

**Questionnaire to Indigenous peoples and civil society**

**Call for submissions “The impact of toxics on Indigenous peoples”**

Mandate of the Special Rapporteur on toxics and human rights

The [Special Rapporteur on toxics and human rights](https://www.ohchr.org/EN/Issues/Environment/SRToxicsandhumanrights/Pages/Index.aspx), [Marcos Orellana](https://www.ohchr.org/EN/Issues/Environment/SRToxicsandhumanrights/Pages/Marcos-A-Orellana.aspx), wishes to thank States, Indigenous peoples, civil society organisations, academic institutions, businesses, international organisations and other stakeholders for the continued engagement with this mandate. He launches the process of gathering inputs from States and other stakeholders to inform his thematic report on the impacts of toxics on Indigenous peoples and human rights. The report will be presented at the 77th session of the United Nations General Assembly in October 2022. The Special Rapporteur kindly requests States, UN agencies, civil society organizations, academics, business enterprises and all other interested parties to share views and relevant information, which could feed his work, as explained below.

**Introduction**

Indigenous peoples throughout the world are disproportionately affected by toxics and hazardous waste. Indigenous peoples maintain a deep connection to the environment, and therefore environmental pollution severely affects their bodies and cultures. The dumping of hazardous wastes in Indigenous lands is a direct assault on their rights and wellbeing.

Often, Indigenous peoples live in territories rich in natural resources, which are often exploited by business entities in irresponsible ways that contaminate the land and expose Indigenous peoples to hazardous substances. For example, artisanal and small-scale mining is causing widespread environmental toxification with mercury. Other extractive industries, such as uranium mining, have serious adverse effects on Indigenous peoples’ rights. In addition to extractive industries, agro-businesses use highly hazardous pesticides that compromise the enjoyment of human rights.

Exposure of Indigenous peoples to hazardous substances and waste infringe on their collective and individual human rights. These rights include free prior and informed consent, self-determination, lands and resources, health and well-being, culture, development, a healthy environment, water, food and subsistence, life, and security of person.

In light of these considerations, and pursuant to the Human Rights Council resolution 45/17, which calls for monitoring of “adverse consequences for persons and groups in vulnerable situations, including indigenous peoples,” the Special Rapporteur on toxics and human rights has decided to focus his upcoming thematic report to the 77th Session of the United Nations General Assembly on the impact of toxics on Indigenous peoples.

The following questionnaire seeks information on how toxics have affected Indigenous peoples’ rights and how States are taking steps to eliminate the effects of toxic exposure on Indigenous peoples. This information may include ways that Indigenous peoples are being exposed to toxics, ways that countries are preventing Indigenous peoples’ exposure to toxics, and the legal rights and remedies available to Indigenous peoples exposed to toxics and hazardous waste.

**Questionnaire**

*You can choose to answer all or some of the questions below*

1. Is your Indigenous community (or one that you represent) suffering from the adverse effects of hazardous substances and toxic wastes? Please describe the case and circumstances of these effects in detail, including the source of the toxic exposure, the types of hazardous substances you are being exposed to, the degree of government/company consultation and consent to relevant activities, as well as any efforts made by the government/company to provide effective remedies.

Inuit in Nunavik have been exposed to high concentrations of toxicants from various activities. This includes former mining exploration sites that are currently the subject of a rehabilitation program,1 the management of hazardous waste in northern landfills,2 and chemical exposures from oil spills such as one that occurred in Ivujivik in 2015 near the municipal water source.3 In addition to these events, Inuit are also exposed to higher concentrations of chemicals from indirect exposure sources. Two examples of these exposures are discussed in detail below.

Inuit populations living in the Arctic are exposed to exceptionally high concentrations of persistent organic pollutants (POPs) and mercury. POPs are a group of synthetic industrial compounds highly resistant to metabolic degradation. They are carried from southern to northern latitudes by long-range oceanic and atmospheric transport and by migrating animals. They also arrive in the Arctic via imported products. The low temperatures in the Arctic enhance the deposition of POPs in a process called “cold condensation” which further slows down their degradation.4,5 These unique Arctic geoclimatic characteristics create a sink for POPs which can be remobilized with climate change and glacial melt.6,7 POPs then bioaccumulate in Arctic food webs after redistribution in the environment, particularly in marine food webs. Since the late 1970s, high concentrations of POPs have been identified in fish, marine mammals, marine birds, and other organisms in Arctic regions, with especially elevated levels in predatory species.8–10 Many of these wildlife species are consumed by Inuit populations and the consumption of these foods constitutes a major exposure source of POPs.

Polychlorinated biphenyls (PCBs), a family of POPs, were originally highlighted as major contaminants of concern in the Arctic. Due to industrial phase-outs and international regulation (including the inclusion of PCBs under the Stockholm Convention list of POPs), PCB concentrations have decreased significantly in the last two decades.11 There are several other POPs which have been included in the Stockholm Convention on Persistent Organic Pollutants, in large part due to concerns about their ability to reach the Arctic and detrimental effects on human and environmental health. More recently, we became aware that Inuit populations are increasingly exposed to yet another group of POPs of major concern, perfluoroalkyl and polyfluoroalkyl substances (PFAS). PFAS represent a large family of synthetic compounds with various industrial and commercial applications, and are used for their ability to repel both oil and water. We recently measured nine PFAS congener concentrations in up to 1322 individuals aged 16-80 years in Nunavik, northern Quebec, Canada\*. Most notably, we detected exceptionally high concentrations of long-chain PFAS concentrations in Nunavik.11 For example, two types of long-chain PFAS, perfluorononanoic acid (PFNA) and perfluoroundecanoic acid (PFUdA), had concentrations 7-fold higher than those in the general Canadian population (Figure 1). Another long-chain PFAS, perfluorodecanoic acid (PFDA), had concentrations 3.5-fold higher compared to the general Canadian population. The congener perfluorooctanesulfonic acid (PFOS) has been internationally regulated under the Stockholm Convention since 2009,12 and while we observed a 4-fold decrease in PFOS concentrations in Nunavik compared to 2004, the concentrations remain 1.5-fold higher than the general Canadian population. The victory of the PCB ban was short-lived as the story of another set of highly persistent and toxic chemicals are now a new concern in the Arctic.

A subset of long-chain PFAS (specifically perfluoroalkyl carboxylic acids (PFCA)), their acids and their precursors were recently nominated for inclusion under the Stockholm Convention list of POPs by Canada.13 International regulation is paramount for the reduction of PFAS concentrations in the Arctic (as was shown by the reduction in PFOS concentrations), and our group is working actively to conduct research on the effects of PFAS exposure among Nunavimmiut to fill the research gaps identified by the screening requirements for inclusion in the list. Our group attended the Persistent Organic Pollutants Review Committee (POPRC) 17th meeting in January 2022 and we also hope to attend the upcoming meeting in September 2022.

Inuit also face elevated exposure to various metals, including mercury. In fact, Arctic populations are exposed to some of the highest concentrations of mercury worldwide.14 Similar to POPs, mercury is released in southern latitudes, mainly through fossil fuel combustion and artisanal gold mining activities, and is carried to northern latitudes by oceanic and atmospheric transport.15 Once converted into methylmercury (an organic form of mercury that is more readily absorbable) by microorganisms, it is biomagnified in Arctic food webs and accumulates in high concentrations in top-predator species.16 The Minamata Convention on Mercury was adopted in 2013 and aims to reduce the use and emission of mercury. To date, studies conducted in Nunavik show no indication that mercury levels in the Arctic environment have decreased in recent decades, even though a decrease in methylmercury concentrations was measured in the Inuit population.17,18 This reduction in methylmercury exposure among Nunavimmiut is likely the consequence of a decline in overall marine country food consumption and public health programs aimed at vulnerable groups including pregnant women. However, methylmercury in Nunavik remains approximately 10-fold higher than concentrations in the general Canadian population.17 Additionally, over half (57%) of women of childbearing age presented blood mercury levels above the Health Canada guideline value in 2017. We hope the impact of the Minamata Convention (officially ratified in 2017) will be measurable in the coming years. Arctic Indigenous Peoples need to be equitably engaged in the global monitoring of the effectiveness of the Convention.

As such, despite the low consumption of market foods and consumer products laced with PFAS or direct exposure to contamination sites, Inuit populations (particularly those in Nunavik) have among the highest PFAS and mercury concentrations worldwide due to global chemical production and use contaminating Arctic environments and wildlife species.19 Country foods - traditional foods harvested and hunted from the land and sea - are an integral part of Inuit culture and are crucial to sustaining food security and nutrition among pregnant women, children, and adults. Country foods are also central to Inuit knowledge transmission and taste preferences in the Arctic. Contamination of these foods with PFAS, other POPs, and mercury points to the environmental injustices Inuit are faced to endure.

In addition, Nunavimmiut (Inuit living in Nunavik) have to deal with several external stressors, largely stemming from systemic racism and enduring impacts of colonization. The combined effects of climate change, population demographic changes, high cost of hunting and harvesting activities (equipment, transportation, etc. amounting in $10,000 per household per year), and reduced food species density make it more difficult to hunt and consume country foods.20–22 Moreover, market foods are limited, more expensive, and difficult to access in northern communities compared to the south due to the elevated transportation costs of delivering goods to remote northern locations.23 The combination of all these stressors has led to almost half of Nunavimmiut with a personal income less than $20,000/year,24 and more than three-quarters experiencing some level of food insecurity.25 As such, these external stressors make Inuit even more vulnerable to the health effects of chemical contamination.

**\*Note:** Data was gathered from the *Qanuilirpitaa?* Nunavik Inuit Health Survey (Q2017), a population health survey conducted in the 14 villages of Nunavik, northern Quebec, Canada to assess the health status of aged 16 and over. The survey recruited 1326 individuals in Nunavik for this study.

1. What are the adverse impacts of toxic and hazardous waste on your Indigenous community’s (or the Indigenous peoples you represent) collective and individual rights, such as your rights to lands, resources, culture, health, livelihood, political and economic involvement, etc.?

Despite the historic and current challenges surrounding country food access, consumption of country foods is still an integral part of Inuit culture26 and the majority of Inuit consume at least some country foods. There has been a resurgence surrounding country food consumption due to their important cultural connections, superior nutritional quality, and potential to contribute to community and household food security.21,27–34 In fact, previous research has shown that Inuit households that reported having time and resources to harvest, as well as those with a hunter in the home, are less likely to be food insecure.29 Additionally, country meats such as marine mammals and caribou provide protein and essential minerals (iron and zinc);17,33,35–40 and, fish and marine mammals are excellent sources of omega-3 fatty acids, selenium, and vitamins A and D.39–43 The chemical contamination of country foods reduces their exceptional quality and can discourage their consumption among some groups. In turn, hunters relying on country foods for subsistence are also impacted economically, further adding to the lack of income and increased food insecurity.

Exposure to these chemicals can also lead to adverse health outcomes. PFAS have been associated with a wide range of adverse health outcomes, including cardiometabolic disease, immunological effects, and thyroid hormone disruption.44–47 More specifically, among Inuit communities, higher exposure to PFAS has been associated with changes in blood lipid levels and hypertension,48 asthma and allergies,49–51 changes in thyroid hormones52–55 and immune responses,56 and adverse reproductive outcomes.57 With regards to mercury, pregnant women and children are particularly vulnerable to methylmercury exposure, as this form of mercury can cross both the blood-brain and placental barriers. The Nunavik Child Development Study (NCDS) showed that prenatal chronic low-dose exposure to methylmercury is associated with several subtle adverse neurodevelopmental outcomes (including impaired attention, memory, cognition, vision and motor functions, as well as anxiety) in childhood or adolescence.58–63 Prenatal exposure to methylmercury has also been associated with the shortening of gestation by about one week.64 Similar findings were observed in the Faroe Islands, where marine mammals used to be frequently consumed.16 Although most research has shown effects of prenatal exposure, there is also some evidence that chronic postnatal exposure is associated with altered fine motor functions and reduced heart rate variability (an indication of impaired cardiovascular functions) in school-age children.60,65,66

1. Is the government implementing a right to free, prior, and informed consent regarding exposure to toxics and hazardous substances on your lands and territories?

The Nunavik Regional Board of Health and Social Services published reports (funded in part by the Canadian Northern Contaminants Program) on the most recent POPs and metal concentrations in Nunavik.11,17 These reports make use of data from the *Qanuilirpitaa?* Nunavik Inuit Health Survey conducted in 2017.

1. Is the company responsible for producing the toxics and hazardous waste implementing dialogue with regards to those substances and their consequences with your community?

Given that much of the exposure to PFAS and mercury is driven by the international use of these chemicals in industrial processes and consumer products, there are not necessarily specific companies responsible for the elevated concentrations in Nunavik. However, the POPRC meetings to review chemicals for inclusion in the Stockholm Convention list of POPs include non-profit associations representing the industry interests of chemical manufacturers. These non-profit associations play no role in implementing dialogue on the impact of their partners’ products, and instead focus on the financial interests of chemical conglomerates.

1. Have you tried to take action (either legal action, advocacy campaign, etc.) to raise awareness on the issue and/or have you tried to obtain compensation?

Legal recourse would be difficult given that exposure to these chemicals is largely global in nature. However, several advocacy initiatives have taken place over the last few decades to raise awareness on the issues surrounding chemical exposures in Nunavik (and the Arctic in general), and to support policy initiatives aimed at chemical restrictions and/or ban. This includes advocacy campaigns held in collaboration with the Canadian federal government, the Nunavik Regional Board of Health and Social Services, the Northern Contaminants Program, and the Arctic Monitoring and Assessment Programme. There has also been involvement in negotiations and implementation of the Stockholm and Minamata Conventions as part of the Inuit Circumpolar Council (ICC). More recently, it included attendance at the POPRC 17th meeting occurred through representation of several local Inuit groups from Nunavik, the ICC, and collaborating scientists.

1. What are the most significant challenges to eliminating exposure to toxics in your community?

There are several significant challenges to eliminating exposure to these toxics in Nunavik and the Arctic region in general. While attendance at the Stockholm Convention meetings has been useful to shed light on the negative impact of these chemicals at a community and human-level, several representatives (country parties and observers, and non-governmental observers from industry) at these meetings continue to support industry interests. Some of the contaminants are difficult to measure and often there is a lack of adequate technology to accurately measure their concentrations in humans. While many parties (including Indigenous groups and the Canadian representatives) advocate for a read-across approach for these difficult-to-measure subset of congeners, it may prove to be difficult to achieve a total ban on the long-chain PFCA because the lack of “sufficient” evidence may be used as a loophole which will affect successful regulations. This is despite the Stockholm Convention’s guiding principles stating that a ‘lack of full scientific certainty shall not prevent the proposal from proceeding’ (Article 8, para 7a), and that decisions as to whether or not a chemical is listed should done in a precautionary manner (e,g,, Article 1 and 8, para 9). The long review processes and the time it takes to gather scientific information makes it impossible to address the problem in a truly precautionary manner. As such, the burden of proof will lie on communities exposed to high concentrations, particularly Inuit living in circumpolar regions who have exceptionally high concentrations of long-chain PFCA congeners in their bodies and foods.

Furthermore, given the lack of policies surrounding green chemistry initiatives that ensure chemical safety *before* their production and use, the fear is that even after these chemicals are banned, inadequately tested replacements will be used, introducing a new set of chemicals of concern. In addition, in the case international regulations are implemented to completely ban long-chain PFCA and their precursors, this would only achieve further contamination of Arctic environments, food webs and communities; however, these chemicals are highly persistent and will remain in the environment for many years to come. To date, there are no implementable remediation measures that could be used to “clean” the Arctic of PFAS. This means that future Inuit generations will remain exposed to elevated concentrations of PFAS until such technology or solution is found or these persistent chemicals eventually degrade.

1. What community education does your country, or the responsible company, provide for Indigenous peoples living in areas with high exposure to toxic and hazardous waste?

Given the cultural significance of country foods and their exceptional nutrient content, community health education programs in Nunavik raise awareness on the contamination of these foods - but also stress that the benefits of country foods still outweigh the risk.

Programs such as collective kitchens are supported by the Nunavik Regional Board of Health and Social Services and funded by the Quebec and Canadian governments. Information on wildlife species most contaminated with mercury and recommendations to reduce intake of these species when needed according to the blood levels of individuals are provided based on a case-by-case approach, with special attention provided to pregnant women and young children. Unless an individual has a high mercury blood level, he/she is encouraged to consume country foods. There are no recommendations for the general public regarding PFAS exposures as their main source of exposure is country food. Indeed, country foods provide essential nutrients, promote food security, bring cultural continuities, enhance community well-being – and the regional authority believes that the benefits of country food outweigh the risks. The most viable/valuable approach is to reduce the contamination at the source.

1. What specific actions has your country taken to protect the rights of Indigenous persons exposed to toxics, in particular women and children?

Canada is undertaking a successful monitoring program of contaminants in the Canadian Arctic with the Northern Contaminants Program. This is run in partnership with territorial governments and Indigenous organizations and has prioritized Indigenous perspectives and capacity building. Canada is also taking national actions to regulate contaminants and (since it is a net-recipient of transboundary pollution) is active in global negotiations. The Canadian government has also provided funds for Indigenous organizations to conduct work in this area and to attend meetings.

More recently, Canada nominated long-chain PFCAs, their acids, and precursors to be included in the Stockholm Convention list of POPs. The inclusion of precursors was especially important given that some PFAS travel north and degrade into long-chain PFCAs once arriving in the Arctic. Canada and the ICC have also been actively involved in the Minamata Convention to reduce mercury exposures.

On a Nunavik community level, a program of medical follow-ups pertaining to mercury exposures will be implemented in the near future for pregnant women and young children. Specific recommendations on country food consumption according to one’s mercury blood level will be provided in order to decrease the blood levels during these critical periods of neurological development (foetus and young age).

1. Are there any national health assessments or studies that your country conducts to measure the rate of toxic exposure that Indigenous peoples do experience?

The Northern Contaminants Programme funds various studies to measure and monitor the concentrations of POPs and metals. They also fund studies aimed to study the environmental concentrations and health effects of these chemicals. There have been three major Nunavik Inuit Health Surveys conducted in 1992, 2004 and 2017. Additionally, the *Nutaratsaliit Qanuingisiarningit Niqituinnanut* (NQN) – Pregnancy wellness with country foods project (2017) monitored chemical exposures in pregnant women in Nunavik.

Scientific studies are regularly published in the peer-reviewed literature and are summarized in annual synopsis reports, as well as Arctic Assessment Reports. The results are also included in assessments of the Arctic Monitoring and Assessment Programme of the Arctic Council. In addition, Canada is providing significant funds to Indigenous organizations to conduct their own health studies (such as the Inuit Health Survey).

1. Does your country provide any services to Indigenous peoples and individual persons exposed to toxics, such as health care, education, etc.?

Through local health care services, targeted educational programs provide recommendations to reduce or avoid the consumption of some specific country food aiming to decrease mercury blood levels during pregnancy. In individuals with known elevated levels of mercury (measured using blood tests), there are specific dietary recommendations aiming at reducing their blood levels. The health effects of chronic exposure to PFAS in circumpolar regions are still unclear, and multiple studies are still underway to examine this.

1. Do Indigenous peoples and individuals in your country have a constitutional or legal right against the exposure of toxics on their persons or their traditional lands and territories, or are there any environmental laws/policies that require environmental remediation?

[blank- prefer not to answer at this time]

1. What are the available remedies for Indigenous peoples and individuals exposed to toxics that have experienced damages (in the form of land, health, livelihood, etc.), and what are the challenges to obtaining these remedies in your country?

[blank- prefer not to answer at this time]

1. Is traditional Indigenous knowledge and medicine available in your community to treat people exposed to toxics?

[blank- prefer not to answer at this time]

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Figure 1: PFAS geometric mean concentrations (µg/ml) in Nunavik (pregnant women and adults) compared to the general Canadian population

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