# **Submission of information on toxic environments and human rights**

Thank you for the opportunity to submit information related to toxic environments and its implications for human rights. To keep the submission within the word limits, we have provided brief context and hyperlinks to reports with more substantive information.

We have focused on specific chemicals/groups of chemicals since many of these have specific causes, hazards and need specific solutions, rather than providing information about more general pollution. We believe the focus on chemicals is vital for accountability of industry and states, as well as to identify interventions and solutions.

Overall, a wide range of violations of human rights can be seen for all of these toxic environments, such as: the rights to life and health; clean water and food; safe livelihoods; a safe, clean, healthy, and sustainable environment; and Indigenous peoples' rights.

## **Examples of toxic environments and especially impacted groups that adversely impact human rights**

### Mercury exposure

Mercury is a well-known neurotoxin that damages the kidneys and many body systems including the nervous, cardiovascular, respiratory, gastrointestinal, hematologic, immune, and reproductive systems.

IPEN released a comprehensive report on [Global Mercury Hotspots](https://ipen.org/documents/global-mercury-hotspots) in 2014 that described mercury exposure from global hot spots such as coal-fired power plants and artisanal small-scale gold mining (ASGM). This and [subsequent reports](https://ipen.org/projects/mercury-fish-and-human-hair) have revealed that mercury contamination regularly exceeds health advisory levels in humans and fish worldwide. [Reports](https://www.nexus3foundation.org/mercury) from Nexus3 Foundation in Indonesia and an [investigation](https://ipen.org/project-reports/inventory-and-mapping-mercury-use-artisanal-small-scale-gold-mining-asgm-sites) by the Centre for Environment Justice and Development (CEJAD) in Kenya show the extreme levels of mercury exposure in women and children involved in ASGM activities.

A recent [report](https://ipen.org/documents/mercury-exposure-women-four-latin-american-gold-mining-countries) from Latin America shows high levels of mercury in hair samples from women in or near the mining towns in Brazil, Venezuela, Colombia and Bolivia. The results for the Bolivian women were especially concerning: they had the highest mercury levels in our study yet have no engagement with mining or contact with mercury and are reliant on a subsistence fish diet. This suggests that many more women who have a fish rich diet in this region are at risk of high levels of mercury exposure through their diet.

### Electronic waste dumps

Electronic products contain a range of toxic substances, including toxic metals such as cadmium in the components and toxic additives to the plastic casing such as brominated flame retardants. Much of the e-waste generated globally is exported to developing countries despite provisions under the Basel Convention restricting this, as well as national and regional regulations (e.g., the WEEE Directive in the EU). E-waste is also exported under the guise of “repair” to developing countries.

In receiving countries such as Ghana, the electronics are manually broken apart and metals harvested whereas plastic components are mostly burned in the open generating toxic fumes containing dioxins, PAHs and other POPs. Not only does this constitute an immediate severe health hazard for the people living and working in these dumps, the toxic fumes leads to dioxins poisoning the food chain. See e.g. this [report](https://ipen.org/sites/default/files/documents/final_ghana-egg-report-v1_6-web_copy.pdf) by IPEN on food chain impacts in Ghana where a mix of domestic and imported e-waste plastics are burned to access valuable metals in electronics.

### Plastic waste impacts

There is overwhelming evidence that vulnerable groups in society are being exposed to toxic substances as a result of exposure to plastic wastes. There is also evidence that toxic chemical additives in plastic represent a significant health risk to recycling workers. Plastics containing POPs BFRs can generate dangerous exposure for recycling workers, including releases of brominated dioxins at the remelting and extrusion phase. Unless carefully separated from polymers that are not contaminated by POP BFRs, these POPs can leak into the overall polymer recycling chain, ending up in products such as [toys and kitchen utensils](https://ipen.org/sites/default/files/documents/toxic_toy_report_2017_update_v1_5-en.pdf) that increase human exposure, especially among [children](https://ipen.org/documents/toxic-soup-dioxins-plastic-toys) as well as in food contact materials and household products.

In some developing countries that have recently been the subject of large imports of plastic waste from developed countries following the China National Sword policy implementation, widespread environmental pollution has been reported. The practice of open burning the unrecyclable plastic waste imports or burning plastic waste as fuel has led to severe POPs contamination of [local soil and the food chain](https://ipen.org/documents/plastic-waste-poisoning-food-and-threatening-communities-africa-asia-central-eastern) in Africa, Asia, Central & Eastern Europe and Latin America.

It follows that similar contamination occurs wherever plastic waste is open burned. This has health implications for waste pickers in the informal economies of many countries who collect recyclables from landfills sites and open dumps which are often subject to continuous burning and smouldering of plastic wastes.

### Women as an especially impacted group by toxics exposures

Irrespective of the toxic environment, women are on a global scale in many cases more impacted by exposure to toxic chemicals. This includes for example women in agriculture, in electronic manufacturing industry and by chemicals added to products most prominently used by women. IPEN released a report on “[Women, chemicals and the SDGs](https://ipen.org/documents/women-chemicals-and-sdgs)” together with UNEP in 2020, describing these impacts in relation to the SAICM Emerging Policy Issues and Issues of Concern.

Women are also especially impacted by endocrine-disrupting chemicals found ubiquitously in plastics.

A recent report on [Plastics, EDCs & Health](https://ipen.org/documents/plastics-edcs-health) by the Endocrine Society in collaboration with IPEN provides insights into impacts of the most common ones such as phthalates, bisphenols, brominated flame retardants, toxic metals and UV stabilizers. The report also investigates exposure routes to endocrine disrupting chemicals in plastics.

### Impacts on communities subsisting on fisheries

Chemicals are polluting oceans and waterways, not only endangering wildlife and those who rely on seafood for sustenance, but threatening the collapse of many fisheries. [This report](https://ipen.org/documents/aquatic-pollutants-oceans-and-fisheries) is the first to begin to detail the numerous ways and places in which chemical pollution and climate change is destabilizing this marine infrastructure and the world's fisheries.

Impacts on Indigenous communities in the Arctic—Persistent Organic Pollutants

Far from pristine, the Arctic contains some of the most highly contaminated animals and people in the world. The Arctic is subject to atmospheric deposition of globally-distilled persistent organic pollutants (POPs), acting as a hemispheric sink for POPs that are transported from lower latitudes. The Arctic is an important indicator region for assessing properties and effects of POPs. Once POPs enter the Arctic, low temperatures and low intensity sunlight slow their deterioration, which makes them available for long-term incorporation into biological systems. POPs bioaccumulate and biomagnify in the lipid-rich arctic food webs, some to dangerous levels. These problems are exacerbated by the rapid pace and magnitude of climate change in the Arctic, which is warming at more than three times the global average. The combination of a warming climate and increased mobilization of POPs, rates of global distillation and deposition in the Arctic are expected to accelerate, causing large-scale ecological consequences, and increasing health risks for people. Moreover, global change scientists predict that accelerated melting of polar snow, ice, and permafrost will mobilize sequestered contaminants and enhance air-to-sea exchange, rendering greater bioavailability of contaminants within arctic food webs. Additionally, the Arctic contains thousands of contaminated formerly used defense (FUD) sites dating from the Cold War, many of which are significant sources of POPs such as PCBs. The Arctic is therefore a significant repository of persistent chemicals that are readily transported through the atmosphere or that are released from FUD sites. Concentrations of some POPs, including PCBs in the blood of people in certain arctic regions, continue to be higher than in general populations of North America and Europe.

Because most POPs are endocrine disruptors (EDCs) and many are also neurotoxicants, high exposures present an important public health concern for people of the Arctic. The Arctic is the home of many indigenous peoples who rely on a traditional subsistence diet that includes a high proportion of lipid-rich foods such as fish and marine mammals; thus, they are chronically exposed to dangerous levels of POPs. The harvest and consumption of traditional foods is central to the nutritional, cultural, and economic health of arctic indigenous peoples. The preamble of the United Nations Stockholm Convention on POPs states, “Arctic ecosystems and indigenous communities are particularly at risk because of the biomagnification of persistent organic pollutants” and “contamination of their traditional foods is a public health issue.” Epidemiological studies in the Arctic have shown effects of contaminants on immune system function, oxidative stress, neurodevelopment, and the hypothalamic-pituitary-gonadal (HPG) axis. Additional risks include cancers, metabolic diseases, and disorders of the thyroid and reproductive development.

Impacts on Indigenous communities in the Arctic—Military Contamination on Sivuqaq (St. Lawrence Island, Alaska, USA)

St. Lawrence Island (SLI) is home to approximately 1,400 Yupik people residing in two extant communities, Gambell and Savoonga. SLI, with the traditional name of Sivuqaq, is located in the northern Bering Sea, 75 km southeast of the Chukotsk Peninsula of Russia and 190 km southwest of the North American mainland at the tip of Alaska’s Seward Peninsula. The people of SLI rely on a traditional subsistence diet. Because of the island’s strategic geopolitical location, the U.S. established an Aircraft Control and Warning Station and White Alice Communications System Station at Northeast Cape (NEC) that operated from 1952-1972. The military displaced the traditional community of ~130 residents of NEC that included a governing tribal council, who re-located to Savoonga. Prior to the military occupation, NEC and the Suqitughneq (Suqi) River were an especially important area for subsistence gathering, fishing, and hunting. The Suqi River was abundant with fish and the water was safe to drink. In a letter dated April 7, 1951, the Savoonga Tribal Council granted the U.S. Air Force a land withdrawal for military use at NEC with clear conditions, including the following provision: “*Any refuse or garbage will not be dumped in streams or near the beach within the proposed area.* The military site encompassed ~39 km2 and included 25 industrial buildings, an airstrip, and associated support facilities. When the military abandoned NEC in 1972, they left extensive debris and hazardous waste in violation of the 1951 agreement. Contamination of soils, sediments, surface waters, groundwater, and biota derives from massive petroleum spills and releases of solvents, polychlorinated biphenyls (PCBs), organochlorine pesticides (OCPs), and heavy metals. Within the NEC formerly used defense (FUD) site, areas of contamination were identified for investigation and removal actions.

Shortly after the military’s abandonment of the NEC FUD site, Annie Alowa, a respected traditional healer, raised concerns that the hazardous materials at NEC posed a long-term health risk for her people. She was concerned by the high incidence of cancers, miscarriages, and other health problems among the families who lived and worked at NEC. She later developed cancer and continued her work for the health of her people until her death in 1999.

The U.S. Army Corps of Engineers is responsible for monitoring and cleanup of the NEC FUD sites pursuant to section 9604 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). In 2009, the Corps issued a Record of Decision (ROD) that allowed contamination to remain in many of the NEC disposal sites. Moreover, the ROD allowed inadequate monitoring plans. Residents were neither consulted nor party to the ROD and did not concur that the remediation was complete or protective of health. Our research found that resident freshwater fish in the Suqi River are highly contaminated with PCBs and pesticides from the FUD sites.

NEC was once a vital community and gathering place for traditional foods. Residents want to re-establish the community at NEC; however, the health and safety of the people, lands, waters, and traditional foods must be ensured. The watershed of the Suqi River is still severely polluted, and the contamination prevents the safe consumption of traditional foods and practicing of cultural activities. Contamination also prevents the recovery of fish populations. Seal haul-outs at the mouth of the river also have not recovered. Collectively, both traditional knowledge and our data suggest that NEC is still unsafe for traditional practices and reestablishment of the traditional community. As the governing entity, the communities reiterate their right and authority to establish the highest standards that require restoration of the lands and waters damaged by military activities at NEC.

We have shown that remediation to date is inadequate to protect public health. Our research established that the people of SLI have concentrations of PCBs in their blood that are six times higher than people who live in the lower-48 U.S. states, and residents of Savoonga who have close traditional ties to NEC have higher concentrations of PCBs in their blood than do SLI residents who are not associated with NEC. We concluded that atmospheric deposition of PCBs coupled with biomagnification into traditional foods results in elevated levels of PCBs in SLI residents, and those residents with traditional association at NEC are further exposed. Our research demonstrates that: 1) NEC remains contaminated with PCBs, OCPs, and toxic metals, despite remediation efforts; 2) contaminant profiles and biomarkers of disease in stickleback closely parallel those of SLI residents; and 3) these chemicals are associated with pathologies in stickleback, as reflected in endocrine disruption, histopathology, and altered gene expression. Thus, our research indicates that contaminants remaining at NEC represent a continuing risk to human health. Furthermore, the predominant contaminants at NEC – PCBs, OCPs, and mercury (Hg) – are well known to cause developmental pathologies and disease in humans. Please find a list of our published papers concerning the community-based research discussed in the last two sections of this submission.

Thank you for your consideration.

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Published papers

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