# Chapter 3

## Environmental Injustice: Pollution and Indigenous Communities

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Ontario’s Indigenous people and communities are disproportionately affected by pollution.

Abstract

Indigenous people and communities are disproportionately affected by pollution. Governments and industries have long turned a blind eye to contamination that adversely affects the health, ecology and economies of Indigenous communities like Aamjiwnaang, Grassy Narrows and Wabaseemoong. Serious health and environmental problems, including lack of access to safe drinking water, that would not be tolerated in other communities, have long been deemed unworthy of priority, effort or expense. After decades of inaction, the Ontario government is finally taking some steps to acknowledge and address these historical wrongs, but more is needed. Environmental justice must be part of the Ontario government’s pursuit of reconciliation with Indigenous people.
3.0 Introduction: Environmental Justice

Indigenous people and communities are disproportionately affected by environmental problems, due to a long and shameful history of mistreatment by all levels of government. Indigenous people have often been subjected to environmental decisions made without consideration of their interests, let alone their participation. Many of these decisions have caused profound harm that carries on to today. Even the locations of some First Nation reserves were chosen because the lands were viewed as worthless to white settlers.¹ Today, many First Nations are engaged in legal battles for more control over how and what activities will be permitted on their traditional lands.

In this chapter, we report on three environmental issues that illustrate the heavy impact of pollution on Ontario’s Indigenous communities.

In Part 3.1, we look at how polluted waterways have affected Grassy Narrows and Wabaseemoong First Nations. In Part 3.3, we examine the causes and effects of toxic industrial air pollution on Aamjiwnaang First Nation. In both cases, the provincial government historically turned a blind eye to the associated health and environmental problems. In Part 3.2, we report on an all-too-common crisis facing many Indigenous communities across Canada – the lack of safe drinking water. While on-reserve drinking water systems are largely the responsibility of the federal government, the Ontario government can and should do its part to address this problem. Many Indigenous communities face similar challenges to those profiled in these cases, including governments’ failure to acknowledge the severity and impact of pollution, to appropriately fund remedial measures, to communicate effectively with the communities, and to work respectfully and collaboratively with those communities in the pursuit of practical solutions.

The situations profiled in this chapter acknowledge that each of these cases is part of a much larger history of government mistreatment. Subjecting vulnerable communities (e.g., poor and/or racialized communities) to significant pollution and excluding them from environmental decision making is often referred to as “environmental injustice.” With this understanding, it becomes clear that environmental justice must be part of Ontario’s pursuit of reconciliation – the process of “working with Indigenous partners to address the
dark legacy of residential schools and the social and economic challenges that face Indigenous communities after centuries of colonization and discrimination."² It is time for environmental justice to be part of the Ontario government’s pursuit of reconciliation with Indigenous people.

Understanding Government Responsibilities for Indigenous Communities

Many issues affecting Indigenous communities in Canada are made more complicated by the fact that the Canadian constitution gives the federal government responsibility for Indigenous people and reserve communities. This means that the federal government is responsible for many matters that the province would normally handle, and the province plays a more limited role than they do in communities elsewhere in the province. For example, initiating a community health study would be within the province’s jurisdiction in most of Ontario, but is the domain of the federal government for reserve communities. Traditional lands located off-reserve, however, are still primarily governed the provincial laws.

In addition, First Nation governments have long fought to regain the power to make, or at least influence, many decisions that affect their communities and traditional lands. Increasingly, both the federal and provincial governments are publicly acknowledging that First Nation governments must be respected as an equal partner in a trilateral relationship regarding matters of interest to all three governments. This means decisions are more and more the result of sometimes lengthy negotiations between all three governments, or, at minimum, First Nation and federal governments.
3.1 Mercury Contamination in Grassy Narrows and Wabaseemoong

3.1.1 Mercury Contamination of the Wabigoon-English River System

The Asubpeeschoseewagong Netum Anishinabek (Gassy Narrows) First Nation and the Wabaseemoong Independent Nations (historically also referred to as the Whitedog First Nation) are two Ojibwa nations based in northwestern Ontario, near the Manitoba border. Almost half of the members of the Grassy Narrows First Nation live within the Grassy Narrows reserve community, and a majority of the members of the Wabaseemoong Independent Nations live within the Wabaseemoong reserve community.

The Wabigoon-English River system runs through the traditional lands of both First Nations, including the reserve communities. While the federal government carries primary responsibility for environmental and health matters within the reserve communities, most of the river system runs through Crown land managed by the province. The river system defines the region's geography, and has historically defined much of life for the Grassy Narrows and Wabaseemoong communities. The people have relied on the river for food, as well as for employment as commercial fishers, hunting and fishing guides, and within the tourism sector more broadly. Over the past 50 years, however, another feature has permeated the river system and life in Grassy Narrows and Wabaseemoong: mercury contamination. Mercury is highly toxic and can cause extremely serious, life-long health effects.

Where Did the Mercury Contamination Come From?

The mercury pollution is largely the result of a pulp and paper mill (at the time, Dryden Chemical, owned by the Reed Paper Co.) in Dryden, Ontario, that discharged mercury directly into the Wabigoon River from 1963 until 1970. From Dryden, the mercury travelled throughout the waters of the Wabigoon-English River system, including the areas used by the people of Grassy Narrows and Wabaseemoong. Mercury was, at that time, well-known to be a powerful poison, but was also commonly used by pulp and paper mills in the paper bleaching process. In 1970, in response to an order from the province, the mill reduced the level of mercury in its wastewater, before ultimately ending the use of mercury completely in 1975. Altogether, an estimated 9 to 11 tonnes of mercury were released into the water.

The paper mill is the largest mercury source affecting the Wabigoon-English River system, but not the only one. Another source is atmospheric mercury, which is released into the air by industrial facilities around the world (particularly coal-fired power plants), and travels long distances before being deposited into forests, lakes and rivers across Ontario, including the Wabigoon-English River system. Logging, which was once prevalent in the region, can exacerbate the problem by releasing atmospherically deposited mercury from the soil via rain and snowmelt into waterways. Forestry activities, however, have been suspended in the vicinity of the Wabigoon-English
AN ESTIMATED 9 TO 11 TONNES OF MERCURY WERE RELEASED INTO THE WATER.

River system due to on-going litigation between Grassy Narrows First Nation and the Ministry of Natural Resources and Forestry.

Mercury also reached the river system when, starting in the 1950s, the Ontario and federal governments built multiple hydroelectric dams on the Wabigoon-English River system. The dam reservoirs released mercury from soil into the watercourse. They also had other negative impacts on the local indigenous communities, including reducing wild rice, game and fur-bearing animal abundance.

Although the exact contribution of each mercury source to the contamination of the Wabigoon-English River system is unknown, it is clear that the pulp and paper mill deserves most of the blame. The Wabigoon-English River system is significantly more contaminated than other river systems in the region, almost all of which are also affected by hydroelectric dams, atmospheric mercury deposition and forestry. A 2016 study commissioned by Grassy Narrows First Nation found that mercury levels are 130 times higher in river sediment immediately downstream of the mill site compared to immediately upstream, a strong indication that the mill site contributes significantly to the high mercury levels (see Figure 2).⁴

Figure 1. Map of the Wabigoon-English River System showing the approximate locations of the Grassy Narrows and Wabaseemoong communities, as well as Dryden (home of the pulp and paper mill responsible for most mercury contamination) and Kenora, Ontario.

Source: Created by the ECO using Google Maps data, 2017.
The Impacts of Contamination on the River System

When mixed with water, inorganic mercury can be metabolised by bacteria into the more toxic methylmercury. Methylmercury is then taken up by the organisms at the bottom of the food web as they absorb nutrients from the water and sediment or when they consume the mercury-metabolising bacteria. The mercury then biomagnifies as it moves from one organism to the next through the food web, meaning that mercury concentrations are greater, higher in the food chain. As a result, the mercury most affects the top eaters in the ecosystem, be they people or other fish-consuming animals.

Methylmercury can negatively affect reproduction rates, behaviour and physical development in fish and fish-eating birds and mammals. In the waters around Grassy Narrows and Wabaseemoong, for example, scientists have noted that mercury contamination may be to blame for declines in otter and mink. Correlations have also been observed in the area between high mercury levels and abnormalities in domestic cats and turkey vultures.

The Impacts of Contamination on the Grassy Narrows and Wabaseemoong Communities

Fish are a traditional staple food in the diets of many members of the Wabaseemoong and Grassy Narrows communities. As a result, many community
members are affected by mercury poisoning. In 2016, a Toronto Star-commissioned study concluded that an average meal of walleye from Clay Lake (located just east of the Grassy Narrows community) contains 15 times the tolerable mercury intake limit for adults, and over 40 times the limit for children and women who are of child-bearing age.\(^7\) (The term “tolerable mercury intake” is not one used by the Ministry of the Environment and Climate Change (MOECC), and it is thus not entirely clear how the study calculated this reported exceedance; regardless, it is clear from the fish advisories issued by the province that mercury poisoning is a concern associated with fish consumption in the area.)

Over 58% of the Grassy Narrows and Wabaseemoong community members examined by Japanese doctors specialising in mercury poisoning have been diagnosed with or are suspected of having Minamata disease, a serious neurological syndrome caused by mercury poisoning.\(^8\) Minamata disease causes degraded neurological abilities including: tunnel vision; deafness; numbness in arms and legs; uncontrollable shaking; difficulty walking; and even death.

Although community members know the risk of mercury poisoning, avoiding fish consumption is not a reasonable option for many in Grassy Narrows and Wabaseemoong because of the cultural significance of fishing and fish consumption.\(^9\)\(^10\) Furthermore, the high food prices and limited economic opportunities in remote communities make many people at least partially dependent on food they can catch or harvest themselves. Unfortunately, the most desirable fish (large pike and walleye) are also the most toxic.\(^11\) Although the government of Ontario has provided uncontaminated whitefish to the affected communities, it has not prevented people from continuing to catch and eat some amount of fish native to their territorial lands.

The mercury damage also affects community members’ livelihoods. As a result of the toxic levels of mercury in the fish, the commercial and sport fisheries have suffered considerably.\(^12\) Because many people worked in fisheries, tourism or related businesses, the closure of the fishery resulted in a significant loss of employment for the Wabaseemoong and Grassy Narrows communities.

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3.1.2 Ontario’s Response: A History of Government Inaction\(^13\)

Since 1969, the Ontario government has known about the mercury contamination of the Wabigoon-English River system. However, despite dozens of government-backed and independent studies confirming environmental impacts and threats to human health, no remediation has ever been done on the river system.

**Working Group Recommended Remediation Over 30 Years Ago**

In 1970, the mercury contamination was sufficiently well known that the Ontario government closed the commercial fishery. Throughout the 1970s, studies of the Wabigoon-English River system, along with the government’s own monitoring data, confirmed elevated mercury levels in various animals, as well as in people living in the Grassy Narrows and Wabaseemoong communities.\(^14\)
A 1976 report documented a suspected outbreak of the Minamata disease among residents of Grassy Narrows and Wabaseemoong. But it was not until 1979 that the provincial government convened a provincial-federal working group to formally investigate the mercury pollution affecting the Wabigoon-English River system. Five years later, the working group’s report confirmed that while mercury levels had decreased substantially since the early 1970s, levels of mercury in fish remained elevated. Ultimately, the working group concluded that the river system should be remediated by dredging the Wabigoon River from Dryden to Clay Lake as well as testing the efficacy of adding clean sediment to Clay Lake to trap mercury underneath the new sediment. The working group determined that, without remediation, mercury levels in fish would remain “unacceptably high for many years.” It also recommended that the mercury monitoring and fish consumption guideline program be continued.
THE GOVERNMENTS OF ONTARIO AND CANADA CHOSE TO WAIT FOR NATURAL PROCESSES – ESSENTIALLY THE RIVER FLUSHING ITSELF CLEAN OVER THE COURSE OF DECADES – TO REDUCE THE MERCURY POLLUTION OVER TIME.

Why Hasn’t the Mill Paid for Remediation?

Under modern environmental laws, the MOECC is committed to making businesses and people who pollute the environment pay to clean it up. Indeed, the “polluter pays” principle is a cornerstone of environmental policy. The MOECC has established several precedents for requiring property owners and their parent companies and officers and directors to pay for both current and historic contamination. So why isn’t the MOECC making Dryden Chemical, the company that dumped most of the mercury, or its parent company Reed Paper Co., pay to remEDIATE the river system, or to compensate the people of Grassy Narrows and Wabaseemoong for the hardships they have suffered?

In fact, in 1977, Grassy Narrows and Wabaseemoong First Nations sued the owners of the mill, seeking compensation for the health and economic effects of the mercury contamination. However, when the lawsuit threatened to kill an agreement to sell the mill in 1979 – a move that would have closed the mill and put people out of work – the provincial government agreed to take responsibility for (i.e., to indemnify both buyer and seller against) future liabilities in exchange for one-time payments from the past and current owners of the mill. This agreement was formalized in a settlement agreement between the Ontario and Canadian governments, the past and current owners of the mill, and Grassy Narrows and Wabaseemoong First Nations, signed by all in 1985. This agreement included an exhaustive indemnity, protecting any future owners of the mill from liabilities relating to the mercury. In exchange, the company contributed money towards a $17 million compensation fund. This money, however, cannot be used to fund environmental remediation, and the communities have argued for years that the criteria for accessing compensation is overly restrictive and that payments are insufficient.

Government Opted for Natural Attenuation – the ‘Do Nothing’ Approach

In 1986, the Ontario government released a socio-economic assessment of the possible remediation measures that the working group had identified in 1984. This assessment concluded that, since it was uncertain that dredging would be effective, the cost of doing so was not worthwhile. Additionally, the MOECC reports that the communities did not support dredging out of concern that it could make the situation worse by causing settled mercury to be re-suspended in the water. Accordingly, the governments of Ontario and Canada chose to wait for natural processes – essentially the river flushing itself clean over the course of decades – to reduce the mercury pollution over time (a process referred to as “natural attenuation”).

Since the 1986 decision not to remediate the Wabigoon-English River system, the Ontario government has done little to manage the mercury contamination. Although monitoring has taken place (with increasing focus on waters identified by the Grassy Narrows community in recent years), until 2017, the Ontario government never undertook, or required others to undertake, thorough sediment sampling along the river system or a detailed investigation of the mill site. Until recently, the only...
action the MOECC required from the current owner of the mill site was some on-site monitoring as a condition of its regulatory approvals (the results of which are not routinely made public).  

3.1.3 The Wabigoon-English River System Today

Mercury Problems Persist

Mercury contamination continues to seriously impact the Grassy Narrows and Wabaseemoong communities and their surrounding ecosystems, despite some moderate improvement.

The authors of the original 1976 Minamata study revisited the community in the early 2000s and concluded that incidence of the disease is increasing. In 1975, 7.9% of Grassy Narrows and Wabaseemoong community members examined by the researchers were suspected of having Minamata disease; in 2011, 58.7% of examined community members met the diagnostic criteria for, or were otherwise suspected of having, the disease.

Another study showed that while mercury levels in fish and sediment dropped dramatically through the 1970s and early 1980s, they have largely plateaued in more recent years, remaining elevated enough to cause concern.

Figure 3: Mercury concentrations from 1960s to 2010, in surface sediments of the east basin of Clay Lake and in 45 cm walleye. The data show that both surface sediment mercury concentrations and fish mercury concentrations appear to have stabilized about 30 years ago.

Source: Asubpeeschoseewagong Netum Anishinabek (Grassy Narrows First Nation) – Ontario – Canada Working Group on Concerns Related to Mercury, Advice on Mercury Remediation Options for the Wabigoon-English River System Final Report by John Rudd, Reed Harris, & Patricia Sellers (March 21 2016).
As a result of elevated mercury levels, several species of fish still remain unsafe for regular consumption.\(^25\) One study calculated that it could be another 50 years until it is safe to eat walleye from the Wabigoon-English River system.\(^26\)

Decades of chronic mercury exposure increases the severity of mercury’s effects.\(^27\) As a result, although some of the fish in the area (such as whitefish) are relatively safe to eat in moderation, it is still considered unsafe for residents of the reserve communities who consume fish frequently.\(^28\)\(^29\)

**New Studies Prompt Government to Finally Take Some First Steps**

In 2013, the provincial government helped to form an inter-ministerial Mercury Working Group (the ANA-Ontario Mercury Working Group) with the goal of addressing Grassy Narrows’ concerns about environmental issues, human health and other matters relating to mercury contamination.\(^30\) The group sought updated advice from experts on remediation options for the Wabigoon-English River system.\(^31\) This advice, released in a May 2016 report, recommended doing additional field work to better understand the mercury contamination before deciding on remediation options.\(^32\)

In response to this report the Government of Ontario committed $300,000 to the working group itself, and $410,000 to Grassy Narrows and Wabaseemoong Independent Nations to fund the recommended field work.\(^33\) This work included: fish sampling by Grassy Narrows; preparation of a plan of study for an environmental baseline within Wabaseemoong Independent Nations’ traditional land use area; and measures to determine if there is an ongoing source of mercury releasing into the Wabigoon River. In addition, significant sediment sampling by the MOECC and Grassy Narrows occurred along the Wabigoon River in 2017.\(^34\)

**Ongoing Contamination Seems Likely**

In February 2017, a research team commissioned by Grassy Narrows First Nation found that mercury levels are 130 times higher in river sediment samples taken immediately downstream of the old mill as compared to immediately upstream.\(^35\) Through isotope analysis, the scientific team determined that the sediments they sampled had been deposited within the previous few months. The researchers concluded that an unidentified source of mercury on the mill site was likely actively leaking into the Wabigoon River.

In addition, a former mill worker has stated that he helped bury several barrels of unknown waste on the property about 40 years ago.\(^36\) If barrels are indeed buried onsite, they could be a potential source of ongoing mercury leaking into the soil and water. However, groundwater sampling and geophysical surveys conducted at the site to date have not found evidence of buried drums in the area studied.\(^37\)
Government Finally Commits to Action in 2017

In response to the February 2017 report, the Premier of Ontario and the Minister of the Environment and Climate Change announced that the provincial government is committed to “working with all partners to identify all potentially contaminated sites, and to creating and implementing a comprehensive remediation action plan for the English Wabigoon River.” In April 2017, the CBC and Toronto Star reported that the Ontario government committed $2.1 million to fund pre-clean up studies.

In May 2017, the MOECC posted a draft Environmental Protection Act Director’s Order on the Environmental Registry for public review and comment, indicating the ministry’s intention to order Domtar Inc., the current owner of the mill site, to develop and implement a comprehensive work plan/assessment to determine whether the mill site is an ongoing source of mercury to the Wabigoon River, and to provide opportunities for First Nations and members of the public to engage in this process. Under the Environmental Protection Act, the MOECC asserts the power to order a property owner to investigate and cleanup contamination on and migrating from their property, even if that property owner did not create the contamination. The Environmental Registry proposal notice for the order notes that “if there is evidence that the Dryden mill site is an ongoing source of mercury, then measures to prevent further mercury from entering the river, and how those measures are to be implemented, will be assessed. This may include future orders.” The MOECC received 2,603 comments on the proposed order. As of September 2017, the ministry was reviewing and considering the comments and had not yet issued an order to Domtar Inc.

In June 2017, the Minister of the Environment and Climate Change announced $85 million in dedicated funding for the remediation of the Wabigoon-English River system, plus an additional $2.7 million to accelerate the current assessment work. The Minister stated that the new dedicated funding will pay for the remediation, including the engineering design and
implementation of remediation measures and long-term monitoring. The remediation options chosen will be based on the fieldwork that is currently underway and will be undertaken in partnership with First Nations. The Minister stated: “we are determined to right these historic wrongs, and we realize that actions speak louder than words. For these reasons, we are committed to working with the First Nations and respecting their leadership.”

3.1.4 Conclusion: Righting an Historic Wrong

For almost 60 years, mercury contamination has severely damaged the Wabigoon-English River ecosystem. This contamination has stripped the people of Wabaseemoong and Grassy Narrows of important facets of their cultural practices, livelihoods and health. The company that profited from the pollution sold the property, settled legal claims, and moved on 30 years ago. The government long ago abandoned the communities to bear the consequences, and has only very recently begun to take the first steps towards remediating the river system, as well as the government’s relationship with the affected communities.

This tragic story is partly borne of a time before modern pollution laws, when industrial pollution was permitted in many parts of Ontario in the interests of short-term prosperity. But it was made much worse by the government’s ill-considered broad indemnity in 1985. Although the polluter (the owners of the original mill) did pay some money pursuant to the settlement agreement, the amount was grossly inadequate to either remediate the river system or appropriately compensate for the damage done.

After accepting financial responsibility for the mercury contamination, the Ontario government declined to take action for decades, largely ignoring the suffering of the Grassy Narrows First Nation and Wabaseemoong peoples. Over and over, the Ontario government chose to do nothing. It chose not to remove the sediment, not to investigate in more detail, not to monitor whether mercury levels were indeed declining. In other words, it chose to allow the ongoing poisoning of the communities.

It is no coincidence that this environmental devastation primarily affects Indigenous communities. The Japanese researchers who have studied Grassy Narrows for decades noted in 2014 that:

… physicians’ associations and the police who interviewed the victims spoke words of blatant discrimination: “They are alcoholics,” and “There is no such thing as organic mercury poisoning.” Such words render it undoubtable that pollution occurs where discrimination exists, instead of discrimination occurring as a result of pollution.

Grassy Narrows has fought a long, hard battle to have this pollution, and discrimination, recognized and addressed. Only now is the government finally starting to take appropriate action to meaningfully investigate the possibility of an ongoing contamination source, and to work with the affected communities to determine what remediation may be effective. Fundamental to the success of this undertaking will be the on-going, meaningful involvement of Grassy Narrows and Wabaseemoong; failing to listen to the experiences, needs and knowledge of these communities will only further delay successful remediation.
3.2 Drinking Water in First Nation Communities

3.2.1 Lack of Safe Drinking Water: A Symbol of Government’s Continued Failure

Most people living in Ontario have rarely gone a day without easy access to safe drinking water while in the province. Most of us assume that having safe drinking water is a reality of life in a wealthy country with solid public infrastructure. However, for some people, this could not be further from the truth. In fact, thousands of Indigenous people live without household access to safe drinking water in Ontario.\(^43\)

A 2011 report commissioned by the Canadian government found that, nationally, 73% of water systems in First Nation communities were categorized as medium or high overall risk.\(^44\) It is not uncommon for homes in some of Ontario’s First Nation communities – even those located close to cities – to lack running water altogether. Even where there is running water, about a third of all First Nation communities in our province are affected by drinking water advisories to either boil tap water before using it (i.e., a “boil water advisory”), or to avoid consuming tap water completely (even if boiled first) and instead rely on bottled water (i.e., a “do not consume advisory”).

As of July 2017, 34 Ontario First Nation communities were affected by an advisory that had been in place for more than a year, and 17 communities were under an advisory more than a decade old (see Figure 4). The longest standing advisory in Canada is in the Neskantaga First Nation in northwestern Ontario: it was issued in February 1995 – more than 22 years ago.\(^45\)

THOUSANDS OF INDIGENOUS PEOPLE LIVE WITHOUT HOUSEHOLD ACCESS TO SAFE DRINKING WATER IN ONTARIO.
Figure 4: Ongoing and unresolved water advisories. The pins mark the location of First Nations affected by drinking water advisories, including the number of months spent on the advisories, as of July 2017.

Source: Health Canada First Nation Drinking Water Advisories database
When added to the material and service shortages that exist in many remote communities, and to the devastating legacy of racism, abuse and colonialism, this lack of access to safe drinking water is a symbol of Canada’s continued failure to its Indigenous people. The 2015 report of the Truth and Reconciliation Commission, which documented the experiences of those affected by the Indian residential school system and recommended actions to address the legacy effects, reported on the poor state of access to safe drinking water among many Indigenous communities, explaining:

While issues such as poor quality housing and water are not direct legacies of residential schools, substandard community infrastructure increases the health burden, and consequently increases the challenges of addressing the legacy of the residential schools. Communities, families, and individuals that are in crisis cannot heal. For this reason, we make specific note of the shameful state of community infrastructure in many Aboriginal communities.

Viewed in this light, the urgent need to provide access to safe drinking water in Indigenous communities — and to then build trust in that safety — cannot be understated.

### 3.2.2 What is Ontario’s Role in First Nations’ Drinking Water?

Regulating drinking water is usually the domain of the provincial government, while water utilities are often owned and run by municipal governments. However, Canada’s constitution tasks the federal government with primary responsibility for First Nation reserve communities, including water infrastructure and regulation. Provincial water standards and regulatory programs do not apply to communities on reserve land.

Instead, federal ministries: provide 80% of the funding associated with water treatment facilities; oversee design, construction and maintenance of water facilities; manage drinking water monitoring programs; and carry out some source water protection activities.

First Nations are generally responsible for planning, operating and carrying out maintenance of their water systems, and for paying 20% of the associated costs.

Nonetheless, the province does have a role to play and has been active in the last few years. The Walkerton Inquiry, which made recommendations to the Ontario government about drinking water safety, dedicated an entire chapter of its final report to the state of drinking water for First Nation communities in Ontario, stating:

Aboriginal Ontarians, including First Nations people living on “lands reserved for Indians,” are residents of the province and should be entitled to safe drinking water on the same terms as those prevailing in other similarly placed communities.

The report laid out four recommendations specific to the Ontario government’s role in improving drinking water quality for First Nation communities. Three of the recommendations spoke of the potential role of the Ontario government to provide technical support and training to First Nation communities, while the fourth recommended that First Nations should be invited to join in the provincial watershed planning process. The Ontario government has responded to each of these recommendations, as well as taken additional action, as discussed below.

**Province Plays a Role Providing Technical Support and Training**

The province has responded to the Walkerton Inquiry recommendations regarding enhancing training and technical support in several ways. For example, the province will, upon request and free of charge, conduct reviews to confirm that drinking water projects in First Nation communities meet provincial requirements and issue “Letters of Conformance” to this effect. The MOECC reported that, as of August, 2017, it had issued 68 Letters of Conformance to First Nation
communities in respect of their water systems. Also, the MOECC reported in May 2016 that it had certified 165 operators now working for 77 First Nations. In addition, the Ontario Clean Water Agency provides operations and maintenance services on a fee-for-service basis to water systems across Ontario, including those in First Nation communities.

More recently, Ontario has provided supplemental funding to the Walkerton Clean Water Centre to work with First Nations partners and communities to help train on-reserve drinking water operators so that they may become certified. Ontario is also supporting First Nations-led conferences on drinking water to help exchange information and increase understanding of needs and potential solutions.

First Nations communities may also participate in the MOECC’s Drinking Water Surveillance Program, a voluntary monitoring program that gathers water quality information for scientific and research purposes. Currently, four First Nations are participating in this program.

In June 2016, the MOECC established the Indigenous Drinking Water Projects Office to provide a single window for First Nations communities and Tribal Councils to access the provincial technical resources
and expertise that are available. When requested by First Nations communities, the Indigenous Drinking Water Projects Office can provide technical and engineering support for on-reserve drinking water systems, working collaboratively with communities and the federal government.

First Nations Can Opt In to the Provincial Source Water Protection Process

Another Walkerton Inquiry recommendation stated that First Nations should be invited to join in the provincial watershed planning process. Ontario has fulfilled this recommendation by enabling First Nations communities to choose to participate in Ontario’s source protection planning program under the Clean Water Act, 2006.

Several communities have elected to participate in the Clean Water Act process. The MOECC reports that 12 of the 19 source protection committees have seats reserved for First Nation representatives, and First Nations elected to participate in 6 of those committees during the development of source protection plans. Since the plans were approved, the MOECC reports that nine First Nations communities have continued to participate on five committees. Further, three First Nation communities have passed Band Council Resolutions to be fully included in local source protection plans (i.e., beyond having a representative sit on the committee, the community itself is included in the source protection plan). In addition to those communities participating in the official source protection program, other Indigenous communities likely have developed their own source protection plans outside the Clean Water Act, 2006 process.

Province Manages Nearby Water Sources and Land Uses

Most water resources in Ontario – including those located near reserve communities – are managed by the province. The province regulates activities such as water takings, industrial discharges of contaminants into waterways, mining, and hydroelectric power development. A number of provincially regulated off-reserve activities, such as taking water or releasing pollutants, can affect water quality on reserve. Protecting water, including drinking water sources for First Nation communities, must be explicitly considered in the land use planning process under the provincial Far North Act, 2010. Furthermore, the MOECC reports that there are 11 First Nations with water systems directly connected to neighbouring municipal water systems, which are provincially regulated.

Province Collaborates with Federal Government and First Nations

In September 2014, Ontario’s Premier issued mandate letters to the Minister of the Environment and Climate Change and the Minister of Indigenous Relations and Reconciliation (at the time called the Minister of Aboriginal Affairs) that directed these ministries to work towards improving drinking water on reserves and to develop measurable, achievable targets to monitor progress.

In response, First Nations were made eligible for the Small Communities Fund, a federal program to which Ontario contributes funding. In 2015, seven Ontario First Nations received funding for drinking water improvement projects. In 2016, the government
reached out to First Nation communities with long-term drinking water advisories to make sure they were aware of the program and 11 on-reserve water projects received funding.

Also in 2016, First Nations in Ontario were eligible to apply for the newly established Clean Water and Wastewater Fund (CWWF), a program to support water and wastewater projects. Through this initiative, the Province of Ontario cost-matches up to 25% of the eligible project costs. As of August 2017, over $15 million (approximately $10 million from the federal government and $5 million from the provincial government) had been dedicated for water projects in reserve communities in Ontario.\textsuperscript{54}

The province has also collaborated with the federal government and four First Nations by providing technical and other support on innovative drinking water improvement projects pursuant to the Canada-Ontario First Nations Drinking Water Improvement Initiative. Similarly, Ontario has provided support to two First Nations through the Showcasing Water Innovation program (which serves both First Nation and non-First Nation communities).

In March 2016, Ontario’s Premier called on all provinces and territories to commit to a national agreement to ensure safe, clean drinking water for all First Nations communities. The MOECC advised the ECO in August 2017 that the province has been working actively with the federal government and First Nation representatives.
on a trilateral strategy to eliminate drinking water advisories and improve the sustainability of water systems on reserves. As part of this work, a trilateral steering committee has developed an action plan to resolve long-term drinking water advisories (restricted to advisories that are longer than one year and affect federally-funded public drinking water systems, but not including systems that suffer chronic, recurring, short-term advisories) in Ontario First Nation communities by the end of March 2021. The MOECC reports that this action plan includes targets that are now being actively implemented by federal, provincial and First Nations partners, but the plan is not currently publicly available.

In June 2017, the MOECC reported that, since the trilateral work began, seven long-term advisories in six communities have been lifted, although two new long-term advisories have been declared in two communities. Although there are plans to make the steering committee’s progress reports public by posting them on the Ontario First Nations Technical Services Corporation website, as of September 2017, the reports were not yet available online.

3.2.3 Why Problems Continue

For years, Indigenous people and communities have been raising the alarm over the state of drinking water access in reserve communities. Numerous public reports and community pleas have identified this as an unacceptable crisis. The federal and provincial governments have both acknowledged the severity and urgency of the issue. Yet, despite the substantial progress described above, much of the problem persists. The reasons for this are multi-faceted, and the subject of some debate. Frequently cited factors include:

- the high cost of constructing and maintaining facilities in remote locations, and insufficient funding to properly operate and maintain these systems;
- lack of clarity regarding roles and responsibilities, especially because of the involvement of multiple federal government agencies;
- limited local capacity and ability to retain qualified operators;
- insufficient testing and inspections of water and water facilities;
- an inadequate federal regulatory framework, particularly respecting source protection; and
- a long-standing lack of political will.
3.2.4 Conclusion: Ontario’s Challenge

Most of the problems that limit access to safe drinking water in reserve communities are primarily the responsibility of the federal government, not the province. In particular, it is not Ontario’s legal responsibility to address funding shortages, nor can Ontario do much to clarify the roles and responsibilities among federal agencies. However, Ontario can, and should, do what is within its power to ensure everyone in the province has access to safe drinking water.

Technical Support and Training

Ontario should build on the important work it already does to provide technical expertise and training to Indigenous communities. This work helps to address issues related to insufficient information and capacity within Indigenous communities. These technical services could be expanded more broadly, and training programs could be enhanced to build up more local capacity. Training programs could also be taken a step further by considering whether general programs could be tailored to make them more applicable to Indigenous communities.

Source Water Protection Planning

One important example where the government could do more to make provincial programs work better for First Nation communities is Ontario’s source water protection program. While First Nation communities can opt in to Ontario’s source protection planning process under the Clean Water Act, 2006, only three communities have chosen to fully participate in the program. A modified version of this program more tailored to the unique circumstances of many First Nation communities could encourage greater uptake. For example, the ministry could work with the three First Nation communities already participating in the program to develop guidance materials and sample policy language that address risks common in First Nation communities. Additionally, the MOECC should consider how they might acknowledge and support the implementation of source protection plans created by First Nation communities outside of the Clean Water Act, 2006 process.

Regulating Nearby Water and Land Use

Many Indigenous communities are especially vulnerable to the effects of poor water quality and other forms of pollution. A number of factors contribute to this vulnerability, such as a lack of full-service medical facilities and environmental emergency response resources, as well as higher rates of disease and illness relative to other Canadians, all of which magnify the negative effects of poor water quality. Although only the federal government can regulate drinking water on reserve lands, Ontario regulates off-reserve activities that may affect reserve drinking water supplies. The province must exercise a heightened level of caution when regulating activities near reserve communities.
Province must exercise a heightened level of caution when regulating nearby activities. For example, issuing an approval that allows a facility to release effluent into a waterway might have a greater negative impact for a reserve community with no or limited water treatment infrastructure than it would elsewhere in the province.

Provincial ministry staff must have the training and direction to consider how land use planning decisions and approvals issued to projects near reserve communities might negatively affect those communities. This duty is, of course, in addition to fulfilling any consultation duties that also exist in such circumstances. As part of this effort, it is important to ensure that notices posted on the Environmental Registry are accessible to those in remote northern communities (e.g., in some communities with limited internet access it may be preferable to mail copies of the notice), and that sufficient time is provided for communities to develop their comments on such proposals.

Measuring Progress on Drinking Water Access

Setting measurable, achievable targets to monitor progress on drinking water access is a key step in measuring water quality and ending long-term advisories. The ECO commends the province for taking action to incorporate targets into the trilateral action plan. It is important, however, that targets applicable to all water advisories (not just the long-term advisories that are the focus of the trilateral action plan) be established as well. Establishing appropriate metrics and making progress reports available to the public will help ensure transparency and accountability as the federal, provincial and First Nations governments work to meet these goals.

Collaborating with the Federal Government and First Nations

Perhaps most important is that efforts to improve the quality of First Nations’ drinking water must be undertaken in partnership with the affected communities, as part of a larger, long-term strategy. The work of the province towards developing a trilateral strategy with the federal and First Nations governments is a strong starting point for such work. It is important that the trilateral collaboration is not restricted to work on long term advisories alone, as the ultimate goal must be to end all drinking water advisories. Although this is just one of a number of issues faced by many Indigenous communities, each in dire need of attention, drinking water is an important component of the reconciliation project. These issues are too big and too complicated for any one government to tackle alone – only with the province, federal government and First Nation governments and communities working together can sustainable solutions be crafted.
3.3
Air Pollution in Aamjiwnaang

3.3.1 Aamjiwnaang: A Community in Harm’s Way

The Ojibwe (Chippewa) reserve community of Aamjiwnaang lies on the shores of the St. Clair River, within the city limits of Sarnia. It is home to the Aamjiwnaang First Nation. The ancestors of Aamjiwnaang’s 2,300 members have lived in what are now Ontario and Michigan for millennia, and the current community site has been settled since at least 1827.

Aamjiwnaang looks a lot like many other small communities across Ontario, except that it is hemmed in by a uniquely intense concentration of heavy industries. About 40% of Canada’s chemical industry is located around Aamjiwnaang, earning the area the name “Chemical Valley.” Aamjiwnaang is not just surrounded by heavy industries, it is polluted by them.

Other Ontario communities, such as Hamilton and Sudbury, also have a high concentration of industry. However, Aamjiwnaang is among the most polluted places in Ontario because of the large number of heavy industries located so close to the residential community.

This situation is a legacy of land use planning decisions that would never be allowed today. The six large petrochemical and petroleum refineries located exceptionally close to the community are of particular concern (see Figure 5). On some of the community boundary roads, homes line the Aamjiwnaang side of the street, while refineries sit on the other; one facility is less than a kilometre from the daycare centre. Although the federal government, along with the Aamjiwnaang Band Council, carries responsibility for the reserve itself, the province is the primary regulator of the heavy industry that surrounds the community.

Photo credit: Toban B., flickr. Used under CC BY-NC 2.0
In 2014, the ECO called the level of pollution in Aamjiwnaang “truly shameful” and called on the MOECC to “enhance its efforts to eliminate the adverse effects of the industrial facilities within Chemical Valley on the Aamjiwnaang community and the environment.” There has been considerable progress since then. The MOECC has clarified some regulatory standards, enhanced its monitoring, laid charges for some spills, and developed a stronger relationship with the community. But today, and for years to come, Aamjiwnaang residents continue to be exposed to pollution that may adversely affect their health.

Figure 5. Map showing major petroleum and petrochemical facilities surrounding the Aamjiwnaang First Nation community, shown in red. Source: Created by the ECO, using GoogleEarth.
3.3.2 Pollutants in the Aamjiwnaang Airshed

The facilities of Chemical Valley release hundreds of toxic chemicals into the Aamjiwnaang (and, more broadly, Sarnia) airshed from hundreds of discharge points. Some of the compounds of particular concern include:

- **Heavy metals, including mercury, lead and cadmium:** These toxic metals can accumulate in soil and water, and are associated with developmental, physical and neurological problems in humans and wildlife. Exposure can be especially dangerous to fetuses and young children.

- **BTEX compounds (benzene, toluene, ethylbenzene, and xylene):** These compounds are a particularly toxic subgroup of volatile organic compounds (VOCs) often found in petroleum products. High concentrations can be toxic to aquatic life, and can lead to crop damage. Long-term exposure to high concentrations can damage organs, cause respiratory problems, damage the immune system, and cause cancer.

- **Benzene:** the first of the BTEX compounds, is a non-threshold carcinogen, meaning that exposure to any amount of benzene increases cancer risks. Acute exposure to benzene can cause serious impacts, including dizziness, irregular heartbeat and, in extreme cases, death. Better regulation of fuels and industries, as well as restrictions on smoking and the reformulation of certain consumer products, have dramatically reduced benzene levels in the air. However, benzene levels remain high and frequently above health standards in Sarnia, and particularly in Aamjiwnaang.

- **Particulate matter:** Dust, dirt, soot and smoke particles that are smaller than 10 micrometres in width are considered inhalable particulate matter (for reference, the average human hair is about 70 micrometres thick). When inhaled, particulate matter can be deposited in lungs, and the smallest particles can enter the bloodstream. As a result, excessive inhalation of particulate matter has been linked with a variety of heart and lung problems.

- **Sulphur dioxide (SO₂):** Sulphur dioxide damages trees and other plants and is one of the components of acid rain. Even brief exposure (5 to 10 minutes) can cause a range of respiratory and cardiac problems in humans, including asthma, bronchoconstriction, changes in lung function, airway inflammation, and airway hyper-responsiveness. The odour threshold of SO₂ is higher than its health impact level, meaning that it can have health impacts even if it cannot be smelled.

The MOECC has identified benzene and sulphur dioxide as particular threats to the Aamjiwnaang community.

Altogether, Chemical Valley releases millions of kilograms of pollution into the Aamjiwnaang airshed each year. Much of this pollution comes from routine emissions from dozens of facilities, which are permitted by the MOECC. Frequent unscheduled, non-routine releases of pollution, called “spills” by the MOECC, also contribute to the problem. Companies are required to self-report spills to the MOECC.

Because of the way these facilities have been designed and built, with hundreds of different discharge points from multiple facilities and no buffer zone between industry and community, there are no easy options for eliminating these releases altogether. Many parts of these facilities are designed to release contaminants into outdoor air in order to protect the health and safety of workers in the facilities, and to avoid indoor buildup of explosive gases. The provincial government has a strong and legitimate interest in the economic health of Sarnia’s petroleum and chemical industries.
These industries frequently raise competitiveness concerns about Ontario environmental regulations, including the recent launch of a cap and trade program. The extraordinary proximity between the vulnerable community of Aamjiwnaang and this essential pillar of Ontario’s economy creates an exceptionally difficult public policy challenge.

3.3.3 Impact of Air Pollution in Aamjiwnaang

Environmental Impacts

The multitude of pollutants released into the airshed every day result in frequent, serious air quality issues. In addition, community waterways and soil are heavily polluted with many of the same pollutants. Significant benzene and other hydrocarbon spills have contaminated the soil and water, and remediation work has often been slow. As noted above, many of these pollutants can damage trees and other plants, and harm fish and wildlife.

Health Impacts

There is strong evidence that pollution is causing people in Aamjiwnaang adverse health effects which neither the federal nor provincial government have properly investigated. Aamjiwnaang is known, sadly, for a 2005 study that confirmed a skewed sex ratio of babies in the community – two girls are born for every boy. Although there has been no follow-up study, anecdotal reports confirm that the sex ratio remains skewed at two-to-one. A 2013 study of Aamjiwnaang mothers and children confirmed that their bodies contain pollutants associated with nearby industries. In particular, the study found above-average levels of cadmium, mercury, perfluorinated compounds, and polychlorinated biphenyl (better known as PCB), among others.

In the early to mid 2000s, a series of studies found that Sarnia (including Aamjiwnaang) experienced high frequencies of many illnesses, higher-than-average hospital admissions for respiratory and cardiovascular illnesses, and higher-than-average incidences of certain cancers. In 2005, the Ontario Medical Association determined that Sarnia-Lambton was among the most heavily impacted communities with respect to health effects from air pollution. There was no government follow-up on these findings, and no updated studies have been completed.

Stress is an under-acknowledged consequence of living surrounded by so much pollution. Stress is caused by both the uncertain long-term health consequences of exposure to pollution, as well as the unpredictable nature of spills. In Aamjiwnaang, a “shelter-in-place” siren may go off at any time because of dangerous spills, requiring residents to immediately go or stay inside, seal air exchanges and await further instructions. Many residents report living on edge, bracing for the next siren to go off, regardless of their plans and schedules. This stress is further exacerbated by the noise and vibration caused by unpredictable flaring (discussed later in this chapter), which can be significant enough to rattle the windows of buildings. Nighttime flaring – a regular occurrence – is loud and bright enough to disrupt some residents’ sleep.

Members of the community have long sought a formal, government-led study to identify the health effects of their polluted environment and other factors. As in all First Nation reserves, Health Canada is the government body responsible for such an undertaking. It has chosen not to investigate. In the absence of provincial or federal government action, the community undertook its own health survey in 2004/2005. Respondents to this survey self-reported noteworthy rates of: asthma; high blood pressure; severe and chronic headaches;
THERE IS STRONG EVIDENCE THAT POLLUTION IS CAUSING PEOPLE IN AAMJIWNANG ADVERSE HEALTH EFFECTS WHICH NEITHER THE FEDERAL NOR PROVINCIAL GOVERNMENT HAVE PROPERLY INVESTIGATED.

Learning and behavioural problems in children; skin rashes; and miscarriages and stillbirths. Anecdotal reports are that these results remain generally representative of the ongoing health problems for many in the community. Still, there has been no government follow-up.

Disruption to Life and Culture

Pollution’s environmental and health impacts, as well as the frequency of shelter-in-place advisories, combine to disrupt the lives and cultural practices of people in Aamjiwnaang. Residents report that the pollution hinders their ability to participate in hunting, fishing, medicine gathering and ceremonial activities.

3.3.4 Aamjiwnaang Fights Back

Despite these difficult circumstances, members of the Aamjiwnaang community have fought persistently over the past 15 years to limit new pollution in their airshed.
and to demand better environmental protections. This work has included a range of strategies – everything from legal challenges\(^67\) to awareness-raising “toxic tours” of the community.\(^68\) A cornerstone for much of this work has been the Aamjiwnaang Health & Environment Committee, which led a successful fight against a proposed ethanol plant in 2002 and 2003, and has been involved in a number of ongoing projects, including air quality monitoring.\(^69\)

Aamjiwnaang members have also been active users of the *Environmental Bill of Rights* (*EBR*). For example, the Health & Environment Committee actively monitors the Environmental Registry and flags issues of interest to the community, assisting members in submitting comments on proposals.\(^70\) As well, community members submitted an *EBR* application for review in 2008 calling for the creation of legislation to address the impacts of cumulative effects on communities that are pollution hotspots like Sarnia. The MOECC agreed to undertake this review and – after years of delay – the ministry anticipates completing this review very soon. In 2013, Aamjiwnaang community members filed an *EBR* application for investigation into a series of incidents at the Shell refinery that released toxic fumes into the air, making community members sick. As a result of the MOECC’s investigation into these incidents, Shell was fined (see *Enforcement Action in Sarnia* below).
3.3.5 Why is Aamjiwnaang So Polluted?

The root cause of Aamjiwnaang’s pollution problem is the existence of so much heavy industry in such close proximity to their residential community (sometimes literally across the street). The community is not moving; nor, likely, are the industrial facilities. Despite this, significant improvements are possible. Currently, several factors make the situation worse than it needs to be, and each presents opportunities for improvement. Broadly speaking, there are three main problems with the MOECC’s approach to industrial pollution affecting Aamjiwnaang:

1. Regulations that do not protect public health;
2. Inadequate monitoring, which hinders enforcement; and
3. Poor communication between the MOECC and Aamjiwnaang community.

Regulations That Do Not Protect Public Health

Ontario has an elaborate system of air quality regulation, which has gradually become more stringent since air standards were introduced in 1971. However, three key flaws allow excessive air pollution in the Aamjiwnaang airshed:

- air standards that are outdated or not based on protecting health;
- emissions that the MOECC doesn’t count; and
- ignoring the cumulative impacts of multiple facilities.

Together, they mean that Aamjiwnaang is exposed to significant human health impacts even if each company complies with its pollution permit.

Standards That Do Not Protect Health

Ontario’s air standards are set out in the air quality regulation, O. Reg. 419/05. To legally operate in Ontario, each facility must demonstrate that its emissions meet the air standards (unless the company obtains MOECC approval to rely on a technology-based standard instead, as discussed below). Ontario’s air standards for some pollutants do not sufficiently protect human health, and lag behind those of leading jurisdictions.

Outdated Standard for Sulphur Dioxide

Ontario’s permissible emission limit for sulphur dioxide ($\text{SO}_2$) was set in 1974, and has never been revised. The MOECC identified $\text{SO}_2$ as a “high priority” for an updated air standard based on its release pattern in Ontario, identification as a priority by federal and national committees, and toxicological information published since 1974. Still, no updated air standard has been adopted.

Ontario’s 1-hour air standard for $\text{SO}_2$ is over six times higher than the level identified by Health Canada as being sufficiently protective of human health (see Table 1). Ontario’s 30-minute standard is even less stringent, even though short exposures (e.g., 5 to 10 minutes) can cause harm, especially if they are repeated.
ONTARIO IS CONTINUING TO REGULATE SULPHUR DIOXIDE WITH A 43-YEAR-OLD STANDARD THAT IT KNOWS DOES NOT PROTECT HUMAN HEALTH.

In 2016, the MOECC began consultations on a new sulphur dioxide air standard, hosting a “pre-consultation science meeting” with representatives from Aamjiwnaang and Walpole Island First Nations, among other participants. To its credit, the ministry provided funding to Aamjiwnaang to hire an independent technical expert to advise the Band Council throughout this process, allowing them to more meaningfully participate. In March 2017, the MOECC advised that an updated sulphur dioxide proposal was to be posted “soon” on the Environmental Registry. But as of September 2017, no such proposal had been posted, although the ministry advised the ECO that discussions with stakeholders were ongoing. This means that Ontario is continuing to regulate sulphur dioxide with a 43-year-old standard that it knows does not protect human health.

### Table 1. Ontario’s SO₂ Standards Compared to Standards Set or Recommended by Other Organizations (measurements provided in micrograms per cubic metre (μg/m³) and parts per billion (ppb)).

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<tr>
<td>10 minutes</td>
<td>175 μg/m³ (67 ppb)</td>
<td>500 μg/m³ (190 ppb)</td>
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<tr>
<td>30 minutes</td>
<td>830 μg/m³ (312 ppb)</td>
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<tr>
<td>1 hour</td>
<td>690 μg/m³ (259 ppb)</td>
<td>105 μg/m³ (40 ppb)</td>
<td>200 μg/m³ (70 ppb)</td>
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<tr>
<td>24 hours</td>
<td>275 μg/m³ (103 ppb)</td>
<td>20 μg/m³ (7.5 ppb)</td>
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### Benzene Standards Based On Technology, Not Health

A second example of standards that do not fully protect human health is the use of technical standards for Benzene and related compounds. As described above, benzene and benzo(a)pyrene are non-threshold carcinogens, which means that exposure to any amount increases the risk of cancer. They are released into the air by leaks and venting from equipment such as: petrochemical storage vessels, valves and pumps; industrial sewage treatment; truck and railcar product loading; and marine vessel loading.

In 2011, Ontario set a new, lower, health-based air standard for benzene (0.45 μg/m³ per year) to come into effect July 1, 2016. However, some industries, including all six petrochemical and petroleum facilities located in particularly close proximity to Aamjiwnaang, did not expect to be able to meet the 2016 benzene air standard. The Canadian Fuels Association and Chemical Industry Association of Canada therefore asked the MOECC to develop a technical standard that these industries could comply with instead, that would allow them to release emissions that exceed the general air standard. This is a legal process, permitted by the air quality regulation. Technical standards are used when facilities within particular industries or that use particular
equipment are unable to meet general air standards due to technical or economic limitations. They allow industry, in effect, to install the best available technology that is “economically achievable” rather than meet the health-based standard, regardless of the impact on Aamjiwnaang.

In 2016, the ministry concluded a multi-year process to develop technical standards for benzene and benzo(a)pyrene emissions from petroleum refineries and benzene and 1,3 butadiene from petrochemical manufacturing facilities. The new standards require industry to take a long list of specific measures to reduce and to detect benzene emissions, but not to meet any particular benzene emission limit. Some of the measures will not be phased in until 2025. The ministry has committed to reviewing the technical standard in 2023 in order to determine if it is still appropriate to move to a more-stringent but still technology-based standard in 2025 (as planned); the precise scope of this review has not been established.

To develop these technical standards, the MOECC formed a working group that included representatives of the relevant industry associations, as well as representatives of both Aamjiwnaang and Waipole Island First Nations, among others. The MOECC also provided the Aamjiwnaang First Nation with funding to allow them to hire their own technical consultant. This was the first time such an arrangement was used for this type of process, and it later served as a precedent for the on-going SO2 standards development process. This allowed the community to meaningfully participate in the later part of the standards development process alongside industry and government experts. The community’s consultant expressed frustration, however, that they had not been meaningfully included from the beginning of the process.

As the MOECC moves into the implementation phase of these new technical standards, it has established a collaborative project where participants from Aamjiwnaang and Waipole Island First Nation, as well as a community environmental group, will work with volunteer facilities on a range of monitoring activities.

The MOECC Ignores Some Emissions

The MOECC does not apply its air standards to a facility’s entire emissions. Under the local air quality regulation, the MOECC requires each industrial facility to measure or estimate its emissions and use an approved dispersion model to estimate the maximum concentration of those emissions at the “point of impingement” – typically, the point where the pollution reaches neighbouring properties. The estimates are set out in an Emissions Summary and Dispersion Modelling (ESDM) report. The MOECC relies on these ESDM reports to decide whether a facility’s emissions are within the allowable limits.

ESDM reports are only reliable, however, if the emissions calculations are accurate and complete. It has been common practice in Canada and the U.S. for facilities to only include emissions from steady-state operations in their ESDM reports, leaving out emissions.
from start-up, shut-down and malfunction conditions – called “transitional operating conditions.” The MOECC guidance document states:

focusing the analysis on steady-state operating conditions may be reasonable if there are no acute effects associated with the contaminant during transitional operating conditions and transitional operating conditions last only for a few hours a few times per year.\textsuperscript{81}

Unfortunately, this guideline is not reliably followed. Some Sarnia industrial facilities frequently use flaring at multiple locations as a fast, cheap method to burn off excess chemical gases that would pose a danger within their plant.\textsuperscript{82} Acid gas flaring can be a major source of sulphur dioxide, particulate matter, noise, vibrations and light. As stated above, even short, undetected exposures to sulphur dioxide can adversely affect human health; such impacts should qualify as “acute effects.” Moreover, these incidents happen multiple times a month and can last several hours or even days. Yet, although flaring is common, and has acute effects on the community, the emissions from flaring are not reliably included in ESDM reports. When flaring emissions are left out of ESDM reports, the MOECC does not consider such emissions when it evaluates facility compliance with air emissions limits. For this reason, flaring is a particular concern for Aamjiwnaang.

In the meantime, the MOECC is collecting more information about flaring, as part of its Sulphur Action Plan under the broader Sarnia Air Action Plan. The focus of this action plan is to better understand all sources of sulphur emissions from industry (including flaring), and eventually reduce such emissions. The MOECC has collected additional information from industry about flaring events, which allowed the ministry to identify gaps in the ESDM reports of several facilities,\textsuperscript{84} and has updated its guidance on how to model flares in ESDM reports. The MOECC has said that it will continue to work on this issue, but no timelines have been provided or next steps identified.

MOECC Ignores Cumulative Effects

Ontario regulates each facility’s air emissions as if it were the only emitter in the area. When issuing an approval for one facility, the MOECC does not consider the cumulative or synergistic impacts on human health or the environment when several emitters are located close together, as they are in Chemical Valley.

This issue is the focus of the still outstanding 2008 \textit{EBR} application for review asking the province to consider new regulations that address air pollution “hot spots.” The \textit{EBR} requires the MOECC to decide such applications in a reasonable time. Eight years is not reasonable especially when human health is at stake.
The ECO has repeatedly raised this application with the MOECC, and has been assured that significant effort is going into the review. The MOECC has committed to using data from the Environmental Activity and Sector Registry for air emissions to inform ministry policy regarding cumulative effects. The MOECC also facilitated a Cumulative Air Emissions Assessment group (a sub-group of the O. Reg. 419/05 External Working Group), which includes representatives from environmental organizations, Aamjiwnaang and Walpole Island First Nations, local public health, industry and the MOECC. This group worked from 2015 to 2017 to inform the future ministry policy on cumulative air emissions. But as of September 2017, no results had been released and no policy proposal had been posted on the Environmental Registry.

After waiting eight years for the ministry to complete this review, Ecojustice applied to the Divisional Court in July 2017 for a judicial review of the ministry’s failure to complete this EBR review within a reasonable time.

This eight-year delay is particularly egregious because there is nothing new about the issue of cumulative effects. More than a decade ago, the MOECC put considerable effort into developing a cumulative air impact policy for
the Clarkson airshed, just west of Toronto. The Clarkson Airshed Study collected considerable air monitoring data between 2003 and 2006. A Task Force was convened to develop an Action Plan to improve air quality in the airshed and to recommend air quality improvement targets, timelines for achieving those targets, strategies, reporting requirements for the Action Plan, information reporting, and oversight, coordination and leadership for the plan. Ultimately, the 2010 Action Plan recommended that the ministry develop and implement a new form of governance and an Airshed Management System in the Clarkson area to manage cumulative impacts. This included evaluating applications for environmental approvals that would increase emissions within the airshed in light of the capacity of the airshed to absorb those emissions. This recommendation was never implemented.

Moreover, the computer models that the MOECC uses to assess emissions are capable of handling cumulative effects. Indeed, the two MOECC-approved emissions computer models used for generating ESDM reports are programmed to remind users that background concentrations should be considered in Ontario; but this instruction is routinely ignored. Ontario Regulation 419/05 could, but does not, require models to factor in background air quality. The U.S. also has an elaborate system for gradually requiring air quality improvements in stressed airsheds while still permitting new facilities to open. Again, Ontario has chosen not to implement a comparable approach.

What Else Is Needed?

Update the SO₂ standard. By continuing to rely on a 40-year-old sulphur dioxide standard that, as the ministry acknowledges, does not protect human health, the MOECC puts Aamjiwnaang residents and many other Ontarians at unnecessary risk. Although much work towards an updated standard has been done, progress has stalled. The MOECC should prioritize finalizing an updated standard, starting with posting the Environmental Registry proposal before the end of 2017.

Ensure Provincial Officers are trained on the new benzene technical standards. Because of the detailed technical nature of the benzene technical standards, it is critical that the MOECC not only undertake compliance inspections at registered facilities, but that inspectors have specialized training to understand relevant equipment and to be alert to possible technical issues relating to such equipment. Although MOECC officers are well trained, they are responsible for many different types of facilities with a wide range of complex equipment. It cannot be assumed that provincial officers always have the depth of understanding necessary to properly evaluate compliance with a new technical standard.

Ensure new benzene standards get results. The MOECC must transparently monitor community air to ensure that the technical standards actually reduce benzene levels in Aamjiwnaang. The Petroleum Refining Industry Standard and the Petrochemical Industry Standard require each facility to install and operate at least six property line monitors for benzene, and to publish an annual monitoring report “including a summary of actions taken to address any statistically significant higher monitoring results.” However, property line monitors will not necessarily detect cumulative impacts, and the community should not have to wait more than a year to know what it is breathing. The MOECC should therefore have real-time community monitoring results available to the public, just as it does for major urban communities’ Air Quality Health Index.

Address transitional operating conditions. The MOECC must clarify its rules on transitional operating conditions by explicitly requiring in regulation that emissions from acid gas flaring be included in ESDM...
reports. In the interim, the MOECC should enforce its current guidance. Flaring in Sarnia occurs frequently and has acute health and lifestyle effects on the neighbouring community. Accordingly, ESDM reports that omit emissions from flaring are incomplete and cannot support a valid environmental compliance approval. The MOECC should require all Sarnia industrial facilities that flare to submit ESDM reports that include these emissions. If correctly completed ESDM reports predict noncompliance with the existing, very lax sulphur dioxide standards, the MOECC should take appropriate compliance and enforcement action, including issuing orders, where appropriate.

Inadequate and Insufficient Monitoring Equipment

There is only one permanent air monitoring station in Aamjiwnaang and it is designed to measure pollutant levels averaged over long periods of time. This is useful for monitoring the general air quality in the Aamjiwnaang airshed, but the equipment is not designed to pinpoint the geographic source of any rogue emissions (which could help identify which facility is responsible for specific incidents). Additionally, there is no monitoring equipment designed to measure the noise and vibrations associated with flaring events.

Recently, the MOECC has invested in additional monitoring equipment. The MOECC recently stationed a new air monitor in Aamjiwnaang that measures volatile organic compounds including benzene. A temporary air monitoring station has also been installed to determine if more monitors are required. As described above, some industrial facilities will also be installing additional property line monitors for benzene, as part of the new technical standards.

Industrial facilities also do some of their own monitoring. For example, the Sarnia Lambton Environmental Association, a co-operative comprised of several Sarnia-area industrial manufacturers, operates a mobile monitor to monitor ambient air quality. Members acknowledge that they can reduce emissions when the need is identified by the monitoring equipment through a “switch to fuels that contain less sulphur dioxide. Rates of manufacturing products may also be cut back in order to reduce SO$_2$ emissions.”

Inadequate Monitoring, Enforcement Challenges

Limited air quality monitoring has hindered the MOECC’s ability to effectively enforce the Environmental Protection Act rules that are supposed to protect the Aamjiwnaang community, and has kept the community in the dark about what they are breathing. Three key issues hinder the MOECC’s ability to effectively monitor air quality and enforce air pollution regulations:

- inadequate and insufficient monitoring equipment;
- over-reliance on industry self-reporting; and
- enforcement challenges due to delayed responses and lack of evidence.

Finalize a cumulative effects policy. The ministry agreed to undertake the “hotspots” application for review in 2009 but has yet to propose what it will do to address the issue. The MOECC should develop a clear policy setting out how it will take cumulative impacts into consideration during its various regulatory functions, including: when deciding whether to issue an environmental compliance approval; determining what conditions to impose upon an approval; setting air standards; and when updating the permit-by-rule regulation for activities with air emissions. Every year that has passed since 2009 without such a policy represents a potential compounding of health and environmental impacts on communities like Aamjiwnaang.
Reliance on Self-Reporting

Like all Ontario emitters, Sarnia facilities are required to self-report to the MOECC anytime they have a “spill” — an emission of potentially harmful pollutants that is “out of the normal course of events.” This includes flaring (in many cases, they must also notify the ministry in advance if they anticipate needing to flare). It may be that the facilities involved are in fact reporting every incident they are themselves aware of, as required.

However, members of the Aamjiwnaang community have expressed doubt that Sarnia facilities are as diligent as they should be about noting and reporting every spill, because community members have repeatedly experienced odours and adverse effects when no facility reported a spill. It can be challenging for the MOECC to detect spills that are not reported because of limited air monitoring equipment.

In addition to routine annual compliance inspections, the MOECC has begun to conduct enhanced inspections as part of the Sarnia Air Action Plan. In these enhanced inspections, MOECC staff go beyond checking for compliance with environmental approvals, and focus more broadly on all possible sources of benzene and sulphur emissions. The goal of this work is to identify sources of “fugitive emissions,”
i.e., emissions that leak from buildings, vehicles and equipment and are not intentional discharges. The MOECC reports that these inspections have allowed the ministry to gather information about common sources of fugitive emissions, which can, in turn, inform future technical standards and guidelines on equipment and best practices.

**Enforcement Challenges Due to Delayed Response and Lack of Evidence**

In addition to the regulatory air standards that limit emissions of particular substances, section 14 of Ontario’s *Environmental Protection Act (EPA)* prohibits the release of any substance that causes an adverse effect. In other words, even if a facility is operating in accordance with its permits, if it releases substances that make people sick, cause material discomfort, damage vegetation and/or interfere with the normal use of their property (as a “shelter-in-place” order surely does), the facility violates the *EPA.*\(^{135}\)

However, the limited monitoring capabilities and reliance on self-reporting discussed above hinder the MOECC’s ability to enforce section 14 of the *EPA* by making it more challenging to determine if a violation has occurred. Many health-relevant releases are brief and it is understandably difficult for the ministry to collect the necessary evidence to determine who is responsible for intermittent, unpredictable, short-lived releases. Although MOECC officers make every effort to respond quickly, it can take several hours for them to arrive. As a result, community members report that it is not uncommon for someone to smell and feel the negative physical effects of a pollutant when they call to report an issue, but, by the time ministry staff arrive, the pollutants have dissipated sufficiently that they are no longer detectable. In such a situation, if a facility declines to identify themselves as the source, there is no way for the ministry or the community to determine the type, extent and source of an emission.

It should be noted, however, that the MOECC’s Sarnia district office is more responsive to complaints than most other MOECC offices. Elsewhere in the province, the MOECC uses discretion when deciding whether or not to dispatch an officer to investigate a single complaint. However, the Sarnia office has made it a policy to always dispatch a person to respond to even a single after-hours complaint about an industrial facility within a designated part of Sarnia and St. Clair (including Aamjiwnaang). This protocol was developed in recognition of the unique vulnerability of many residences in such close proximity to heavy industry.
Charges have been laid for some notable spills. For example, the ministry laid charges against Shell Canada Limited for one of the January 2013 incidents that was the subject of the EBR application for investigation noted in Part 3.3.4. As a result, in 2015, the company pled guilty to causing or allowing the discharge of odour into the natural environment. It was fined $500,000 and required to contribute $200,000 to the Aamjiwnaang First Nation (which the community used to install their own “fenceline” air monitoring network along the community boundaries). In 2016, Imperial Oil Limited pled guilty to a charge of discharging coker stabilizer thermocracked gas into the environment in relation to a 2014 incident. During a leak that lasted three and half hours, residents experienced burning eyes, sore throats, headaches, light-headedness, nausea and dizziness. Some residents were forced to remain in their homes, and a hospital had to take defensive measures. The company was required to pay over $800,000 in fines and victim surcharges.

**What Else Is Needed?**

**More air monitoring equipment.** Additional air monitoring equipment and related technology is needed in Aamjiwnaang, whether funded publicly or by industry. The current monitoring network cannot track the source of fast-dissipating spikes in common contaminants. Of particular use would be more on-site monitoring, as well as mobile equipment that can be used to better track contaminants through the airshed. Noise and vibration monitoring would also help quantify and document such disruptions to the community, which may violate the EPA. It is equally important that the community have prompt access to the results, which should not be obscured by averaging of the data over long periods of time.

**Require industry to disclose and respond to ambient air quality monitoring data.** In Sudbury, two companies operating the majority of large polluting facilities jointly maintain, and publicly disclose the results of, 18 fixed SO$_2$ monitoring stations. They are also required to predict where the highest pollutant concentrations will occur and to send a mobile monitor to those locations. For this purpose, they maintain a sophisticated weather office, and jointly sponsor a third party to monitor and report the pollution. Real time SO$_2$ data is accessible on two public websites.$^{89}$ Facilities curtail production when necessary to avoid exceeding ambient air pollutant limits in the community. The MOECC should require Sarnia’s industrial facilities to undertake similar measures.

**Do more to confirm self-reports.** The ministry should do more to confirm that facilities are accurately tracking and reporting exceedances of air standards. Having facility monitoring data independently verified, and expanding ministry powers to compel facilities to carry out modeling of specific conditions would both further this end. Additionally, increasing the number of proactive inspections undertaken by the MOECC could also help verify that facilities are operating in compliance with both their approvals and the law more generally.

**Additional resources to support enforcement efforts.** The MOECC’s Sarnia district office is responsible for ensuring compliance with environmental rules for 40% of Canada’s entire chemical industry. To manage this sizable task, the district office has 6
full-time provincial officers who carry out inspections in 40 industrial facilities. It is clear the district office works hard to both responsibly enforce the rules and to be responsive to Aamjiwnaang’s concerns and needs. However, challenges persist, as discussed above.

In light of the unique concentration of industry and its impacts on the people of Aamjiwnaang, as well as the urgency of reconciliation with Indigenous people, more resources should be dedicated to ensure rapid and effective responses to community complaints whenever they occur. In the past, the ministry has required businesses that create significant regulatory loads to fund dedicated environmental officers, as well as proactive odour detection patrols. Something similar may be appropriate for Aamjiwnaang.

Moreover, in order to enhance the air monitoring network, acquire other useful technology, undertake additional proactive inspections, as well as ensure personnel are available to respond as quickly as possible to complaints, the Ontario government needs to provide the Sarnia district office with additional resources.

**Communication Challenges**

Beyond the discrete regulatory and enforcement problems identified above, ineffective and insufficient communication between the MOECC, industry and the Aamjiwnaang community is a clear source of frustration. Poor communication undermines what limited trust the community has in the government and industry, and makes every challenge more difficult to address. These challenges largely fall into three categories:

- an unreliable emergency warning system;
- inadequate information sharing between the MOECC, industry, and the Aamjiwnaang community; and
- frustration and mistrust among community members toward the MOECC.

**Unreliable Warning System**

Aamjiwnaang and the larger Sarnia community is equipped with an emergency response system intended to warn residents about dangerous discharges of contaminants. In the most severe situations air sirens sound to warn the community to shelter-in-place. Residents cannot fully trust this system, however, because there are times that community members can smell, taste and feel the significant effects of air pollutants, but no sirens go off. This reportedly happened in 2013, during an incident at the Shell facility that resulted in charges against the company. This unreliability both increases the risk exposure of Aamjiwnaang’s residents, and also increases their stress and fear.

There are also reports of mixed messages being delivered from the community emergency management team, the MOECC and the facilities themselves. For example, community members recall situations in which one entity told them there was a problem and they should stay inside, while another told them that everything was operating as normal.

**Inadequate Information**

Community members report that it is often difficult for them to get information either from the MOECC or from the facilities directly about discharges of pollutants or other incidents as they occur (i.e., at the time an odour is smelled in the air, people are feeling ill, or a siren is going off). This hinders the ability of community members to respond appropriately, and also increases stress and fear. For example, in 2013 it was reported that a release of hydrogen sulfide made children at the
daycare centre ill. However, the emitter reportedly did not notify the community or nearby hospitals of the spill. As a result, when the children were taken to hospital, the doctors lacked key information about the cause of their symptoms.\textsuperscript{20}

The Sarnia Lambton Environment Association, the industry group, collects substantial monitoring data but only for its own use. Short-term pollutant spikes are recorded by its monitoring equipment, but only one-hour averages are reported to the ministry. Even less information is provided to the public, and not all of it is accurate. Reports on the Sarnia Lambton Environment website are quite old, the most recent being from 2015.\textsuperscript{21} What is advertised as “the most recent Progress Review Technical Summary for details on SO\textsubscript{2}” is from 2013.

Even when information is provided to the community, it is often inadequate (such as being advised to expect flaring on a particular day, but not being told whether there are dangerous substances in the emissions, such as sulphur dioxide). Similarly, there is often very little follow-up information available to the community after an incident, such as whether the MOECC conducted an investigation, what ministry staff determined regarding the emissions, or what action they took as a result.\textsuperscript{22}

Although problems persist, the MOECC and the community have been working to improve information dissemination. One of the most significant examples comes from Clean Air Sarnia and Area (CASA), a community advisory panel composed of representatives from industry, First Nations, community members and government. CASA’s mandate is to improve air monitoring and communication of air quality information to community members.\textsuperscript{23} Its most significant initiative is the development of a new website, expected to launch in late 2017, that will provide real-time air quality information from stations along the St. Clair River from Sarnia to Walpole Island.\textsuperscript{24} Aamjiwnaang Band Council plans to erect public screens displaying this information around the community in order to ensure that it is easily accessible to residents.\textsuperscript{25}

**A NEW WEBSITE WILL PROVIDE REAL-TIME AIR QUALITY INFORMATION FROM STATIONS ALONG THE ST. CLAIR RIVER FROM SARNIA TO WALPOLE ISLAND.**

**Frustration with the MOECC**

It is clear the MOECC’s Sarnia district office works hard to address Aamjiwnaang’s concerns. However, community grievances and mistrust persist regarding some ministry responses to complaints, particularly when the district office is closed and complaints must go to the MOECC’s Spills Action Centre, an emergency line that receives calls about all types of environmental emergencies across the entire province. Members of the community have reported that the MOECC staff answering these calls sometimes decline to send someone to investigate even where appropriate. For example, one community member reports being told by a Spills Action Centre employee that he was unable to assist if the community member did not know what facility was responsible for the fumes they called to report, rather than arranging for an MOECC officer to visit the site and attempt to determine the source of the contaminant.

Underlying these issues is the fact that the Governments of Ontario and Canada have given Aamjiwnaang, like all Indigenous communities, many reasons to mistrust government. In Aamjiwnaang, decades of pollution have left the First Nation with limited trust in the MOECC’s ability and desire to protect their health against big business’ interests. Although this has begun to change in recent years, as the ministry has made a clear effort to improve its responsiveness to community concerns, mistrust of both the ministry and industry permeates every conversation.

The MOECC has worked hard in recent years to improve its relationship with Aamjiwnaang. In 2016, the MOECC undertook a multi-step communication needs
assessment with Aamjiwnaang. The ministry completed: in-depth interviews with community leaders; conducted focus groups with mothers, youth, educators and others; and surveyed community members, including reaching out to a number of community groups. The results of this assessment will be used to inform ministry communications decisions in the future.

As a provisional measure, the MOECC has implemented an interim communications protocol aimed at providing clearer and fuller communications relating to emergency events. Representatives from the community confirmed that they felt this initiative has improved communications between the community and the ministry, although further clarifications are still needed.

What Else Is Needed?

Ensure a reliable warning system. The community must be able to trust that the warning system is reliable and will sound each and every time it is necessary to shelter-in-place. One way to help build this confidence is to ensure that, when incidents occur and the system does not sound, the MOECC provides an explanation of why the system did not sound (be it because the situation was not serious enough to merit a shelter-in-place advisory, because there was a mechanical or process breakdown, or for another reason). If the lack of sound is the result of an error, the ministry must communicate to the community what has been done to ensure the same problem does not happen again. Moreover, improving communication between Aamjiwnaang, the MOECC, and neighbouring facilities – with an emphasis on the open sharing of information about all incidents and air quality – will help build trust in all aspects of the emergency management system.

Require advance community notice of flaring. Another strategy that could improve community confidence in the warning system, as well as improve communication generally, would be to require facilities that immediately surround Aamjiwnaang to notify the community of expected flaring as a condition of their environmental compliance approval. It is already common practice to include approval conditions
requiring facilities to notify the MOECC if such incidents are anticipated, so it should be a small burden to require that they notify Aamjiwnaang’s Band Council at the same time. This small measure would go a long way to alleviating a lot of the apprehension community members feel when they see flaring and do not have information about whether it is associated with an emergency or what substances are in the emissions.99

Strengthen communication channels. The MOECC should continue to build on its work to date to improve communication with the community. In particular, community members highlighted a desire to receive more follow-up information after an incident. For example, as it currently stands, the MOECC may advise the community that it is going to investigate a complaint, but then never provide information about the outcome of the investigation, leaving the community wondering as to the results.100

Improve Spills Action Centre responses to incidents. For the benefit of not only Aamjiwnaang, but all of Ontario, Spills Action Centre staff need to be trained on how to respond to complaints of unknown contaminants from unknown sources. The Centre should undertake routine customer service quality assurance assessments in order to ensure that staff provide callers with accurate information and appropriate responses.

Improve transparency and build trust between the MOECC and Aamjiwnaang. Fundamental to achieving all other goals is an unwavering commitment from the MOECC to build trust and improve transparency in the ministry’s dealings with the Aamjiwnaang community. The Aamjiwnaang Band Council has expressed a desire for the MOECC to fund and sanction one or more roles for someone that works alongside other MOECC staff in carrying out inspections and investigations, but who is from Aamjiwnaang and reports back to the community on their work.

### 3.3.6 Conclusion: What’s Possible?

The people of Aamjiwnaang have suffered immensely from the shadow of Chemical Valley, and they continue to do so. Asthma and other respiratory problems are commonplace, cancer rates are higher than average, and a skewed sex ratio at birth, along with high rates of miscarriage and stillbirth, leave parents wondering about the long-term impacts on their children.101 This should not be the price anyone has to pay to live in the place they call home. That those affected belong to an Indigenous community on its ancestral land makes the situation all the more intolerable.

In a perfect world, the industries of Chemical Valley would continue to support Ontario’s economy, but would immediately stop emitting all toxic pollutants into the air that their neighbours breathe. In the real world, industry and the MOECC should do everything practicable to achieve transformative, tangible improvements, until Aamjiwnaang’s air quality meets health-relevant standards. The longer this takes, the longer the people of Aamjiwnaang will be exposed to pollutants known to adversely affect human health.

In this complex context, what do we expect the provincial government to do?

As shown in this chapter, there are many ways for the MOECC to improve the situation in relatively short order. In particular, the ECO recommends that:

1. No later than June 30, 2018, the MOECC amend O. Reg. 419/05 to set up-to-date SO₂ air standards that protect human health. Specifically, the MOECC should establish a SO₂ standard that meets or exceeds the level identified by Health Canada as being sufficiently protective of human health, i.e., a 1-hour limit of, at most, 105 μg/m³ (40 ppb).
2. The MOECC clarify, by regulation, that acid gas flaring must be included in ESDM reports, even when associated with transitional operating conditions. This will eliminate any confusion, and will ensure that Ontario’s air quality standards and approvals apply to all relevant industrial emissions. More broadly, the ministry must ensure that all health-relevant emissions resulting from foreseeable, repeated transitional operating conditions are properly reported, evaluated and regulated.

3. The MOECC ensure the people of Aamjiwnaang have access to real time air monitoring information. The people of Aamjiwnaang and their health professionals should know what they are breathing. For toxic contaminants with acute effects from brief exposures, like SO₂, Aamjiwnaang should know about short-term spikes when they happen, not just long-term averages. All outdoor air quality monitoring data should be public, whether collected by industry or the MOECC.

4. The Government of Ontario and the MOECC increase technical capabilities and response capacity at the Sarnia district office by making more resources available. Improved monitoring, more pro-active inspections, and faster response times will make it easier for the MOECC to identify violations of the EPA and ensure remedial action is taken.

5. The MOECC work with Aamjiwnaang to improve transparency and trust between the ministry and the community. In particular, the MOECC should make every effort to fulfill the community’s desire to have an Aamjiwnaang community member work alongside MOECC staff during compliance and enforcement activities.

The ECO’s recommendation regarding cumulative effects, set out in Chapter 2 of this report, is also worth restating here, as it has direct impact on the issues faced by the Aamjiwnaang community: “the ECO recommends that the MOECC ensure that all forms of environmental approvals (including ECAs and registrations) take into account the potential cumulative effects of multiple regulated entities on local air quality.” Taking cumulative effects into account when issuing approvals to industry has great potential to improve air quality and protect human health in the long term by imposing absolute limits on the amount of pollution a single airshed is required to accept.
Conclusion: Environmental Justice Must Be Part of Reconciliation

It is not a coincidence that Indigenous people and communities in Ontario bear a disproportionate burden of pollution and poor environmental management; rather, it is part of a much larger history of mistreatment by all levels of government.

This chapter describes environmental problems that threaten the health of several Indigenous communities, limit their cultural practices, and damage the natural environment. Although Grassy Narrows, Wabaseemoong, Aamjiwnaang, and the dozens of communities affected by drinking water advisories are each unique, the challenges they face have common threads applicable to many Indigenous communities: long-standing government failures to value Indigenous relationships to land and water, to acknowledge the severity of pollution when it occurs, to adequately investigate and remediate contamination, to communicate effectively with affected communities, and to work respectfully and collaboratively with them to seek solutions.

In recent years, the government of Ontario has begun to acknowledge this harmful legacy, and to seek reconciliation with Indigenous communities. The MOECC has worked to redress past wrongs and to improve current conditions. But undoubtedly there is still much to do. As stated in the introduction of this chapter, environmental justice must be part of Ontario’s pursuit of reconciliation. The ECO recommends that the Government of Ontario incorporate environmental justice as part of its commitment to reconciliation with Indigenous people and communities.
Endnotes


26. Margaret R. Neff et al., “Long-Term Changes in Fish Mercury Levels in Historically Impacted English-Wabigoon River System (Canada)” (2012) 14:9 J Environ Monit 2327 at2333. The authors’ model does not claim statistical significance and is only a high level analysis of the current best data. If the recovery of the Wabigoon-English River system continues its current trajectory, which is unlikely because of this statistical model does not well capture the most recent concentrations, there is a 2/3 chance that by 2064 walleye, a culturally and nutritionally significant food source in Grassy Narrows and Wabaseemoong, will be safe for routine consumption.


30. Ministry of the Environment and Climate Change, information provided to the ECO (February 24, 2017).

31. Asubpeeschoseewagong Netum Anishinabek (Grassy Narrows First Nation) - Ontario – Canada Working Group on Concerns Related to Mercury, Advice on Mercury Remediation Options for the Wabigoon-English River System Final Report by John Rudd, Reed Harris, & Patricia Sellers (March 21 2016).

32. Ministry of the Environment and Climate Change, information provided to the ECO (February 24, 2017); Asubpeeschoseewagong Netum Anishinabek (Grassy Narrows First Nation) - Ontario – Canada Working Group on Concerns Related to Mercury, Advice on Mercury Remediation Options for the Wabigoon-English River System Final Report by John Rudd, Reed Harris, & Patricia Sellers (March 21 2016) at 43.

33. Ministry of the Environment and Climate Change, information provided to the ECO (February 24, 2017).

34. Ministry of the Environment and Climate Change, information provided to the ECO (February 24, 2017).

35. Asubpeeschoseewagong Netum Anishinabek (Grassy Narrows First Nation), Evidence that the Former Chlor-Alkali Site in Dryden, Ontario is Still Leaking Mercury into the Wabigoon River by Patricia Sellers et al. (February 2017) at 2.


48. This particular obligation only lies with the federal government in reserve communities south of the 60th parallel.


51. Other recommendations related to actions the federal government could take in collaboration with First Nations governments to ensure drinking water safety in reserve communities.
Specifically, the report recommended that:

- Recommendation 88: Ontario First Nations should be invited to join in the watershed planning process outlined in Chapter 4 of this report.
- Recommendation 91: The provincial government should require the Ontario Clean Water Agency (OCWA) to offer its services to First Nations band councils for operating on-reserve water systems on a normal commercial basis.
- Recommendation 92: The provincial government should actively offer, on a cost-recovery basis, its training facilities and curriculum to First Nations water system operators.
- Recommendation 93: As a matter of principle, the provincial government should make technical assistance, drinking water testing, inspection, and enforcement available to First Nations communities on a cost-recovery basis, if requested.


For more on these issues, see: Cathy Gulli, “Why Can’t We Get Clean Water to First Nation Reserves?” MacLean’s (October 7, 2015), online:

- <www.lpparl.gc.ca/content/lpp/researchpublications/prb0843-e.html#2>

Citing Senate Standing Committee on Aboriginal Peoples, Proceedings, Part Two, Report of the RAP Community (Ottawa: Library of Parliament, 2010) online:

- <www.lpparl.gc.ca/content/lpp/researchpublications/prb0843-e.html#2>


65. Ecojustice, Exposing Canada’s Chemical Valley, (Toronto: Ecojustice, 2007) online:


66. Ecojustice, Exposing Canada’s Chemical Valley, (Toronto: Ecojustice, 2007) online:

- <www.med.uottawa.ca/sim/data/Images/Env_Health/Sarnia_air_pollution_report.pdf> at 9; also discussed in Patrick McGuire, “I Left My Lungs In Aamjiwnaang: Breathing the Most Polluted Air in Canada”, Vice.com (August 7, 2013), online:


67. These are refineries and manufacturing facilities belonging to Imperial Oil, Shell Canada, NOVA Chemicals, Suncor, INEOS Stryroration Canada Limited, and ARLAXCEO Canada Inc. You can view information about the environmental approvals each of these facilities hold on the Access Environment website:

  - <www.qisapplication.lrc.gov.on.ca/AccessEnvironment/IndexAccEnv.htm?site=AccessEnvironment&view=AE&locale=en-US>; All six of these companies applied to register in the technical standards registry for the benzene and benz[a]pyrene Technical Standards for petroleum or petrochemical facilities.


69. Over 110 million kilograms of pollution were released into the Sarnia airshed in 2009 and about 60% of this volume was released within 5 kilometres of Aamjiwnaang. See: Nil Basu et al., Biomarkers of Chemical Exposure at Aamjiwnaang, Multiple Chemical Exposure Assessment at Aamjiwnaang (McGill Environmental Health Sciences Lab Occasional Report, 2013) at 3.


71. Nil Basu et al., Biomarkers of Chemical Exposure at Aamjiwnaang, Multiple Chemical Exposure Assessment at Aamjiwnaang (McGill Environmental Health Sciences Lab Occasional Report, 2013) at 12.


74. Ecojustice, Exposing Canada’s Chemical Valley, (Toronto: Ecojustice, 2007) online:

- <www.med.uottawa.ca/sim/data/Images/Env_Health/Sarnia_air_pollution_report.pdf> at 9; also discussed in Patrick McGuire, “I Left My Lungs In Aamjiwnaang: Breathing the Most Polluted Air in Canada”, Vice.com (August 7, 2013), online:


77. “Aamjiwnaang First Nation Health & Environment Committee”, online: Aamjiwnaang First Nation Health & Environment Committee <www.aamjiwnaangenvironment.ca/>.

71. Compliance with the regulated air standard is assessed by the facility modelling its emissions, and demonstrating that the estimated maximum point of impingement (POI) concentration resulting from the facility’s emissions does not exceed the air standard. See: “Rules on Air Quality and Pollution”, online: Ministry of the Environment and Climate Change <www.ontario.ca/page/rules-air-quality-and-pollution>.

72. Sulphur dioxide emissions in Sarnia have reportedly gone up since some Sarnia facilities began using high sulphur Alberta feedstocks, typical of the oil sands.

73. Based on recent Health Canada research, an SO$_2$ standard based primarily on protecting human health would set a 1-hour limit at 105 micrograms (μg) per cubic metre of air (μg/m$^3$) or 40 parts per billion (ppb). Health Canada developed a SO$_2$ reference concentration (RfC) from the statistically significant lowest observed adverse effect concentration of 400 ppb, resulting in lung function decrements from controlled human exposure studies of asthmatics exposed for 5-10 minutes at increased ventilation. To account for the uncertainties in the controlled human exposure dataset, and to consider the supporting evidence from the epidemiology, a combined uncertainty factor of 6 was applied. This resulted in an inhalation RfC of 67 ppb ($\approx 175$ μg/m$^3$), which was converted to a 1-hour limit of 40 ppb ($\approx 105$ μg/m$^3$). See: Health Canada, Human Health Risk Assessment for Sulphur Dioxide, (Ottawa: Health Canada, 2016) online: <publications.gc.ca/collections/collection_2016/asco-hc/H144-29-2016-eng.pdf>.


76. Environmental Registry Policy Decision #012-6857, Petroleum Refining – Industry Standard under the Local Air Quality Regulation (O. Reg. 419/05) (July 28, 2016); Environmental Registry Policy Decision #012-6859, Petrochemical Industry Standard under the Local Air Quality Regulation (O. Reg. 419/05) (July 28, 2016).


79. Transitional operating conditions have traditionally been excluded, partly on the grounds that they are unpredictable and unavoidable, and partly on the grounds that, by definition, these are periods of time during which pollution control systems are not operating as designed.


81. When such chemicals must be released into the atmosphere, it is better to flare them than to vent them unburned; burning the gases reduces – but does not eliminate – their negative environmental and health effects.

82. A similar debate is underway in the U.S. In response to a petition by the U.S. Sierra Club, the U.S. Environmental Protection Agency issued a rule in 2015 to increase states’ regulation of air pollutants from transitional operating conditions. In 2015, it ordered 39 states to revise their air pollution rules to better control such air pollution. The rule was challenged in court, and is now being reconsidered by the U.S. government.

83. Specifically, the ministry determined that information was lacking in the Emissions Summary Dispersion Models, including information to verify that emission estimates were a maximum for the relevant averaging periods. (Ministry of the Environment and Climate Change, information provided to the ECO (March 24, 2017)).

84. “Air Quality: Sulphur Dioxide (SO$_2$)”, online: Sarnia Lambton Environmental Association <www.sarniaenvironment.com/air-quality-sulfur-dioxide-so2/>. Some Sarnia facilities now use natural gas feedstocks which typically contain much less sulphur, and at least one biomass-based facility is under construction.

85. Environmental Protection Act, RSO 1990 c E19, s. 15(1).

86. “Air Self Assessment”, online: Ministry of the Environment and Climate Change <www.ontario.ca/page/air-self-assessment>. Questions 10 and 13 in particular set out the rules around reporting emissions exceedances and any discharge that could cause an adverse effect.

87. Under s.6(1) of the EPA, no person shall discharge or permit a discharge of a contaminant into the natural environment. Under s.1(1) a contaminant is defined as any “solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them resulting directly or indirectly from human activities that causes or may cause an adverse effect” and adverse effect is defined as “one or more of, (a) impairment of the quality of the natural environment for any use that can be made of it, (b) injury or damage to property or to plant or animal life, (c) harm or material discomfort to any person, (d) an adverse effect on the health of any person, (e) impairment of the safety of any person, (f) rendering any property or plant or animal life unfit for human use, (g) loss of enjoyment of normal use of property, and (h) interference with the normal conduct of business.”


92. Interviews with community members and other stakeholders (various dates, 2017).

93. Ministry of the Environment and Climate Change, information provided to the ECO (March 24, 2017).

94. Ministry of the Environment and Climate Change, information provided to the ECO (March 24, 2017).

95. Aamjiwnaang First Nation, information provided to the ECO (May 25, 2017).

96. Ministry of the Environment and Climate Change, information provided to the ECO (March 24, 2017).

97. Ministry of the Environment and Climate Change, information provided to the ECO (March 24, 2017).

98. Ministry of the Environment and Climate Change, information provided to the ECO (March 24, 2017).

99. Interviews with community members and other stakeholders (various dates, 2017).

100. Interviews with community members and other stakeholders (various dates, 2017).