrine parameters. This has been an effective means of ensuring data on additional ED parameters is generated. Additionally, Health Canada has also been involved in Endocrine Disruptor Screening and Testing Advisory Task Force, and OECD guidance related to endocrine disruption in animal test species.

4) What factors prevent action/progress on addressing EDCs in your country/ organization?

- Lack of technical capacity
- Lack of scientific knowledge
- Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors
- Difficulty with resource mobilization
- Lack of economically feasible green and sustainable alternatives
- Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
- None, there are no factors preventing action or progress
- Other:

4a) Please explain your response, including examples if possible.

In Canada, with respect to the regulation of pesticides, there are no significant factors preventing action or progress on the regulation of EDCs. Canada's legislated mandate and primary objective is to prevent unacceptable risks to Canadians and the environment from the use of chemicals and pesticides, including those with hazards related to endocrine disrupting modes of action. See response to Question 1a) for more detail.

There can be significant data gaps associated with EDCs, in particular related to mode of action and adverse effects across species and ecosystems. Informed substitution is also an important issue for EDCs where development of green alternatives has been slow and often such new substances still have issues associated with them including similarities to chemicals they are replacing (e.g., DINCH as a phthalate replacement). Finally, understanding and managing mixture effects and cumulative risk assessment are challenging due to lack of data and their inherent complexity. Coordinated international action would be beneficial to address EDCs which enter the country via unknown supply chains or consumer products.

Re/ environmental monitoring data:

Increasing knowledge around the adverse effects of EDCs in the environment is key. However, the monitoring studies should have a few characteristics. In particular, they should:

- 1) monitor a broad range of matrices, from wastewater treatment systems (WWTS) influents and effluents to ground water, surface water and drinking water;

- 2) be designed with the intent of identifying how EDCs behave over long distances (*Do they get diluted as the water flows further and further down the watershed or along the river?*);
- 3) EDCs should be analyzed both individually and cumulatively (cumulative analyses could be a long-term goal);
- 4) share monitoring data via a central database.

Studies such as these this would spearhead positive impacts on the environment, by accurately informing regulatory activities taking place at a later date – after in-depth monitoring programmes.

Again, multiple matrices, long distances, and individual and cumulative approaches would be necessary to cover the main challenges at this time.

#### Re/ ecotoxicological data:

In particular:

- 5) EDCs should be analyzed both individually and cumulatively (cumulative analyses could be a long-term goal).
- 6) Toxicological data could be shared via a central database.

One particularly interesting series of questions might be “*Are there EDCs that exist in the environment that neutralize each other’s effects? → What are they? → Which conditions are necessary for the neutralizing effect to take place?*”

#### Appropriate risk management approaches:

Improved understanding of the potential for significant effects and/or long term harm to the environment or to Canadians is needed to inform appropriate risk management approaches for EDCs. The EU has identified that EDCs can be considered substances of very high concern, which would then be subject to restriction and authorization. Recent amendments to the *Canadian Environmental Protection Act, 1999* enables the identification of substances that pose the highest risk, to be prescribed through regulation, and the requirement to give priority consideration to prohibition of these substances. However, in the absence of regulatory criteria, it is unclear if this type of risk management approach should be prioritized or considered for EDCs in Canada.

In addition, international alignment in terms of common concerns or risk identification across trading partners can help to ensure earlier and more effective reduction of risks, particularly where substances are used in sectors/sources with integrated markets.

5) Can you point to existing initiatives that could be replicated or scaled up at the international level?

*Please share a weblink to the suggestion(s) if available.*

The Pepper Platform, or “*Plateforme public-privé pour la pré-validation des méthodes de caractérisation des perturbateurs endocriniens*”, may be a prime example. It is a public-private

platform, based in France, that allows pre-validation of methods for the identification of endocrine disruptors. Accurate methods form the main steppingstone for monitoring.

There are also a number of relevant international initiatives in place under the OECD that help address issues and advance knowledge on EDCs, for example the AOP wiki and several multilateral working groups, including the Working Parties on Hazard Assessment, Test Guideline Development, and Exposure Assessment (WPHA, WNT and WPEA, respectively).

Canada supports international initiatives to better understand the complex modes of action of endocrine disrupting chemicals, such as investments in basic research, communication, and collaboration are essential for enhancing scientific understanding and improving the assessment of all endocrine-mediated modalities.

6) Which sectors/value chains need to be closely involved in developing solutions?

Please visit the two-page factsheet on [Endocrine Disrupting Chemicals](#) for more information on the topic. If you select "Other", please elaborate your response.

- Agriculture and food production
- Construction
- Electronics
- Energy
- Health
- Labour
- Pharmaceuticals
- Public, private or blended finance
- Retail
- Textiles
- Transportation
- Waste
- Other: Consumer products and supply chain, water resources management, chemical safety, industry, and trade organizations.

7) Which international forum or instrument would be best placed to take the lead on international action on EDCs?

Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...

Though the UNEP assessment paper on linkages with other clusters related to chemicals and waste is presented in this survey for consideration, it does not establish significant operational level linkages between the various chemicals and waste cluster multilateral agreements (MEAs), particularly in the context of EDCs. Though the criteria for listing chemicals under some MEAs (e.g., Rotterdam Convention, Stockholm Convention) includes consideration of risk evaluations or adverse effects, there are no criteria explicitly relating to specific modes of action.

Therefore, these MEAs are not directly relevant instruments for addressing EDCs. In other cases, (e.g., Convention on Biological Diversity) the potential relevance of endocrine disrupting modes of action to the objectives of the convention has yet to be comprehensively established.

The Organisation for Economic Co-operation and Development (OECD), being an intergovernmental organization with 38 different member countries from around the world, may be best positioned to take the lead on EDCs as it is involved in many relevant initiatives and work, such as the development of testing and assessment guidelines and guidance documents by its various working parties (see response to question 3a), and it fosters collaboration between governments, industry, scientists, etc. New members of the OECD and other countries can benefit from its work and from the lessons learned in the area of EDCs and other chemicals' risk assessment and management.

Canada considers that next steps internationally to help address EDCs related issues could be housed under the SAICM beyond 2020 Instrument. Initiatives involving information sharing, awareness building, and the development of voluntary measures are well suited with the New Framework's mandate. Canada further recommends that the New Framework considers the model established and the work undertaken by the UNEP Global Mercury Partnership.

The beyond 2020 framework may also be an instrument to identify generalized national and regional deficiencies in scientific risk assessment and regulatory capacities, as pertaining to EDCs.

The World Health Organisation (WHO), the United Nations (UN), and the Food and Agriculture Organization of the United Nations (FAO), may be equally well positioned to coordinate and collaborate effectively.

7a) Which international agendas have important linkages with EDCs?

For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)

- Agriculture and Food
- Biodiversity
- Climate Change
- Health
- Human Rights
- Sustainable Consumption and Production
- World of Work
- Other:

7b) Please elaborate on the important linkages with EDCs, including examples if possible.

For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)

The above UNEP clusters have obvious and less obvious linkages to EDCs. However, further understanding of the relationships between these clusters, as it pertains to chemical production

and waste of EDCs, is needed. From an ecological risk assessment perspective, an important linkage with EDCs lies with environmental exposure to these substances and their effects levels as well as mixture effects. Impacts on biodiversity are also challenging to evaluate due to lack of data, ecosystem complexity including interspecies variability, vulnerable developmental stages and multi-generational effects. For example, phthalates are known to have endocrine effects but cumulative risk assessment for this class of chemical has been challenging from the ecological perspective due to lack of data. When assessed individually, their adverse environmental impact when present in environmental mixtures in real world situations may be underestimated in some cases.

In regards to health, some pharmaceuticals can be EDCs, e.g., tamoxifen. Also, it has previously been shown that pharmaceuticals in the environment play an important role in driving antimicrobial resistance (AMR) by increasing rates of horizontal transfer of resistance genes (known as horizontal gene transfer or HGT) between organisms of a same bacterial species and between organisms of different bacterial species (Wang et al., 2021). To be clear, common non-antibiotic drugs were found to enhance conjugation and HGT experimentally in the laboratory, including NSAIDS (Ibuprofen, Naproxen, Diclofenac), lipid-lowering drugs (Gemfibrozil), and beta-blockers (Propranolol).

Given that AMR is a top threat to human health, the most important linkages on the horizon may be those between EDCs and AMR. One Health Linkages. In other words, of the areas of common interest between Health and chemicals and waste management, the area of “pharmaceuticals in the environment and environmental dimension of AMR (UNEP 2022, page 14, blue box at right), may be the place where the linkages with most relevance to human and environmental health lie at this time. In particular:

(1) What are the various ways that EDCs and AMR interplay? For example, does the presence of EDCs in the environment, as well as in the organisms, increase emergence and spread of AMR? If it does, at which level is this most important – spread between bacteria? spread between animals? spread between bacteria and animals? spread between bacteria and humans? spread between animals and humans? Etc.

(2) What happens when the environmental concentrations of EDCs and of antimicrobials are mimicked in laboratory and field toxicological studies to identify the effects of their co-exposures to different species, from bacteria, algae, phytoplankton, all the way to mussels, frogs and fish, and many other organisms native to various environments?

(3) Also, since it has been shown decades ago that EDC and antibiotic molecular weights and water/octanol partition coefficients may be reliable predictors of the efficacy of various processes to eliminate them (Cicmanec 2002), can novel laboratory studies, combined with appropriate field data, help advance their clean-up and reduction?

The general idea is to “coordinate and cooperate”, as repeated numerous times in the SAICM/IP.4/INF/3 document. Since it has been agreed in the answer to question 1, that, at this time increased research is key to depict just what kind of landscape EDCs (and AMR) are associated with in the grander scheme of environmental pollution and its fallout upon organisms, biology and biodiversity, the main impetus described in this answer as well (to question 7b) is to widen and deepen our understanding of their cumulative effects.

In addition, since the greatest anthropogenic contributors to environmental pollution with antimicrobials consist of the following in decreasing order (pharmaceutical manufacturing >

hospitals > wastewater treatment systems (WWTSS) > untreated human wastes > waste and runoff from aquaculture > livestock > plant-based food production > processing facilities) (Chatterjee et al., 2018), then the priority for testing these sources for both EDC and AMR influences, such as non-antimicrobial pharmaceutical drugs known to have effects on AMR such as increasing HGT, should possibly be investigated in that same order, in other words, investigating pharmaceutical manufacturing, hospitals, and WWTPs first.

## References

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8) What priority level do you attach to EDCs for international action?

- Very high
- High
- Medium
- Low
- Very low

9) Is there any priority further work you would like to suggest at the national level?

*Please share a weblink to the suggestion(s) if available.*

Identifying chemicals that: (1) have poorly reversible and/or heritable effects, and (2) are widely dispersed in the environment, and (3) have increasing levels in the environment, and (4) are widely used for societal and technological applications, and (5) are very persistent in the environment. Such chemicals include but are not limited to EDCs (i.e., genotoxic compounds). A chemical profile such as this presents the worst chemical threat to vital earth systems that sustain life on the planet (i.e., see chemical threats to the planetary boundary).

Re/ toxicological data (quality, quantity and nature):

1. Improve testing methods and evaluation methodologies, including New Approach Methods (NAM), of the tests themselves;
2. Increase and improve EDC data, i.e.:

- a. Identify all tissues affected (cover a broad range of diverse species);
- b. Classify according to species and increase the number of relevant species (e.g., native to the countries where the EDCs have been detected);
  - Describe the nature of the effect(s) and broaden effects range such that non-lethal effects are given increased attention; and
  - Identify the period in development when the various species are sensitive.
- c. Determine whether or not the animal data are relevant to humans by seeking the most appropriate data in humans along with their corresponding epidemiological data; and
- d. Strive for a more comprehensive approach, integrating all of the following while aiming to replace, reduce and refine vertebrate animal toxicity testing:
  - Wildlife animal data
  - Laboratory animal data
  - *In vitro data*
  - *In silico data*
  - Human studies
- e. Seek collaboration between method developers, researchers, and regulatory agencies.

10) Is there any priority further work you would like to suggest at the regional level?

*Please share a weblink to the suggestion(s) if available.*

[Science approach document - ERC2 - Canada.ca](#)

Canada would encourage input from other regions that may identify particular assessment and management challenges related to EDCs, as well as general challenges related to overall scientific risk assessment and regulatory capacity. Excellent stewardship at the highest level is critical to ensure the correct methodologies (or the best ones available at the time) trickle down and are used at all levels within the hierarchy.

## Environmentally Persistent Pharmaceutical Pollutants (EPPPs)

*Pharmaceuticals, including antibiotics, and their metabolites can enter the environment through a variety of pathways, including wastewater and solid waste from pharmaceutical manufacturing, consumption and excretion, improper disposal of unused or expired products, animal husbandry and aquafarming. Their presence in the environment may result in different adverse effects on wildlife and ecosystems; some well-known cases include endangerment of some vulture species, reproductive failures in fish, and the development of antimicrobial resistance.*

*Internationally, EPPPs were recognized as an issue of concern under SAICM at ICCM4 in 2015. The same resolution “considers that information dissemination and awareness-raising on EPPP are particularly relevant and that improving the availability of and access to information on such chemicals is a priority”, “recognizes the current knowledge gaps on exposure to and the effects of EPPP”, “decides to implement cooperative actions on EPPP with the overall objective of increasing awareness and understanding among policymakers and other stakeholders”, and “requests all interested stakeholders and organizations to provide support, including expertise, financial and in-kind resources, on a voluntary basis, for such cooperative action, including by participating in developing and making available relevant information and guidance”*

Please visit the two-page factsheet on [Environmentally Persistent Pharmaceutical Pollutants](#) for more information on the topic.

1) Do you agree with the assessment report that further international action is necessary?

(Yes/No/Don't know)

If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9

1a) Please provide a brief explanation for your response.

The increase in the world population, increase in the number of drug products on the market, increase in the diagnoses of stress/anxiety/depression amongst young people in addition to the aging of the population overall, all of these factors are increasing the amount of pharmaceuticals being used. In addition, climate change may impact the receiving environment, as well as an increase in the incidence of disease and the need for pharmaceuticals.

Pharmaceuticals represent some of the most intentionally biologically active compounds to enter the environment and are also linked to EDCs.

Information sharing (e.g., development of shared database(s)) between jurisdictions and stakeholders would be appropriate and relevant for international consideration. Guidance and standard operating procedures (SOPs) for emission scenarios, including how to address cumulative exposures, would also be beneficial to assist in risk assessment work. Sharing of information at the international level on risk management strategies for pharmaceuticals is also



worthwhile, given challenges in identifying and applying risk management measures that still allow for beneficial use.

However, specific releases to the environment that would cause immediate risk beyond Anti-Microbial Resistance (AMR) are country-specific and would not warrant international risk management actions. AMR is already being addressed via separate international frameworks, which is where more intensive international engagement is required.

2) What types of international actions should be taken?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Legally binding
- Soft law
- Information sharing and awareness / Voluntary initiatives
- No international actions are needed
- Other: Joint guidance, Standard Operating Procedures

2a) Please explain your response, including examples if possible.

Canada supports “information sharing and awareness / voluntary initiatives” to promote sound scientific risk assessment and management practices. Such “Information sharing and awareness / voluntary initiatives” may also facilitate increases in regulatory and risk assessment capacity in jurisdictions where deficiencies can be identified. This may also lead to national or regionally appropriate expansion of legally binding measures within certain jurisdictions, as well as the adoption or adaptation of existing stewardship programs

Information sharing/awareness and voluntary initiatives would also be beneficial for public awareness such as take back programs, national/international logos for disposal, national/international definitions for hazardous wastes, etc.

Sharing information on pharmaceutical substances (e.g. concentration, use quantities chemical-physical properties, ecotoxicology data, potential metabolites), including on those that have not yet been brought into markets, is critical for informing risk assessment and exploring alternatives. Consolidating this information in a database that can be readily shared and updated could facilitate timely information exchange. Also, the development and sharing of strategies/approaches to address complex issues such as cumulative exposure (e.g., source-, endpoint- and chemical class-based evaluations) would be beneficial for all countries. The development of guidance and Standard Operating Procedures (SOPs) to assist with emission scenarios (e.g. WWTPs) would also be relevant.

At the national level, legally binding and soft law requirements could help with the appropriate assessment and risk management of EPPPs with international guidance on the best approach for things such as manufacturing releases (amending Good Manufacturing Practices to include environmental releases or amending risk management plans that include plans to prevent environmental releases) in addition to restricting uses for specific classes of pharmaceuticals (e.g., use of antibiotics, etc.).

3) Which type of approach or measure would you see as appropriate to address Environmentally Persistent Pharmaceutical Pollutants at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures
- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))
- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other:

3a) Please explain your response, including examples if possible.

See response for 2a)

Canada recognizes that having a comprehensive toolbox that contains all the approaches or measures listed above could be important in addressing EPPPs.

Taking an international approach such as the one used by UNEP's Persistent Organic Pollutants Review Committee (POPRC) could be beneficial for managing pharmaceuticals.

Further, Canada recognizes that robust regulatory control measures at the national level are key to prevent an influx of drug producers and suppliers to countries with the lowest environmental standards, and to promote fair and equitable trade. Increasing environmental regulations, assessment and risk management will also help to mitigate risks before they become a problem (being pro-active versus reactive).

Amending Good Manufacturing Practices to include limiting the release into the environment during manufacture would be highly beneficial as it would be required internationally and it has been shown that a high degree of environmental impact is seen at manufacturing sites (including the increase in antimicrobial resistance).

Awareness tools for consumers would be extremely helpful, as other jurisdictions are facing similar issues with improper disposal. Having consistent messaging in various jurisdictions, as possible, would be appropriate.

Monitoring at points of discharge to the environment are needed. A focus on this is extremely important because of the societal dependence on pharmaceuticals making it ethically ambiguous to take restrictive actions without negatively impacting the health of humans and animals.

4) What factors prevent action/progress on addressing Environmentally Persistent Pharmaceutical Pollutants in your country/ organization?

- Lack of technical capacity

- Lack of scientific knowledge
- Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors
- Difficulty with resource mobilization
- Lack of economically feasible green and sustainable alternatives
- Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
- None, there are no factors preventing action or progress
- Other: Ethical considerations relating to drug access and appropriate risk management.

4a) Please explain your response, including examples if possible.

Resources are tight, everywhere, to do extensive research and legislative/regulatory development so there is a lack of scientific knowledge with respect to improved testing and environmental impact. It is difficult to exchange information internationally and to coordinate and get consensus and the needed buy-in from so many international actors, including governments and stakeholders, to amend international agreements/guidelines.

There are also ethical concerns with restricting access to drugs, both in Canada and internationally. Even when alternatives are available, it is not always feasible to restrict access due to drug allergies and drug-drug interactions. This can make risk management difficult for toxic substances. Therefore, wastewater monitoring for drug mixtures is suggested.

5) Can you point to existing initiatives that could be replicated or scaled up at the international level?

*Please share a weblink to the suggestion(s) if available.*

As previously indicated, Canada is of the view that Good Manufacturing Practices (GMPs) and Risk Management Plans (RMPs) could updated/ scaled up at the internationally level in order to harmonize practices and standards.

1. [Good manufacturing practices](#)
2. Risk Management Plans
  - a. [Canada's RMP](#)
  - b. RMPs in Europe: [European Medicines Agency](#) and [Medicines Evaluation Board](#).

Other initiatives that could be replicated could updated/ scaled up at the internationally level:

A [UNEP POPRC](#) equivalent for known and emerging EPPPs

Sweden's open web-based portal ([Environmental Classification System for Pharmaceuticals](#)) that allows pharmaceutical companies to self-declare their own environmental information

6) Which sectors/value chains need to be closely involved in developing solutions?

Please visit the two-page factsheet on [Environmentally Persistent Pharmaceutical Pollutants](#) for more information on the topic. If you select "Other", please elaborate your response.

- Agriculture and food production
- Construction
- Electronics
- Energy
- Health
- Labour
- Pharmaceuticals
- Public, private or blended finance
- Retail
- Textiles
- Transportation
- Waste
- Other:

7) Which international forum or instrument would be best placed to take the lead on international action on EPPPs?

*Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...*

Canada considers that next steps internationally to help address EPPPs related issues could be housed under the SAICM beyond 2020 Instrument. Initiatives involving information sharing, awareness building, and the development of voluntary measures are well suited with the New Framework's mandate. Canada further recommends that the New Framework considers the model established and the work undertaken by the UNEP Global Mercury Partnership

The [Organisation for Economic Co-operation and Development \(OECD\)](#), being an intergovernmental organization with 38 different member countries from around the world, could also play a key role in leading the work on EPPPs as its Chemicals and Biotechnology Committee is involved in many relevant initiatives and work, such as antimicrobial resistance, and it fosters collaboration between governments, industry, scientists, etc. New members of the OECD and other countries can benefit from its work and from the lessons learned in the area of EPPPs and other chemicals' risk assessment and management.

7a) Which international agendas have important linkages with EPPPs?

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

- Agriculture and Food
- Biodiversity

- Climate Change
- Health
- Human Rights
- Sustainable Consumption and Production
- World of Work
- Other: Waste

7b) Please elaborate on the important linkages with EPPPs, including examples if possible.

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

**Agriculture and Food:** Potential impacts of contaminants in agricultural lands and irrigation water systems

**Biodiversity:** Certain pharmaceuticals may cause undesired adverse effects, including endangerment of certain species of vultures, endocrine disruption such as reproductive failures in fish, and the development of antimicrobial resistance (AMR) due to the wide use of antibacterial agents in human and veterinary medicine. For most wildlife, exposure to pharmaceuticals in the environment could be long-term, potentially occurring via multiple exposure routes, and involving mixtures of substances

**Healthy soils** are home to high microbial diversity, which is key to performing vital ecosystem functions. Antimicrobials have ecotoxicological effects that can disturb soil and plant health, reducing soil microbial diversity. Soil microbial diversity is an essential shield for the spread of AMR, as well as a main source of pharmaceutical discoveries. Soil microbial composition has been altered by human activities and climate change. Further research is necessary to establish how AMR affects biodiversity loss.

**Climate Change:** Potential impacts of contaminants in the ocean (and other waterways) with less/more water impacting how chemicals impact the environment.

**Health:** Collaboration and joint research of environmental risk assessment of drugs – AMR research and surveillance. The use of EPPPs is directly related to addressing disease and ensuring global health is maintained/improved in various sectors in a sustainable manner.

**Waste:** Sound management of chemical wastes and releases of chemicals during drug manufacture (updating both Good Manufacturing Practices and Risk Management Plans)

8) What priority level do you attach to EPPPs for international action?

- Very high
- High
- Medium
- Low
- Very low

9) Is there any priority further work you would like to suggest at the national level?

*Please share a weblink to the suggestion(s) if available.*

The Government of Canada is working on developing a modernized environmental risk assessment and risk management regulatory framework for drugs under the *Food and Drugs Act* (FDA). The FDA was recently amended to allow for the development of this regime and also to provide Health Canada the ability to risk manage environmental risks resulting from therapeutic products, including drugs. It has been difficult to obtain resources to finalize this regime which would improve efficiencies for industry by align the timing of the safety, efficacy and quality assessment and the environmental risk assessment and bring them both under one Minister and act. These regulations will provide support to the surveillance of Anti-Microbial Resistance (AMR) as all new drugs to Canada, including antibiotics, will be captured and assessed for their environmental impact before they are marketed.

A review of current and foreseeable wastewater technologies as they pertain to removal of EPPPs.

Development of approaches/strategies to address cumulative exposures from pharmaceuticals in the environment

10) Is there any priority further work you would like to suggest at the regional level?

*Please share a weblink to the suggestion(s) if available.*

Long-range transport of EPPPs (including further investigation of non-target mixtures of pharmaceuticals) in water released via surface or groundwater See The Role of Persistence in Chemical Evaluations ([Mackay et al 2014](#)).

Cumulative effects of these substances on humans, biodiversity, and the environment.

Pharmaceuticals and pesticides are the main reason the EU developed criteria for PMT (persistent, mobile and toxic) substances. Exposure occurs in non-human biota. Mobility is the main change to existing approaches (i.e., PBT, vPvB) therefore governments may want to examine just how mobility of persistent compounds is addressed at the regional level.

Canada would encourage input from other regions that may identify particular assessment and management challenges related to EPPPs (e.g., scientific risk assessment and regulatory capacity).

## Hazardous Substances within the Life cycle of Electrical and Electronic Products (HSLEEP)

*Electrical and electronic products (EEP), also referred to as electronic and electrical equipment (EEE), include any device with a circuit, battery or plug. They can contain many chemical additives for certain properties such as flame retardancy. Some chemical additives may be hazardous, including heavy metals and persistent organic pollutants (POPs), and may be released during production, use, transport, and end-of-life treatment (disposal or recycling), leading to environmental and human exposures and possible adverse effects.*

*HSLEEP was adopted as an EPI at ICCM2 in 2009. Conscious that actions are needed up-, mid- and downstream, a life cycle approach was endorsed. Despite valuable efforts made at all levels, significant challenges remain in regard to identifying, disseminating and implementing best practices at all stages of the life cycle, including design, recycling and disposal.*

*Please visit the two-page factsheet on [Hazardous Substances within the Life cycle of Electrical and Electronic Products](#) for more information on the topic.*

1) Do you agree with the assessment report that further international action is necessary?

(Yes/No/Don't know)

If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9

1a) Please provide a brief explanation for your response.

International action via global agreement has been helpful for a number of substances such as persistent organic pollutants and mercury to reduce or eliminate the use of these substances in the manufacture of products (earlier stages of the product's life cycle). However, global action would need to include addressing emerging substances that could be a concern (next generation of flame retardants, metals, PFAS, etc.) so as to avoid regrettable substitution of these alternatives in new products and emerging technologies (example EVs).

Continuing action would allow to further protect human health and the environment throughout the lifecycle of electronics including the responsible end of life management. Efforts must include the US, especially from Canada's perspective, whose economy is highly integrated with the US manufacturing sector.

2) What types of international actions should be taken?

*Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options*

- Legally binding
- Soft law
- Information sharing and awareness / Voluntary initiatives
- No international actions are needed

- Other:

2a) Please explain your response, including examples if possible.

Information sharing/ voluntary initiatives: Canada supports “information sharing and awareness / voluntary initiatives” to promote sound management practices. Such “Information sharing and awareness / voluntary initiatives” may also facilitate increases in regulatory and risk assessment capacity in jurisdictions where deficiencies can be identified. This may also lead to national or regionally appropriate expansion of legally binding measures within certain jurisdictions, as well as the adoption or adaptation of existing stewardship programs such as guidelines, codes of practice, strategies for Electrical and Electronic Products (EEP) lifecycle, supply chain transparency initiatives, etc. This could be done under the New Framework replacing SAICM.

Alternative substances used for EEP, to replace mercury, lead, and flame retardants that are being phased out could be an emerging concern of regrettable substitution at earlier stages of the EEP lifecycle. Continued research and information sharing across jurisdictions may help in addressing the risks from these emerging substances.

3) Which type of approach or measure would you see as appropriate to address HSLEEP at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures
- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))
- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other:

3a) Please explain your response, including examples if possible.

Canada supports further information-based and enforcement measures as well voluntary measures and approaches that tackle earlier life-cycle stages of EEP and that aim to find solutions to phase out or minimize the use of certain hazardous substances. Initiatives such as extended producer responsibility programs and third-party verification and labelling schemes can also be useful to address certain hazardous substances in defined product categories and to influence consumers’ purchasing decisions.

Other international measures designed to build capacity and provide support towards the development of robust, science-based domestic regulatory frameworks are particularly important given that industry/global suppliers often move their operations to countries with low environmental, social, and labour standards.



4) What factors prevent action/progress on addressing HSLEEP in your country/ organization?

- Lack of technical capacity
- Lack of scientific knowledge
- Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors
- Difficulty with resource mobilization
- Lack of economically feasible green and sustainable alternatives
- Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
- None, there are no factors preventing action or progress
- Other:

4a) Please explain your response, including examples if possible.

In the Canadian context, the main challenges are:

- Supply chain not being overly transparent.
- Jurisdictional division of powers, for example for waste management
- Lack of harmonization among North American market
- Alternative substances used for EEP, to replace mercury, lead, and flame retardants that are being phased out could be an emerging concern of regrettable substitution at earlier stages of the EEP lifecycle.

5) Can you point to existing initiatives that could be replicated or scaled up at the international level?

*Please share a weblink to the suggestion(s) if available.*

The Basel Convention's Technical guidelines on transboundary movements of electrical and electronic waste and used electrical and electronic equipment are an important resource for parties seeking to manage in a sustainable way the ever-growing e-waste stream. The sound management of hazardous substances in EEP, particularly during end-of-life treatment, is challenging. E-waste constitutes the fastest growing waste stream in the world, and their recycling rates remain low in many countries.

The [Basel Convention Partnership for Action on Challenges relating to e-waste](#) (PACE II) focuses on used and waste mobile phones, computing equipment, TV screens including LEDs, LCD, CRTs screens, audio and video equipment, refrigerators, and cooling and heating equipment. The Partnership also promotes the development of policies for the environmentally sound management of e-waste, such as EPR schemes. The programme of work of the Partnership includes the promotion of dissemination and training activities, the development of guidance documents on the environmentally sound management of used and waste e-equipment in its scope, and the implementation of pilot projects.

HSLEEPS have been a priority sector within the work on chemicals in products by SAICM with a focus on accelerating the adoption of measures by governments and value chain stakeholders to reduce the use of chemicals of concern in electronics products. Canada is of the view that

next steps internationally to help address HSLEEPs related issues could be housed under the SAICM beyond 2020 Instrument. Initiatives involving information sharing, awareness building, and the development of voluntary measures are well suited with the New Framework's mandate. Canada further recommends that the New Framework considers the model established and the work undertaken by the UNEP Global Mercury Partnership

The United Nations Industrial Development Organization (UNIDO) has worked with the secretariats of the Basel, Rotterdam and Stockholm Conventions and UNEP International Environmental Technology Centre to lead activities in this area to date. ICCM3 endorsed the addition to the Global Plan of Action of new activities related to hazardous substances within the life cycle of electrical and electronic products, including the work areas of e-products green design, environmentally sound manufacturing of e-products and awareness-raising for e-products.

The Organisation for Economic Co-operation and Development (OECD) has also been active in this area by providing guidance for the sound management of e-waste, case studies, emissions scenario documents on smelting and disposal of metals used in electrical and electronic products, workshops, etc.

Canada, Mexico and the United States are collaborating on the sound management of e-waste in North America through the [North American Commission on Environmental Cooperation \(CEC\)](#). One project involves describing the transboundary movement, or flows, of used and end-of-life computers, monitors and other electronic equipment both within, and exported from, North America. A second project involves enhancing the capability of small and medium-sized enterprises to recycle and refurbish e-waste using sound environmental practices. CEC has released a report, "[Quantitative Characterization of Domestic and Transboundary Flows of Used Electronics Products](#)," detailing trade flows of used electronics from and within North America.

[Solving the E-waste Problem \(Step\)](#) is a multi-stakeholder initiative and a global platform addressing the e-waste problem. Step develops scientific papers to help members address e-waste issues within their own organizations and provides global, objective and scientifically-based information relevant to addressing the global problem of e-waste.

Canada has implemented a [number of programs](#) on extended producer responsibility for e-waste that could be replicated in other countries.

6) Which sectors/value chains need to be closely involved in developing solutions?

Please visit the two-page factsheet on [Hazardous Substances within the Life cycle of Electrical and Electronic Products](#) for more information on the topic. If you select "Other", please elaborate your response.

- Agriculture and food production
- Construction
- Electronics
- Energy
- Health
- Labour
- Pharmaceuticals

- Public, private or blended finance
- Retail
- Textiles
- Transportation
- Waste
- Other: manufacturers of chemicals; polymer compounding companies; material science consultants; parts manufacturers

7) Which international forum or instrument would be best placed to take the lead on international action on HSLEEP?

*Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...*

Canada recommends that work on HSLEEP continues under the SAICM beyond 2020 instrument, the OECD, the Stockholm Convention (for phasing out POPs), and the Basel Convention (for transboundary movement of e-waste and their environmentally sound management), and other initiatives that have been established to share information relevant to preventing and addressing the e-waste problem at the national, regional, and international level.

7a) Which international agendas have important linkages with HSLEEP?

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

- Agriculture and Food
- Biodiversity
- Climate Change
- Health
- Human Rights
- Sustainable Consumption and Production
- World of Work
- Other:

7b) Please elaborate on the important linkages with HSLEEP, including examples if possible.

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

**Biodiversity:** E-waste can be toxic, is not biodegradable and accumulates in the environment, in the soil, air, water and living things.

**Climate change:** Every electric or electronic device ever produced has a carbon footprint, throughout its life cycle, and is contributing to climate change.

**Health:** According to the World Health Organization, [several adverse health effects](#) are caused by exposure to e-waste, including negative birth outcomes such as premature birth, changes in lung functions, and respiratory issues. Open-air burning and acid baths being used to recover

valuable materials from electronic components release toxic materials leaching into the environment. These practices can also expose workers to high levels of contaminants such as lead, mercury, beryllium, thallium, cadmium and arsenic, and also brominated flame retardants (BFRs) and polychlorinated biphenyls, which can lead to irreversible health effects, including cancers, miscarriages, neurological damage and diminished IQs.

Human rights: pollution in developing economy countries if e-waste ends up there, and people living near recycling sites/dumpsites are most impacted. Women and children are particularly impacted.

Sustainable consumption and production: a lifecycle approach is needed to address HSLEEP, e.g., EEE design and manufacture could be changed to minimize use of hazardous substances.

World of Work: Workers, aiming to recover valuable materials such as copper and gold, are at risk of exposure to over 1,000 harmful substances, including lead, mercury, nickel, brominated flame retardants and polycyclic aromatic hydrocarbons (PAHs).

8) What priority level do you attach to HSLEEP for international action?

- Very high
- High
- Medium
- Low
- Very low

9) Is there any priority further work you would like to suggest at the national level?

*Please share a weblink to the suggestion(s) if available.*

As mentioned, Canada, Mexico and the United States are collaborating on the sound management of e-waste in North America through the [North American Commission on Environmental Cooperation \(CEC\)](#). This collaboration has proven to be an effective vehicle for information-sharing and for addressing common challenges. Additional work needs to be done to overcome the numerous barriers/ factors undermining progress.

10) Is there any priority further work you would like to suggest at the regional level?

*Please share a weblink to the suggestion(s) if available.*

Canada would encourage further information sharing at the regional level, particularly regarding approaches to manage HSLEEP at various stages of the lifecycle and solutions to common challenges.

## Highly Hazardous Pesticides (HHPs)

*The FAO and WHO International Code of Conduct on Pesticide Management defines HHPs as: “Pesticides that are acknowledged to present particularly high levels of acute or chronic hazards to health or environment according to internationally accepted classification systems such as the WHO or the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) or their listing in relevant binding international agreements or conventions. In addition, pesticides that appear to cause severe or irreversible harm to health or the environment under conditions of use in a country may be considered to be and treated as highly hazardous”.*

*At ICCM4 in 2015, HHPs were identified as an issue of concern. In addition, among other actions, governments and other stakeholders supported “concerted action to address HHPs in the context of SAICM” and encouraged “relevant stakeholders to undertake concerted efforts to implement the strategy at the local, national, regional and international levels, with emphasis on promoting agroecologically-based alternatives and strengthening national regulatory capacity to conduct risk assessment and risk management, including the availability of necessary information, mindful of the responsibility of national and multinational enterprises”, and welcomed “the offer of the FAO, UNEP and WHO to develop modalities for international coordination in the context of the IOMC”*

Please visit the two-page factsheet on [Highly Hazardous Pesticides](#) for more information on the topic.

1) Do you agree with the assessment report that further international action is necessary?

(Yes/No/Don't know)

If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9

1a) Please provide a brief explanation for your response.

In Canada, a science-based risk assessment and risk management approach are used to determine the acceptability of risks to human health and the environment posed by pesticides, including HHPs. This is consistent with other international regulators and requires comprehensive scientific data as the basis of hazard and risk assessments. Further, Canada employs a post-market surveillance system which includes compliance and enforcement capacity, and regulatory mechanisms for the reporting and assessment of new scientific information or potential adverse effects.

Canada's *Pest Control Product Act (PCPA)*, does not have provisions for the classification of pesticides as “HHPs”, or for the regulation of HHPs as a subcategory of pesticides. However, the Canadian regulatory system *fully* incorporates consideration of the inherent hazard level of pesticides, as well as the potential for exposure to such hazards. Mitigation measures are established proportionate to the hazard level of pesticides. As hazard levels increase, the following may be applied: larger uncertainty factors; additional use restrictions/directions (e.g. increase personal protective equipment, restrictions on who can use or access products, etc.); targeted education and enforcement; and, denial of registration.

Canada notes that different national pesticide regulatory systems may have different approaches to, and legal requirements for, achieving the shared goals of protecting human health and the environment. While the PCPA is largely based on scientific risk assessment and value (i.e., efficacy), other systems may prioritize hazard-based classification schemes, or risk-benefit approaches.

Canada also notes that not all countries and regions have the same degree of regulatory capacity and that other regions, (e.g. LMICs) may face unique HHP management challenges. Therefore, Canada supports international actions to identify and prioritize specific regulatory deficiencies, and to implement a broad range of regionally appropriate measures. This varied approach is consistent with the *International Code of Conduct on Pesticide Management Guidelines on Highly Hazardous Pesticides* (FAO, 2016), which states, i) “Countries are encouraged to identify the HHPs in use, to assess the risks involved and to decide upon appropriate measures to mitigate these risks”, and ii) “Prohibition ... may be considered *if*, based on risk assessment, risk mitigation measures or good marketing practices are insufficient to ensure that the product can be handled without unacceptable risk to humans and the environment.”

2) What types of international actions should be taken?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Legally binding
- Soft law
- Information sharing and awareness / Voluntary initiatives
- No international actions are needed
- Other:

2a) Please explain your response, including examples if possible.

Under the authority of the PCPA, legally binding conditions of registration and use are in place in Canada for all pesticides.

Canada supports “information sharing and awareness / voluntary initiatives” to promote sound scientific risk assessment and management practices. Such “Information sharing and awareness / voluntary initiatives” may also facilitate increases in regulatory and risk assessment capacity in jurisdictions where deficiencies can be identified. This may also lead to national or regionally appropriate expansion of legally binding measures within certain jurisdictions, as well as the adoption or adaptation of existing stewardship programs.

It is also noted that presently there are multiple lines of discussion and advocacy co-occurring on HHPs, not only across various international fora, but also *within* individual international instruments and multilateral environmental agreements. A consolidation of these lines of discussion could enhance transparency and facilitate international advancement on the effective management of HHPs.

3) Which type of approach or measure would you see as appropriate to address HHPs at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures
- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))
- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other:

3a) Please explain your response, including examples if possible.

As per the PCPA, Canada's comprehensive approach to pesticides regulation and use includes: (1) domestic regulatory control measures, including scientific risk-based assessments for determining approved use conditions; (2) education, compliance, enforcement and incident reporting frameworks; and (3) consideration and support of voluntary sustainable pest management strategies (such as integrated pest management (IPM)). Adoption or adaptation of these measures as well as established stewardship programs (e.g. CleanFarms, <https://cleanfarms.ca/>) may be appropriate means for addressing certain HHP-related issues.

4) What factors prevent action/progress on addressing HHPs in your country/ organization?

- Lack of technical capacity
- Lack of scientific knowledge
- Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors
- Difficulty with resource mobilization
- Lack of economically feasible green and sustainable alternatives
- Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
- None, there are no factors preventing action or progress
- Other:

4a) Please explain your response, including examples if possible.

In Canada, a science-based risk assessment and risk management approach are used to determine the acceptability of risks to human health and the environment. Though the PCPA and Canada's regulatory system does not include provisions for the classification of pesticides as "HHPs", or for the regulation of HHPs as subcategory of pesticides, the relative

hazardousness of individual pesticides is *fully* considered. See response to Question 1a) for more detail.

5) Can you point to existing initiatives that could be replicated or scaled up at the international level?

*Please share a weblink to the suggestion(s) if available.*

Nil

6) Which sectors/value chains need to be closely involved in developing solutions?

*Please visit the two-page factsheet [Highly Hazardous Pesticides](#) for more information on the topic. If you select "Other", please elaborate your response.*

- Agriculture and food production
- Construction
- Electronics
- Energy
- Health
- Labour
- Pharmaceuticals
- Public, private or blended finance
- Retail
- Textiles
- Transportation
- Waste
- Other: Power line companies (e.g. maintenance of power lines)

7) Which international forum or instrument would be best placed to take the lead on international action on HHPs?

*Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...*

According to the HHP criteria, as outlined in the *International Code of Conduct on Pesticide Management Guidelines on Highly Hazardous Pesticides* (FAO, 2016), substances listed under the Rotterdam Convention, the Stockholm Convention and the Montreal Protocol are *designated* as HHPs. As such, these instruments are already the *de facto* leads on broad aspects of global HHP management. These Conventions remain well placed to continue with these long-established roles in the global management of HHPs. These conventions provide for: i) prior informed consent and information exchange in international trade of HHPs; ii) the global elimination or restriction of HHPs that are persistent organic pollutants; iii) and the global elimination or restriction of HHPs that are ozone depleting substances or greenhouse gases. The Basel Convention also has an established role in addressing HHP waste issues through its linkages to one or more of the aforementioned conventions. These multilateral agreements



amount to internationally agreed upon mechanisms for global bans of certain HHPs, and for the international management of others.

Given that these four well-established multilateral agreements support different aspects of the global management of HHPs, the potential role of other instruments, such as the *Strategic approach and sound management of chemicals and waste beyond 2020 process* (i.e., SAICM beyond 2020), the OECD Working Party on Pesticides, or the FAO's action plan initiatives, is necessarily limited. Instruments outside of the BRS conventions and Montreal protocol should focus on identifying national and regional issues, prioritization of these issues, and facilitating a broad range of appropriate solutions.

It is also noted that presently there are multiple lines of discussion and advocacy co-occurring on the topic of HHPs, not only across various international fora, but also within individual international instruments and multilateral environmental agreements. A consolidation of these discussions and actions should be a priority with the aim of enhancing transparency, and increasing efficacy of action while facilitating international cooperation on the management of HHPs.

7a) Which international agendas have important linkages with HHPs?

For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)

- Agriculture and Food
- Biodiversity
- Climate Change
- Health
- Human Rights
- Sustainable Consumption and Production
- World of Work
- Other:

7b) Please elaborate on the important linkages with HHPs, including examples if possible.

For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)

Though the *UNEP assessment paper on linkages with other clusters related to chemicals and waste* is presented in this survey for consideration, it does not establish clear operational linkages between the various chemicals and waste cluster MEAs, nor does it present linkages of direct relevance to HHPs. Similarly, the potential relevance of HHPs to many of the "international agendas" items presented above has yet to be comprehensively established.

8) What priority level do you attach to HHPs for international action?

- Very high

- High
- Medium
- Low
- Very low

9) Is there any priority further work you would like to suggest at the national level?

*Please share a weblink to the suggestion(s) if available.*

Nil

10) Is there any priority further work you would like to suggest at the regional level?

*Please share a weblink to the suggestion(s) if available.*

No. HHPs are highly regulated within Canada, as is generally the case in Canada's regional level. However, Canada would encourage input from both within our regions and other regions that may identify issues and challenges with the management of HHPs and overall regulatory capacity.

## Lead in Paint

*Lead is a multi-system toxicant for which no safe level of exposure has been identified. Exposure to lead can cause chronic and debilitating health impacts in all age groups, and children are particularly vulnerable to its neurotoxic effects. The widespread use of lead has caused extensive environmental and human exposure across the globe. One major source of exposure, particularly for children, is through “lead paint”, or paint to which lead compounds have been added as pigments, drying agents or anti-corrosives.*

*Among others, “Lead in Paint” was recognized as an issue of concern under the second session of the International Conference on Chemicals Management (ICCM2) in 2009. The ICCM2 also endorsed the establishment of an international partnership, the Global Alliance to Eliminate Lead Paint (GAELP), to assist in phasing out lead paint worldwide. The GAELP aims to have all countries adopt “legally binding laws, regulations, standards and/or procedures to control the production, import, sale and use of lead paints with special attention to the elimination of lead decorative paints and lead paints for other applications most likely to contribute to childhood lead exposure” and to have all paint manufacturers eliminate “the use of added lead compounds in priority areas” by 2020.*

Please visit the two-page factsheet on [Lead in Paint](#) for more information on the topic.

1) Do you agree with the assessment report that further international action is necessary?

(Yes/**No**/Don't know)

If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9

1a) Please provide a brief explanation for your response.

The scope of existing international actions in terms of awareness raising, partnerships, model tools and guidelines, and GEF project funding seems sufficient. While some additional pressure could perhaps be brought to bear on global paint manufacturers, action now needs to be taken by national governments.

The Government of Canada supports ongoing initiatives to reduce lead exposure through the elimination of lead in paint and would be supportive of its inclusion under SAICM, GALEP, or other similar fora.

2) What types of international actions should be taken?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Legally binding
- Soft law
- Information sharing and awareness / Voluntary initiatives
- No international actions are needed**
- Other:

2a) Please explain your response, including examples if possible.

No additional actions are needed at the international level, but actions targeted to strengthen existing measures may be appropriate.

The appropriate actions should be taken at the country level. For example, in a country where lead in paint is very prevalent and the industry does not yet have the means to phase it out, outreach and voluntary actions may be appropriate initial action before working up to soft law and legally binding actions.

3) Which type of approach or measure would you see as appropriate to address Lead in Paint at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures
- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))
- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other: work with global paint manufacturers to phase out use

3a) Please explain your response, including examples if possible.

Efforts to improve enforcement of national regulations or other measures to phase out lead in paint in addition to working with paint manufacturers would be most useful moving forward. However, it may take a combination of measures to be able to eliminate lead in paint in a particular country.

4) What factors prevent action/progress on addressing Lead in Paint in your country/ organization?

- Lack of technical capacity
- Lack of scientific knowledge
- Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors
- Difficulty with resource mobilization
- Lack of economically feasible green and sustainable alternatives
- Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
- None, there are no factors preventing action or progress
- Other:

4a) Please explain your response, including examples if possible.

Canada sets controls for lead in paint under its *Hazardous Products Act* and regulations, including through content limits and labelling requirements. Furthermore, under the *Surface Coating Materials Regulations (SCMR)* of the *Canada Consumer Product Safety Act (CCPSA)*, the total lead content of paints and other surface coating materials manufactured, imported, advertised or sold for consumer use is restricted to no more than 90 mg/kg. Last year, Canada also published [regulatory amendments to the SCMR](#), which included broadening the definition of surface coating materials.

The Government of Canada monitors and evaluates industry compliance to the legislative and regulatory requirements under the CCPSA through post-market and risk-based compliance verification actions. Products or establishments that do not comply with the CCPSA and its regulations may be subject to enforcement actions.

5) Can you point to existing initiatives that could be replicated or scaled up at the international level?

*Please share a weblink to the suggestion(s) if available.*

[Global Alliance to Eliminate Lead Pain \(GALEP\)](#).

Perhaps positive marketing using companies such as AzkoNobel and PPG as examples of good corporate citizens would help to incentivize other paint manufacturers to also phase out lead in paint.

6) Which sectors/value chains need to be closely involved in developing solutions?

*Please visit the two-page factsheet on [Lead in Paint](#) for more information on the topic. If you select "Other", please elaborate your response.*

- Agriculture and food production
- Construction
- Electronics
- Energy
- Health
- Labour
- Pharmaceuticals
- Public, private or blended finance
- Retail
- Textiles
- Transportation
- Waste
- Other: Paint manufacturers, importers, and associations

7) Which international forum or instrument would be best placed to take the lead on international action on Lead on Paint?

Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...

There are already existing initiatives promoting the elimination of lead in paint including SAICM and Global Alliance to Eliminate Lead Paint (GALEP). Therefore, Canada is of the view that efforts must focus on strengthening the current mix of voluntary and soft law instruments at the country level

7a) Which international agendas have important linkages with Lead on Paint?

For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)

- Agriculture and Food
- Biodiversity
- Climate Change
- Health
- Human Rights
- Sustainable Consumption and Production
- World of Work
- Other:

7b) Please elaborate on the important linkages with Lead on Paint, including examples if possible.

For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)

Elevated lead in the environment can result in decreased growth and reproduction in plants and animals, and neurological effects in vertebrates.

Need to ensure Occupational Health and Safety considerations for workers renovating existing buildings with lead paint. Also use existing consumer awareness programs and purchasing programs to raise issue of lead in paint in key countries/regions.

8) What priority level do you attach to Lead on Paint for international action?

- Very high
- High
- Medium
- Low
- Very low

9) Is there any priority further work you would like to suggest at the national level?

Please share a weblink to the suggestion(s) if available.

Nil

10) Is there any priority further work you would like to suggest at the regional level?

*Please share a weblink to the suggestion(s) if available.*

Nil

## Nanotechnology and Manufactured Nanomaterials

*While no definition has been internationally agreed upon, nanomaterials are commonly defined as materials having at least one external or internal dimension between 1 and 100 nm.*

*Nanotechnology, i.e. the manipulation of matter at the nanometre scale, has rapidly developed in the past few decades and led to the widespread presence of nanomaterials in consumer products and industrial applications.*

*Despite multiple benefits associated with the technology, concerns have emerged regarding potential risks posed by manufactured nanomaterials to human health and the environment. In light of these concerns “Nanotechnology and manufactured nanomaterials” was designated an emerging policy issue at the second session of the ICCM in 2009. Stakeholders stressed the need to close knowledge gaps; to understand, avoid, reduce and manage risks; and to review the methods used for testing and assessing safety.*

*Please visit the two-page factsheet on [Nanotechnology and Manufactured Nanomaterials](#) for more information on the topic.*

1) Do you agree with the assessment report that further international action is necessary?

(Yes/No/Don't know)

If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9

1a) Please provide a brief explanation for your response.

Currently, and similarly with traditional chemicals, individual jurisdictions are responsible for assessment/management of risks related to nanomaterials – there is opportunity for greater alignment and collaboration across international jurisdictions to ensure safe outcomes for less resourced nations.

After about 2 decades of research, there is no harmonised human health risk assessment framework available for nanomaterials. They are increasingly incorporated in all sorts of products and drugs. There is an urgent need for testing methods, risk assessments and risk management " to enable countries to use them safely and to maximize the benefits that nanotechnology can offer.

Several activities, such as developing standardized tests for assessment of manufactured nanomaterials, are efforts led through the OECD. Although the scope of nanomaterials may differ slightly between the two organizations, to avoid duplication of effort the UNEP is encouraged to refer to work already conducted or soon to be conducted by the OECD. “At the international level, enabling a systematic assessment of the risks of manufactured nanomaterials may be considered” is an item that stands out to still be worked on.

2) What types of international actions should be taken?

*Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options*

Legally binding



- Soft law
- Information sharing and awareness / Voluntary initiatives
- No international actions are needed
- Other:

2a) Please explain your response, including examples if possible.

Risk management actions should match the risks identified through assessments. For chemicals that are non-nanomaterials, a variety of risk management actions can be taken, and the same should be considered for nanomaterials. However, given that a limited number of risk assessments of nanomaterials have been conducted, Canada welcomes international initiatives and efforts intended to build capacity on risk assessment methodologies and to share relevant tools, results, and approaches within jurisdictions. Currently there is a great deal of expertise and activity on this front in some jurisdictions, a more robust information sharing effort would ensure the best practices and data are being leveraged where they need to be.

Canada also supports voluntary labelling initiatives in order to raise public awareness and increase supply chain transparency. Further international actions (e.g. a legally binding instrument) could be explored once a better understanding and conclusive evidence on the human health and environmental risks imposed by nanomaterials are developed.

3) Which type of approach or measure would you see as appropriate to address Nanotechnology and manufactured nanomaterials at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures
- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))
- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other:

3a) Please explain your response, including examples if possible.

There are regulatory actions being taken by individual jurisdictions around the world with respect to nanomaterials. In order to facilitate, accelerate, and aid these actions, as well as to ensure their implementation globally, the key at this stage is increase information about nanomaterials and development of guidelines.

There are very few publications of risk assessments internationally for nanomaterials. These documents can provide guidance on what management measures may be most appropriate for given nanomaterials. Likely, a range of measures may be applied depending on the substance and its uses (e.g., nanoplastics, nanometal oxides, and carbon nanotubes have different chemistries and properties, and may need differed regulatory options for management). Given

that nanomaterials are used extensively in all sorts of products and they can adversely impact human and environmental health in low doses, efforts to understand the impacts of nanomaterials, and risk manage where appropriate, should be prioritized.

4) What factors prevent action/progress on addressing Nanotechnology and manufactured nanomaterials in your country/ organization?

- Lack of technical capacity
- Lack of scientific knowledge
- Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors
- Difficulty with resource mobilization
- Lack of economically feasible green and sustainable alternatives
- Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
- None, there are no factors preventing action or progress
- Other:

4a) Please explain your response, including examples if possible.

As mentioned, there are very few publications of risk assessments internationally for nanomaterials. In addition, research efforts are inconclusive for some nanomaterials because of their size and property varieties. Furthermore, some information may be confidential business information, or for various other reasons is challenging to share between industry stakeholders and government regulators. Lastly, information sharing between jurisdictions in this field can be limited. A trusted environment platform might allow for this to be overcome.

5) Can you point to existing initiatives that could be replicated or scaled up at the international level?

*Please share a weblink to the suggestion(s) if available.*

Much of this questionnaire is in line with Safe-and-Sustainable-by Design (SSbD) and Safe-and-Sustainable-Innovation Approach (SSIA) for nanomaterials as part of the OECD and Inter-Organisation Programme for the Sound Management of Chemicals (IOMC) which includes UNEP. Building on the development which has already occurred, or placing effort to increase the effectiveness of this initiative is suggested.

The OECD Working Party on Manufactured Nanomaterials currently coordinates the generation of test guidelines and guidance documents for safety and assessment of nanomaterials. The work within the WPMN could be scaled up and leveraged to increase input/collaboration on international level regulatory actions.

6) Which sectors/value chains need to be closely involved in developing solutions?

*Please visit the two-page factsheet on [Nanotechnology and Manufactured Nanomaterials](#) for more information on the topic. If you select "Other", please elaborate your response.*

- Agriculture and food production
- Construction
- Electronics
- Energy
- Health
- Labour
- Pharmaceuticals
- Public, private or blended finance
- Retail
- Textiles
- Transportation
- Waste
- Other: Cosmetics, chemical production

7) Which international forum or instrument would be best placed to take the lead on international action on Nanotechnology and manufactured nanomaterials?

*Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...*

OECD – WPMN - [Testing Programme of Manufactured Nanomaterials - OECD. This could be a good place to start as it already coordinates with many of the leading experts in this field among OECD member countries.](#)

INC (Intergovernmental Negotiating Committee) – nanoplastics

Basel Convention – Managing waste containing nanomaterials. Further work would be needed by the Basel Convention to assess if wastes containing nanomaterials are hazardous wastes or other wastes and if the current scope of the Convention includes all relevant nanomaterials.

There are several European (or EU based) groups such as Nano4Gov and Nano Harmony that are very active in this space.

7a) Which international agendas have important linkages with Nanotechnology and manufactured nanomaterials?

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

- Agriculture and Food
- Biodiversity
- Climate Change
- Health
- Human Rights
- Sustainable Consumption and Production

World of Work

Other:

7b) Please elaborate on the important linkages with Nanotechnology and manufactured nanomaterials, including examples if possible.

For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)

Nanotechnology and manufactured nanomaterials have applications in each of the listed fields and thus any regulatory actions on nanomaterials would have linkages to both innovations and health/safety implications for their use in the linked fields.

Health: nanomaterials are used in advanced medicine especially for drug delivery

World of Work: safety data sheets may cover CAS numbers for substances that can occur at the nano-scale and may not adequately cover potential risks. Very few risk assessments of nanomaterials have been published internationally, and work is ongoing internationally.

Nanomaterials may potentially lead to more targeted delivery / action which could decrease quantities needed relative to bulk substances.

Biodiversity: nanomaterials may be used as fertilizers and effects on non-target organisms are not well understood. There is a lack of risk management due to the gap of risk assessment of nanomaterials, and this may lead to chemical pollution to the environment.

Climate change: nanomaterials are used and expected to be used in renewable energy technology such as batteries. Carbon-based nanomaterials may be formed from waste sources of carbon dioxide and then used in industries which can store the carbon.

Agriculture and food: some nanomaterials may be used as fertilizers and chemical signals to enhance farming practises (e.g. decrease water use). Nanomaterials are used in food packaging.

Sustainable consumption and production: OECD WPMN has a strong focus on the intersection between safe and sustainable by design and nanomaterials. All examples on page 43 seem relevant.

Human rights: Canada has just received royal assent for Bill S-5 which includes the right to a healthy environment. In the next two years, the linkage between human rights and chemical management, including for nanomaterials, will be developed in more detail.

8) What priority level do you attach to Nanotechnology and manufactured nanomaterials for international action?

Very high

High

Medium

Low

Very low

9) Is there any priority further work you would like to suggest at the national level?

*Please share a weblink to the suggestion(s) if available.*

<https://www.canada.ca/en/health-canada/services/chemical-substances/nanomaterials.html> - identifies the priorities under the Chemical Management Plan for assessing and managing nanomaterials in Canada. Priorities include:

- Conducting and publishing screening assessments for existing nanomaterials under Canadian Environmental Protection Act, 1999 (CEPA 1999)
- Conducting new substance risk assessments and implementing regulatory action as needed under CEPA 1999
- Engage with stakeholders internationally (e.g. through OECD WPMN and international technical conferences) and nationally in order to conduct relevant and accurate work

10) Is there any priority further work you would like to suggest at the regional level?

*Please share a weblink to the suggestion(s) if available.*

As mentioned above, there is an urgent need for testing methods, approaches, risk assessments and risk management frameworks to better understand risk and impacts of nanomaterials on human health and the environment. Nanomaterials can offer societies many benefits and this would enable to more effectively protect human health, biodiversity, and the environment from potentially hazardous nanomaterials, and continue their safe use.

## Per- and polyfluoroalkyl substances (PFASs)

The PFAS family is composed of thousands of synthetic organic chemicals that contain at least one perfluorocarbon moiety (e.g. –CF<sub>2</sub>–) in their molecular structures. These substances have been widely used in numerous commercial and consumer applications since the late 1940s.

Since the late 1990s and early 2000s, studies have been conducted to assess some “long-chain” PFASs. Their findings resulted in the listing of perfluorooctanesulfonic acid (PFOS) and its precursors under the Stockholm Convention in 2009. That same year, at ICCM2, SAICM stakeholders identified “managing PFASs and the transition to safer alternatives” as an issue of concern. A resolution by ICCM2 further invited intergovernmental organisations, governments and other stakeholders “to consider the development, facilitation and promotion in an open, transparent and inclusive manner of national and international stewardship programmes and regulatory approaches to reduce emissions and the content of relevant perfluorinated chemicals of concern in products and to work toward global elimination, where appropriate and technically feasible”

Please visit the two-page factsheet on [Per- and polyfluoroalkyl substances \(PFASs\) and the transition to safer alternatives](#) for more information on the topic.

1) Do you agree with the assessment report that further international action is necessary?

(Yes/No/Don't know)

If you select "No", you are welcome to answer the questions below or you may proceed directly to question 9

1a) Please provide a brief explanation for your response.

PFAS are a broad class of human-made substances and have a wide range of uses in products available to consumers, industrial applications, and other specialized applications. PFAS are extremely persistent in the environment; are prone to accumulation; are mobile, able to migrate locally and over long distances. PFAS is found nearly everywhere in the environment, including air, surface and groundwater, oceans and soils, as well as in wastewater, landfill leachate, sewage sludge and contaminated sites worldwide. Some PFAS and their precursors can be transported long distances either in the air or in water. Certain PFAS are commonly detected in humans. In Canada, some subpopulations identified as having a potential for greater exposure to specific PFAS (e.g., PFNA), including certain northern Indigenous communities.

2) What types of international actions should be taken?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Legally binding
- Soft law
- Information sharing and awareness / Voluntary initiatives

- No international actions are needed
- Other:

2a) Please explain your response, including examples if possible.

Legally binding: The Stockholm Convention on Persistent Organic Pollutants (POPs) is an international environmental treaty. Three subgroups of PFAS (PFOS, PFOA and PFHxS, their salts and related compounds) are already listed to the Convention. And another subgroup of PFAS (LC-PFCAs, their salts and related compounds) was nominated by Canada and a Risk Management Evaluation is being drafted for adoption at the POPs Review Committee in October 2023. This Convention is an important tool to reduce exposure in disproportionately impacted communities. Canada welcomes initiatives aimed at supporting Parties to implement and comply with the Convention.

Soft law: Initiatives by use sector. There are already international standards for fluorine free firefighting foams. Also, standards in textile sector in the EU could be adapted in other countries, such as Canada.

Voluntary initiatives: For PFAS that do not comply with listing criteria of the Stockholm Convention, Canada supports information sharing and awareness / voluntary initiatives to promote education and best practices for the responsible use and disposal of those substances for the protection of human health and the environment. This could be done through the [OECD/UNEP Global Perfluorinated Chemicals \(PFC\) Group](#), which brings together experts from OECD member and non-member countries in academia, governments, industry and NGOs as well as representatives from other international organisations to consider the development, facilitation and promotion in an open, transparent and inclusive manner of national and international stewardship programmes and regulatory approaches to reduce emissions and the content of relevant perfluorinated chemicals of concern in products and to work toward global elimination, where appropriate and technically feasible. The Group currently leads work on voluntary initiatives, research, information sharing (e.g. webinars, reports, online portal, etc.) in order to support a global transition towards safer alternatives.

Such “Information sharing and awareness / voluntary initiatives” may also facilitate increases in regulatory and risk assessment capacity in jurisdictions where deficiencies can be identified. This may also lead to national or regionally appropriate expansion of legally binding measures within certain jurisdictions, as well as the adoption or adaptation of existing stewardship programs such as voluntary phase-out, declaration of substances, availability and access of information within the supply chain, and labelling.

Canada also supports information sharing and awareness / voluntary initiatives to promote sound scientific risk assessment and management practices

3) Which type of approach or measure would you see as appropriate to address PFASs at the international level?

Please refer to the [catalogue of international actions](#) prepared by UNEP for more information on available options

- Regulatory control measures

- Information based and enforcement measures: (such as Scientific and technical guidelines; Guidelines and tools for enforcement; Awareness tools (including of consumers))
- Options / guidance for economic instruments
- Voluntary measures and approaches: (such as Guidelines, principles and strategies)
- Measures supporting science based knowledge and research
- Other:

3a) Please explain your response, including examples if possible.

Information based and enforcement measures: These instruments are important tools to assist countries in implementing and enforcing regulatory control measures to ban or severely restrict classes of PFAS, rather than individual chemicals, and to impose stringent requirements and conditions for 'essential uses'. Canada would also welcome labelling initiatives in order to educate and empower consumers to make informed decisions.

Voluntary measures and approaches: Guidance documents could be developed, including to help industries to phase-out, best practice to decontaminate aqueous film-forming foam (AFFF) systems, and to help with testing.

Science based knowledge and research:

- PFAS are extremely persistent which requires precautionary measures to prevent their releases into the environment. In addition, their toxicology does not meet the criteria from regulatory ecological assessment (i.e. they bind to protein whereas most regulatory programs use models assessing lipid bound substances). More research is needed to understand these specific characteristics of PFAS.
- Increasing scientific knowledge on impacts of certain types of PFAS such as fluoropolymers to better understand how they behave and degrade in environmental compartments

4) What factors prevent action/progress on addressing PFASs in your country/ organization?

- Lack of technical capacity
- Lack of scientific knowledge
- Difficulties in sharing knowledge and coordinating action among different stakeholders and across sectors
- Difficulty with resource mobilization
- Lack of economically feasible green and sustainable alternatives
- Only coordinated international action can address the issue (e.g., due to transboundary effects, or prevalence of chemicals in international trade)?
- None, there are no factors preventing action or progress
- Other:

4a) Please explain your response, including examples if possible.

- Limited information available on PFAS within the supply chain, as well as the domestic manufacture of PFAS not regulated under domestic Regulations, and presence of PFAS in imported products, including manufactured items



- Lack of efficient destruction capacities for PFAS, especially for spent or decommissioned AFFF containing PFAS system/equipment.
- Some PFAS are capable of undergoing long-range atmospheric transport or in global ocean currents, as evidenced by their widespread distribution around the world, including in remote regions.

5) Can you point to existing initiatives that could be replicated or scaled up at the international level?

*Please share a weblink to the suggestion(s) if available.*

- [Stockholm Convention on Persistent Organic Pollutants \(POPs\)](#)
- [Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade](#)
- [OEC/UNEP Global PFC Webportal on PFAS](#)
- [Great Lakes Water Quality Agreement \(GLWQA\)](#)
- [Protocol on Persistent Organic Pollutants \(POPs\) \(Protocol to the UNECE Convention on Long-Range Transboundary Air Pollution \(LRTAP\)\)](#)
- [Arctic Contaminants Action Program Working Group \(ACAP\)](#)
- [Arctic Monitoring and Assessment Programme Working Group \(AMAP\)](#)

6) Which sectors/value chains need to be closely involved in developing solutions?

*Please visit the two-page factsheet on [Per- and polyfluoroalkyl substances \(PFASs\)](#) for more information on the topic. If you select "Other", please elaborate your response.*

- Agriculture and food production
- Construction
- Electronics
- Energy
- Health
- Labour
- Pharmaceuticals
- Public, private or blended finance
- Retail
- Textiles
- Transportation

- Waste
- Other: Cosmetics, food packaging materials, vehicles, firefighting operations, electronics, etc.

7) Which international forum or instrument would be best placed to take the lead on international action on PFASs?

*Please provide specific examples of e.g., Intergovernmental bodies, multilateral agreements within or outside the chemicals and waste cluster, international instruments...*

Canada considers that control measures should be focused on the Stockholm Convention whenever possible (i.e. for PFAS that are subject to long-range transport) given that it provides an effective and dynamic framework to regulate Persistent Organic Pollutants (POPs) throughout their lifecycle, addressing the production, use, import, export, releases, and disposal of these chemicals worldwide.

In addition to the Stockholm Convention, the Organisation for Economic Co-operation and Development (OECD), being an intergovernmental organization with 38 different member countries from around the world, may be best positioned to support actions on PFAS, specifically those that are not subject to long-range transport. As mentioned, the [OECD/UNEP PFC Group](#) is involved in many relevant initiatives and work, such as risk reduction approaches and transitioning to alternatives, while fostering collaboration between governments, industry, scientists, etc. New members of the OECD and other countries can benefit from its work and from the lessons learned in the area of PFAS and other chemicals' risk assessment and management. The OECD/UNEP PFC Initiatives involving information sharing, awareness building, and the development of voluntary measures for substances that do not meet the listing criteria of the Stockholm Convention are well suited with the Group's mandate. Note that the inventory of PFAS drafted by this group is already used as a basis to define PFAS by some regulatory (incl. Canada) and scientific groups.

The Basel Convention Technical Guidelines or the Environmentally Sound Management of Wastes Consisting of, Containing or Contaminated with POPs provide guidance to countries which are building their capacity to manage these type of waste in an environmentally sound manner.

In regions where countries have taken limited action to reduce the use and releases of PFAS, regional scale actions, ranging from cooperation on national regulations, or trade agreements, or a regional agreement to reduce emissions (similar to the UNECE LRTAP Convention), could be considered

The Arctic Council Action Plan can assist countries in transitioning to fluorine free firefighting foams.

7a) Which international agendas have important linkages with PFASs?

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

- Agriculture and Food
- Biodiversity
- Climate Change
- Health

- Human Rights
- Sustainable Consumption and Production
- World of Work
- Other:

7b) Please elaborate on the important linkages with PFASs, including examples if possible.

*For more information, please see the [UNEP assessment paper on linkages with other clusters related to chemicals and waste](#)*

**Biodiversity:** Depending on the substance's physical and chemical properties, certain PFAS have been found to bioaccumulate in biota. PFAS have also been reported to significantly biomagnify (that is, to accumulate to increasingly higher levels up the food chain) in air-breathing organisms (for example, mammals, birds), which can increase the likelihood of adverse effects being observed. Ecotoxic effects such as immunotoxicity and neurotoxicity as well as effects on growth, reproduction, and development, have been reported in the literature, although there are still significant data gaps for certain species, subgroups of PFAS, and types of effects studied.

**Climate Change:** A recent analysis of US Environmental Protection Agency [data](#) has revealed that PFAS are contributing to the climate crisis as their production involves the emission of potent greenhouse gases.

**Health:** Effects of concern of PFAS on human health include effects on the liver, kidney, thyroid, immune system, nervous system, metabolism and bodyweight, and reproduction and development. These effects are commonly reported in laboratory and epidemiological studies with well-studied PFAS. The International Agency for Research on Cancer has classified PFOA as possibly carcinogenic to humans.

**Sustainable Consumption and Production:** Due to their properties, PFAS are used in many industrial sectors and are found in a wide range of products, including certain firefighting foams, food packaging, non-stick cookware, drugs, cosmetics, textiles, vehicles, and electronics.

8) What priority level do you attach to PFASs for international action?

- Very high
- High
- Medium
- Low
- Very low

9) Is there any priority further work you would like to suggest at the national level?

*Please share a weblink to the suggestion(s) if available.*

There are a number of actions being taken at the national level. The Government of Canada has taken action on three subgroups of PFAS (PFOS, PFOA and LC-PFCAs, their salts and precursors) under the [Prohibition of Certain Toxic Substances Regulations, 2012](#). The Regulations prohibit the manufacture, use, sale, offer for sale and import of these 3 subgroups,

as well as products containing them, with a limited number of exemptions. [Proposed amendments](#) to the Regulations were published in May 2022 to remove or phase out most exemptions. The final Regulations are expected to be published in summer 2024, at the earliest. In addition, on May 20, 2023, the Government of Canada published the [draft State of PFAS Report](#), and the [Risk Management Scope for PFAS](#) for a 60-day public comment period. In the Risk Management Scope, it is noted that the Government of Canada is considering regulatory and/or non-regulatory controls to minimize environmental and human exposure to the class of PFAS from firefighting foams; gathering information necessary to identify and prioritize options for reducing environmental and human exposure from the class of PFAS from other sources and products; and aligning with actions in other jurisdictions, where appropriate.

10) Is there any priority further work you would like to suggest at the regional level?

*Please share a weblink to the suggestion(s) if available.*

The UNEP/OECD Global PFC Group (within the OECD WPRM) has already published a definition of PFAS, a non-exhaustive list of PFAS and several reports on available alternatives for some sectors. The work of this group could be used to inform domestic and regional action on PFAS.

Canada would encourage input from other regions that may identify particular assessment and management challenges related to PFAS, as well as general challenges related to overall scientific risk assessment and regulatory capacity.

## Final Questions

1) From the list of 19 issues, which issue(s) do you think is/are the most urgent?

- Arsenic
- Bisphenol A (BPA)
- Cadmium
- Glyphosate
- Lead
- Microplastics
- Neonicotinoids
- Organotins
- Phthalates
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Triclosan
- Chemicals in products (CiP)
- Endocrine-disrupting chemicals (EDCs)
- Environmentally Persistent Pharmaceutical Pollutants (EPPPs)
- Hazardous substances within the life cycle of electrical and electronic products (HSLEEP)
- Highly hazardous pesticides (HHPs)
- Lead in paint
- Nanotechnology and manufactured nanomaterials
- Per- and polyfluoroalkyl substances (PFASs) and the transition to safer alternatives

1a) Please explain your response

Canada recommends to prioritize international action on issues of concern that have been assigned “High” or “Very High” priority level.

3) Are there any other observations you wish to note?