Office of the Auditor General of Ontario

Value-for-Money Audit:

Hazardous Spills

November 2021

Ministry of the Environment, Conservation and Parks

Hazardous Spills

1.0 Summary

In November 1985, divers discovered a dark, tarry mass of hazardous chemicals the size of a basketball court at the bottom of the St. Clair River, which forms part of the international border between Ontario and Michigan, and is a drinking water source for about 160,000 people. The toxic cocktail, eventually known internationally as "The Blob," was created by a series of chemical spills from companies along the river's shoreline. This included the 1985 Dow Chemical spill in Sarnia of 11,000 litres of a hazardous dry-cleaning solvent with the potential to cause cancer. Removing the contaminants from the river bed took millions of dollars and years of remediation work. Since the spill, the Ministry of the Environment, Conservation and Parks (Environment Ministry) amended the *Environmental Protection Act* to require spillers to prevent, report and clean up spills to protect Ontario from the environmental and human health impacts of hazardous spills. More than 35 years later, Ontario experiences about 8,000 spills per year, some of which injure workers, kill wildlife and pollute the air, land and water. Added to the short-term effects of these spills are unknown long-term and cumulative effects.

A hazardous spill is a discharge of a substance to air, land or water that can pose a threat to human health and/or the environment. Spills can take many forms, such as a breach of a pipeline during excavation spilling natural gas into the air, a spill from a crashed truck or train carrying hazardous substances, or an accidental spill of an industrial storage container that leaks dangerous chemicals into a nearby stream. Thousands of such spills are recorded in Ontario annually—73,000 between 2011 and 2020. Spills can occur due to malfunctioning equipment, human error and/or external factors, such as poor weather, that contribute to vehicle accidents and damage to buildings and infrastructure. In some cases, spilling substances may be a normal part of industrial operations. These spills are contained to prevent harm to human health or the environment and are therefore not required to be reported to the Environment Ministry. These contained spills are not part of the subject of this report.

The Environment Ministry is mandated to protect Ontario's air, land and water, leading to healthier communities and economic prosperity. The Environment Ministry is responsible for putting measures in place to prevent the risk of hazardous spills harming human health and/or the environment. These measures involve various regulatory and compliance activities, such as ensuring companies properly plan to prevent and respond to spills, regulating their operating activities to ensure they reduce the risk of spilling hazardous substances, and ensuring their compliance with these rules through inspections and enforcement.

Overall, our audit found that the Environment Ministry does not conduct adequate regulatory activities to reduce the risk of occurrence of the most

common sources of spills (natural gas transmission and distribution pipelines, electricity transmission and distribution transformers, and residential fuel tanks) impacting human health and/or the environment, and its enforcement regime does not effectively ensure compliance with the regulations that do exist. Other provincial government regulators, such as the Technical Standards and Safety Authority, do not have a mandate to protect the environment by preventing spills.

The Environment Ministry does not disclose sufficient information to the public about the quantity of hazardous spills and the harm they cause, to inform them of the impacts on their local community and across Ontario. Information is not disclosed on the specific locations where spills occur, who caused the spills, or the specific impacts the spills have had or may have on human health and/or the environment. Further, the information that is disclosed is not reported in a timely manner. Despite timely public reporting requirements under the *Management Board of Cabinet Act*, the Environment Ministry waited until May 31, 2021, while we were conducting our audit, before publicly reporting information on spills that occurred after 2013 and up to 2020.

The Environment Ministry is also not recovering its costs from responding to spills, resulting in taxpayers and not the spillers paying for spills. Of the over 73,000 spills that occurred in the province between 2011 and 2020, the Environment Ministry attempted to recover response costs from a spiller only three times. In these three instances, the Environment Ministry did not attempt to recover at least 47% of the total $1.3 million it incurred. When looking at just 30 of these 73,000 spills (0.04%) where the Environment Ministry did not attempt to recover any costs from the spiller, we estimated that the spills had cost Ontarians $4.5 million in staff time, laboratory tests and other expenses during spills response. The total amount of unrecovered costs incurred by the Environment Ministry responding to spills is potentially tens of millions of dollars more. However, this unrecovered amount cannot be estimated because the Environment Ministry does not track all costs.

With respect to the prevention of spills, we found the following:

- **Thousands of spills are caused by entities not subject to spill prevention and contingency planning requirements under O. Reg. 224/07 of the *Environmental Protection Act* (Act).** The requirements for having spill prevention and contingency plans in place under O. Reg. 224/07 (Spill Prevention and Contingency Plans) only apply to industrial facilities. Between 2016 and 2020, these industrial facilities were responsible for a minority (7% or 2,842) of the 40,349 reported spills. The Environment Ministry does not require spill prevention and contingency plans for high-risk sources such as oil and natural gas transmission and distribution pipelines, electricity transmission substations, fuel delivery trucks and bulk fuel storage facilities. Without the most frequent causes of spills requiring this form of planning, the Environment Ministry cannot effectively protect the environment from spills.
- **The Environment Ministry does not verify that entities with requirements for spill prevention and contingency planning have effective plans in place.** The Environment Ministry does not ensure planning to prevent and respond to spills has occurred and is documented. Where this planning is documented, the Environment Ministry does not review or approve plans to ensure that they comply with best practices in preventing and responding to spills.

With respect to responding to spills when they happen, we found the following:

- **The Environment Ministry is not informed of spills in a timely manner.** Despite requirements in the Act, spillers are not always immediately notifying the Environment Ministry of spills. Between 2016 and 2020, 3,746 (or 9%) of the 40,349 reported spills were not reported until the following day, and 505 spills took more than 10 days to report. Further, the Environment Ministry did not always penalize spillers for failing to report spills in a timely manner. We also reviewed a sample of 110 spills between 2010 and 2020, and

found that 45 (or 41%) were never reported to the Spills Action Centre directly by the spiller, as required by the Act. The Environment Ministry learned of these spills from first responders, such as firefighters and police officers, the municipality or members of the public.

- **The Environment Ministry does not independently confirm that spillers have sufficiently remediated the environment after a spill.** The Environment Ministry relies on the spiller to perform its own analysis of soil and water samples, and submit proof to the Environment Ministry that the natural environment has been sufficiently restored. This means that spillers are left to police themselves and ensure effective environmental remediation, with little risk of Environment Ministry enforcement action. In 2017, the Environmental Review Tribunal identified that it is completely appropriate for the Environment Ministry to conduct independent sampling to verify the accuracy of spillers' sampling results and to reach its own conclusions on what was needed for cleanup.
- **The Environment Ministry is not fully using its powers to ensure that spills are promptly remediated.** Under the Act, the Environment Ministry has the power to clean up spills and then recover the remediation costs from the spiller. In a sample of 110 out of 40,349 spills between 2016 and 2020 that the Environment Ministry assessed as having medium to high risks to the environment and human health, most were remediated promptly by the spiller and/or a contractor. However, we identified five where the spiller initially refused, could not be found, or was unprepared to remediate the spill, delaying timely cleanup. In all these spills, the Environment Ministry did not step in to ensure timely remediation, resulting in further risks to the environment and to human health.

Environment Ministry oversight and regulation of activities that may cause environmentally harmful spills requires a strong enforcement regime. However, we found that the Environment Ministry's approach to enforcement was lenient and relied mostly on asking violators of environmental laws and regulations to comply, instead of using its powers to confirm full compliance by a required date. Other specific concerns with the Environment Ministry's enforcement included:

- **The Environment Ministry does not properly record or analyze data to identify the highest-risk sources and causes of spills that can have negative impacts to human health and/or the environment.** This means that it cannot target its limited inspection resources on the areas that are likely to provide the most benefit or adjust its regulations and policies to more effectively reduce the impacts from spills.
- **The Environment Ministry is decreasing its proactive inspection and enforcement of environmental requirements, such as for spill prevention, because of staffing reductions.** This is despite the fact that 42% of the Environment Ministry's proactive inspections identify non-compliance with these requirements. Although the Environment Ministry said it is focusing on higher-risk inspections and investigations that can be more time consuming, inspections are identifying fewer total instances of non-compliance and investigations are resulting in fewer total convictions. This reduction in inspection and enforcement work will further limit the Environment Ministry's ability to identify weaknesses in spill prevention plans and correct non-compliance with other environmental requirements to prevent spills before harm can come to human health and/or the environment.
- **Environmental penalties cannot be used to hold polluters accountable for the most common causes of spills.** Environmental penalties are a financial penalty used to protect air, water and land, and hold polluters accountable for environmental harm. They are intended to encourage quick and effective compliance, and can be applied for not reporting spills. However, between 2016 and 2020, those responsible for over 94% (38,124 of 40,349) of reported spills could not be

penalized. This is because penalties apply only to certain facilities in nine industrial sectors (for example, petroleum, iron and steel, and metal mining). The only penalties that apply to spills to air are for specific petroleum facilities in Sarnia that discharge sulphur dioxide. However, these penalties are much lower than similar penalties in California. The 21 sulphur dioxide–related penalties that the Environment Ministry issued in 2019 and 2020 amounted to $1.6 million, far less than the nearly $14.7 million that would have been applied in southern California based on the same quantity of sulphur dioxide.

- **The Environment Ministry allows repeat offenders to continue operating because of an ineffective compliance strategy.** Despite the Environment Ministry's policy that allows it to revoke the environmental approvals of entities that repeatedly violate environmental laws and regulations, the Environment Ministry has only ever revoked two companies' environmental approvals. The Environment Ministry identified to our Office 54 companies as repeat offenders, with 41 of the 54 continuing to operate without being brought into compliance as of October 2021. For example, GFL Environmental (GFL), a waste management company, had 78 reported spills between 2016 and 2020. Although Environment Ministry staff noted that the company "regularly contravenes the acts, regulations and legal documents overseen by the ministry," the Environment Ministry continues to grant GFL new environmental approvals allowing it to expand its operations. For example, the Environment Ministry found that GFL was contaminating surface water in the township of North Stormont by repeatedly spilling leachate (liquid passed through a landfill) at concentrations resulting in 10% fish mortality, violating its environmental approval. The Environment Ministry also found that GFL was falsely reporting test results showing 0% fish mortality. Despite this, the Environment Ministry approved the expansion of the landfill where this was occurring. The Environment Ministry relies on staff judgment and does not yet have a policy to ensure a consistent consideration of non-compliance prior to issuing environmental approvals.

This report contains 13 recommendations, with 29 action items, to address our findings.

Overall Conclusion

The Ministry of the Environment, Conservation and Parks (Environment Ministry) does not have effective systems and processes in place to prevent or reduce the risks and negative impacts of hazardous spills to the environment and human health. Specifically, it does not require prevention and response planning for the most common causes of hazardous spills, such as pipelines, nor does it ensure this type of planning is being effectively performed by the companies required to do so.

The Environment Ministry is also not ensuring that sufficient action is taken to prevent, eliminate or reduce adverse effects resulting from hazardous spills by spillers. It is not informed in a timely manner of all such spills and it is not independently confirming that spillers have properly remediated the spills they caused. Further, the Environment Ministry does not report to the public on hazardous spill events in a timely manner nor recover all reasonable costs it incurs from responding to these spill events, which not only burdens taxpayers but reduces the motivation for spillers to prevent spills.

When the laws and regulations the Environment Ministry does have in place are violated, the Environment Ministry's enforcement regime is not strong enough to bring entities into compliance in a timely manner or deter repeat violations. The Environment Ministry requires stronger spill prevention, response, cost-recovery and enforcement systems to protect the health of Ontarians, as well as Ontario's wildlife, air, land and water from hazardous spills.

MINISTRY OVERALL RESPONSE

Protecting the health of Ontarians and the environment is our top priority and we take spills very seriously. In the event of a spill or related emergency, the Ministry of the Environment, Conservation and Parks quickly assesses any environmental impacts and ensures the responsible parties clean up the spill and restore the environment.

We agree with the Auditor General that public transparency and timely information about spills in Ontario is important. That is why we recently (in May 2021) introduced a user-friendly online reporting tool that allows the public to report potential pollution incidents quickly and receive real-time status updates on the incident after it has been reported.

The Ministry appreciates the areas that the Auditor General has highlighted, and we are committed to continuous improvement to ensure that we address spills in a timely, effective, and transparent way. We are exploring ways to improve the environmental monetary penalties program to include more environmental contraventions and cover more members of the regulated community. We are committed to reviewing and developing new guidance documents, developing performance metrics, and improving data integrity and transparency, as appropriate.

2.0 Background

2.1 Overview

A hazardous spill is a discharge of a substance to air, land or water that, when present in high enough quantities and concentrations, poses a threat to human health or the environment.

The *Environmental Protection Act* (Act) defines a "spill" as a discharge or release of a pollutant into the natural environment from or out of a structure, vehicle or other container that is abnormal in quality or quantity in light of all the circumstances of the discharge. "Abnormal in quality or quantity" acknowledges that substances may be released as part of normal operations for a variety of activities, and these may be permitted through regulations or environmental approvals. Therefore, approved discharges that occur as part of normal operations are not considered spills. Further, some industrial activities' spills are a normal part of operating, and mechanisms are in place to control the substances spilled, preventing them from entering and impacting the natural environment. The Ministry of the Environment, Conservation and Parks (Environment Ministry) does not require industry to report many of these types of contained spills and are thus not the subject of this report.

Environmental approvals from the Environment Ministry are required for businesses that release contaminants into air, land or water. The Act prohibits persons from discharging a contaminant into the natural environment if the discharge causes or may cause an adverse effect. Spills and other sources of pollution contribute to adverse effects in Ontario, including:

- 800 annual worker injuries with lost work time due to exposure to chemicals and chemical products, and reported to the Workplace Safety and Insurance Board;
- 600 annual cancer cases per year from local sources of air pollution estimated by Public Health Ontario;
- 6,600 annual premature deaths from local sources of air pollution estimated by Health Canada; and
- $5 billion annual economic costs from local sources of air pollution, including health care and lost productivity estimated by Health Canada.

In 1985, Ontario implemented amendments to the *Environmental Protection Act* to establish spill remediation requirements and a spill reporting call centre (Spills Action Centre) following the Dow Chemical pipeline spill in 1985 in Sarnia of 11,000 litres of perchloroethylene (a dry-cleaning chemical with the potential to cause cancer) into the St. Clair River. The

St. Clair River is a drinking water source that supplied water to about 160,000 people in Ontario and Michigan at the time of the spill. Perchloroethylene is hazardous in concentrations of two parts per million and was found to be in concentrations of over 100,000 parts per million in the river. The company removed approximately 80% of the contaminant immediately after the spill in August, while the rest settled at the bottom of the river and absorbed other toxic materials, before cleanup resumed in November.

In response to subsequent numerous spills in the St. Clair River in 2003 and 2004, Ontario amended the *Environmental Protection Act* in 2005 and introduced accompanying regulations in 2007 to establish environmental penalties and requirements for spill prevention and contingency plans. These spills included a 2004 Imperial Oil heat exchanger leak of 160,000 litres of toxic methyl ethyl ketone and methyl isobutyl ketone into the St. Clair River, which are chemicals that can cause severe eye and skin irritation and were found to be in concentrations harmful to local fish. The Environment Ministry found companies had not taken steps to prevent spills despite threat of prosecution, and intended that the new penalties and requirements would encourage "companies to do more to prevent spills and to ensure fast, effective cleanup when mishaps do occur."

See **Figure 1** for a partial account of spills in the Sarnia and St. Clair River area, and their cumulative impacts on the local First Nations community. Other

Figure 1: Examples of Cumulative Impacts from Spills on a Local Community

Prepared by the Office of the Auditor General of Ontario

Health and Environmental Impacts in Chemical Valley

With over 60 industrial plants, "Chemical Valley" in Sarnia, Ontario, accounts for approximately 40% of Canada's chemical industry. Between 2010 and 2020, there have been 796 spills reported in Sarnia. According to a 2011 report by the World Health Organization, the people of Sarnia breathe some of the most polluted air in all of Canada.

In 2014, Plains Midstream Canada reported a spill of crude oil condensate, as local air monitoring in Sarnia measured one sample in a downwind location of 50 parts per billion of benzene in the air—22 times higher than the provincial standard that was subsequently set in 2016. The sample was a 10-minute air sample and the standard is based on an annual average. Benzene exposure has harmful effects on bone marrow and red blood cell production and has been linked to higher incidence of leukemia and other cancers in people. Ministry of the Environment, Conservation and Parks (Environment Ministry) staff did not inspect the site at the time of the spill.

That same year, Imperial Oil spilled 151 kilograms of hydrocarbon oil to the ground and 470 kilograms of hydrocarbon gas (a fuel source—examples are natural gas or propane) into the air in Sarnia, leading nearby residents to report burning eyes, dizziness and nausea. The spill was reported to the Environment Ministry's Spills Action Centre, and within five hours of the spill, an all-clear order was issued as no unsafe levels were detected by local air monitoring systems. The Environment Ministry fined Imperial Oil $812,000. According to media reports, only four spills reported in the Sarnia region between 2013 and 2017 have resulted in charges laid by the Environment Ministry, despite hundreds of spills reported.

The Aamjiwnaang First Nation, located near Sarnia and adjacent to Chemical Valley, has reportedly been impacted by the cumulative pollution and emissions in this area. Members of this community report health impacts including asthma, reproductive effects, learning disabilities and cancer. People also report significant impacts on their mental health, including fearing the outdoors and anxiety regarding unreported environmental incidents and a lack of transparency from industry and government.

A 2006 survey of 411 Aamjiwnaang band members identified releases of chemicals and spill incidents as their primary concern. The most common health issue experienced among the Aamjiwnaang was respiratory problems, which reportedly affected about 40% of those surveyed. Other reported issues included asthma (17% of adults, 22% of children under 16), severe chronic headaches (26% of adults, 9% of children), learning and behavioural problems (23% of children), attention deficit hyperactivity disorder (13% of children), persistent skin rashes (16% of adults, 27% of children), miscarriages or stillbirths (experienced by 39% of women), kidney problems (11%) and thyroid problems (5%).

Since the Aamjiwnaang First Nation air quality monitoring station was established in 2008, the annual average levels of sulphur dioxide have been reduced by 55%, total sulphur by 65%, nitrogen dioxide by 57% and fine particulate matter (less than 2.5 micrometres in diameter) by 32%. Benzene levels have remained stable.

Following media coverage of spills, including those described in this figure, the Environment Ministry began planning the Sarnia Area Environmental Health Project in 2017. This includes three components: Air Exposure Review, Plants Study, and Environmental Stressors Review. The project is currently under way with expected completion in 2022. The Ministry's Environment Plan states that the goal of the project is "to help address concerns about air pollution and other environmental stressors from local industries in the Sarnia area." Both spills and approved discharges of pollutants come under the project's purview.

Indigenous communities can also be affected by spills. See **Appendix 1** for a list of First Nations reserves that have recently experienced the most nearby spills.

Figure 2 shows key steps in the spill prevention, response and remediation used to reduce the impacts from spills on human health and/or the environment.

2.2 Reported Spills in Ontario

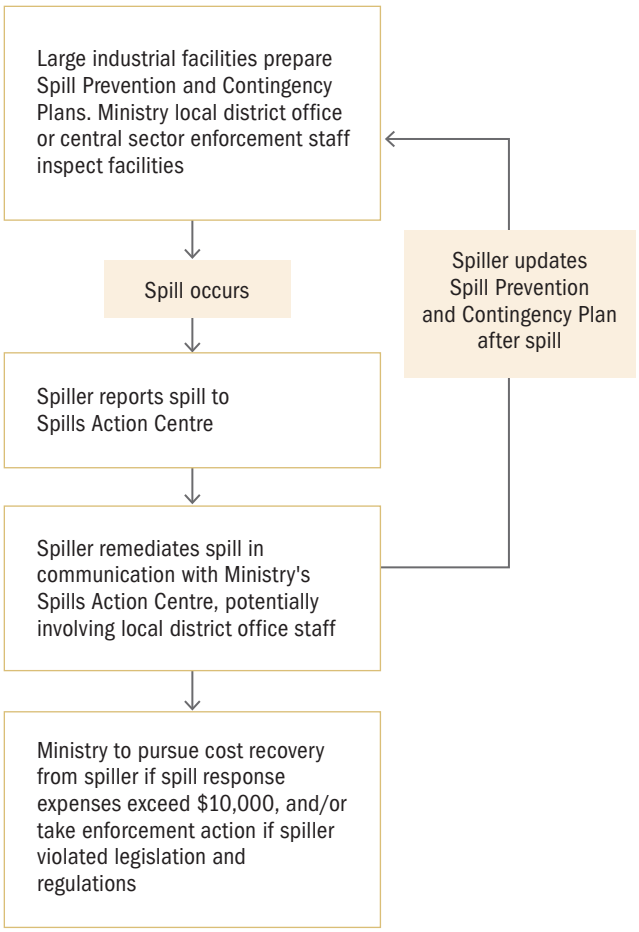
More than approximately 8,000 spills occur in Ontario each year – not including those that may go unreported and therefore unaddressed by the Environment Ministry.

Hazardous spills are discharges of substances to air, land or water that pose a threat to human health or the environment when present in high enough quantities and concentrations. The Environment Ministry assessed that 37,573 of 40,349 spills reported between 2016 and 2020 potentially had negative impacts on human health and/or the environment, based on initially reported information (see **Appendix 2**). **Appendix 3** lists the 14 spills in 2020 the Environment Ministry assessed as having an impact on human health. Based on available data, between 2016 and 2020, 36% of spills in Ontario occurred due to human error, and 21% were due to equipment failure. Other spills can be caused by external factors, such as poor weather, that contribute to vehicle accidents and damage to buildings and infrastructure (**Figure 3**).

In some industrial operations, spills are a normal part of operating, and mechanisms are in place to control the substances spilled and prevent them from entering and impacting the environment. For example, electrical utilities that distribute electricity to cities and towns use transformers to reduce the voltage of the electricity to a safe level for home and office use. These transformers use oil for insulation and cooling, and they occasionally spill this oil. However, these spills can be less than 100 litres, contained onsite and cleaned up immediately without impacting human health or the environment. As these spills are a normal part of the utilities' operations, mechanisms and plans are in place to contain and clean up the spill immediately. These spills do not have to be reported to the Environment Ministry and are not classified as hazardous spills as discussed in this report. However, if these spills are not contained, surpass 100 litres, or affect human health or the environment, they would have to be reported and therefore would be considered hazardous spills for the purposes of this report.

Figure 2: Key Steps and Environment Ministry Responsibilities with Hazardous Spills

Prepared by the Office of the Auditor General of Ontario

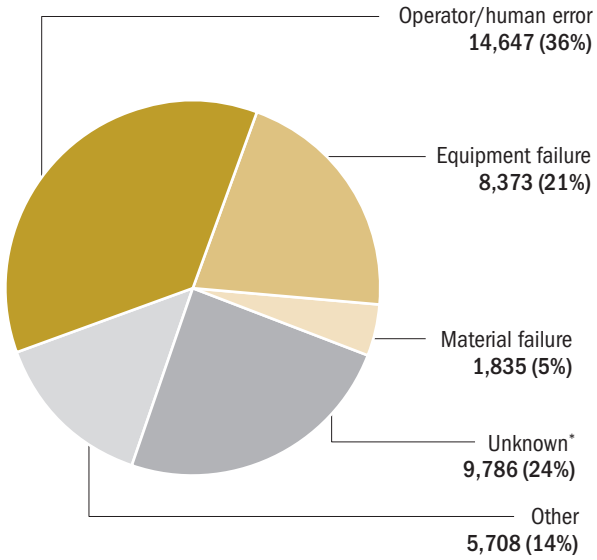


2.2.1 Spills to Air

Hazardous spills include the release into the air of substances that can have negative impacts on human health and/or the environment (**Figure 4**). The most

Figure 3: Causes of Spills, 2016–2020

Source of data: Ministry of the Environment, Conservation and Parks

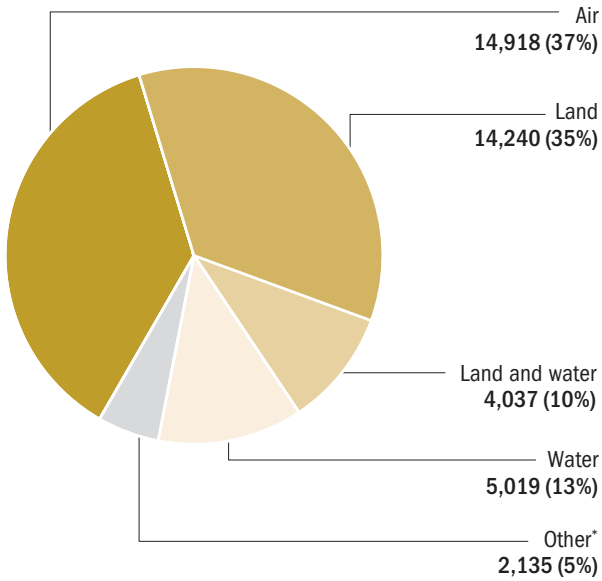


Note: The Environment Ministry has advised us that, due to a lack of overall data stewardship, data related to spills has poor to fair reliability.

* Unknown consists of spills with incident report form field "unknown," "not applicable" or blank, due to data management issues noted in **Section 4.1.**

Figure 4: Environment Receiving the Spill, 2016–2020

Source of data: Ministry of the Environment, Conservation and Parks



Note: The Environment Ministry has advised us that, due to a lack of overall data stewardship, data related to spills has poor to fair reliability.

* Other includes spills that went to (a) air and land, (b) air and water, and (c) air, land and water, and those with unknown impacts, which are spills with incident report form field "unknown," "not applicable" or blank, due to data management issues noted in **Section 4.1.**

common of these is natural gas, which accounted for 12,294 or 30% of reported spills between 2016 and 2020 (**Figure 5**). Natural gas is transported to homes and businesses by pipelines, and was the source of 9,616 or 24% of reported spills (**Figure 6**). Natural gas is composed primarily of methane, which is a highly potent greenhouse gas. Natural gas exposure can cause symptoms of hypoxia (headache, decreased vision, fatigue, shortness of breath and loss of consciousness) and even asphyxiation in humans; it is also flammable and highly explosive. A 2003 explosion in Etobicoke, caused when an Enbridge natural gas pipeline was damaged by construction equipment, killed seven people and injured four others.

Propane, which accounted for approximately 109 reported spills between 2016 and 2020, is another flammable and explosive gas. A 2008 explosion following an illegal fuel transfer forced the evacuation of 12,000 people, and killed an employee and a first responder at the Sunrise Propane plant in North York.

Another frequently spilled contaminant is refrigerant gas, with 1,048 reported spills between 2016 and 2020. This highly potent greenhouse gas can deplete the ozone layer, creating damaging cumulative effects even without dramatic direct impacts. See **Appendix 4** for a listing of the substances spilled into the air, their quantities, and the associated health and environmental impacts. See **Appendix 5** for maps of 15,373 reported spills into the air in Ontario over the period 2016 to 2020. These spills accounted for 38% of all reported spills in Ontario over that period.

2.2.2 Spills to Land and Water

Hazardous spills to land and water include approximately 12,500 reported spills of oil products or 31% of all reported spills between 2016 and 2020. Oil products are flammable and include cancer-causing substances. Examples of the many types of spilled oil products include:

- diesel fuel (3,670 reported spills), which both powers and is carried in bulk by trucks and trains;
- hydraulic oil (2,740 reported spills), which is used in braking systems for trucks, trains and other motor vehicles;

- motor oil (559 reported spills) used in vehicle engines; and,
- crude oil (55 reported spills), which is transported before being turned into final products.

In the 2015 CN Rail train derailment in Jack Township near Gogama, which was caused by a broken track, 2.6 million litres of crude oil and oil products were spilled, resulting in a fire that burned for three days and contaminated over 77,851 tonnes of soil, which had to be sent to landfill to mitigate further impacts.

Transformers use mineral oil (619 reported spills) or other transformer oils (1,635 reported spills). A 2015 spill involving a flipped truck carrying transformers resulted in 6,000 litres of spilled mineral oil flowing from the highway and through the sewer system into Mimico Creek. This event killed 37 birds despite the rescue efforts of Toronto Wildlife Centre. Transformer oil can also contain cancer-causing PCBs (polychlorinated biphenyls). PCBs do not readily break down and so accumulate in the environment and in the living tissue of humans and animals.

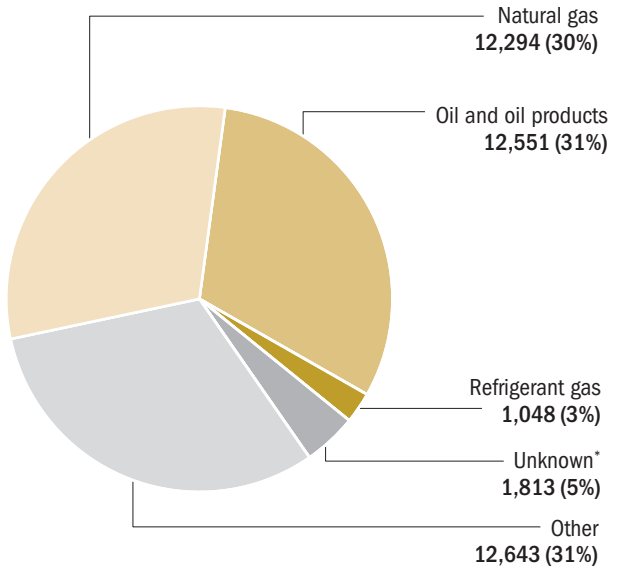
See **Appendix 5** for maps of 18,677 reported spills to land (46% of all reported spills) and 9,208 reported spills to water (23% of all reported spills) in Ontario between 2016 and 2020. Some of these spills occurred in or near wellhead protection areas (areas around municipal wells that contribute source water to a drinking water system). See **Appendix 6** for a list of the municipalities that have experienced the most spills in or near wellhead protection areas in the past five years.

2.3 Spill Prevention and Contingency Plans

Following the February 2004 Imperial Oil spill, the Environment Ministry appointed a group of experts in April 2004 to "examine the causes of industrial spills and dangerous air emissions and recommend to the government prevention measures for industry and others." This Environment Ministry-appointed group concluded that a long-term solution to spills needed regulatory requirements to plan how to prevent spills and respond to them when they occur. Specifically, the group said "pollution prevention is an essential component of any modern environmental management framework," but found "Ontario's

Figure 5: Contaminants Spilled, 2016–2020

Source of data: Ministry of the Environment, Conservation and Parks

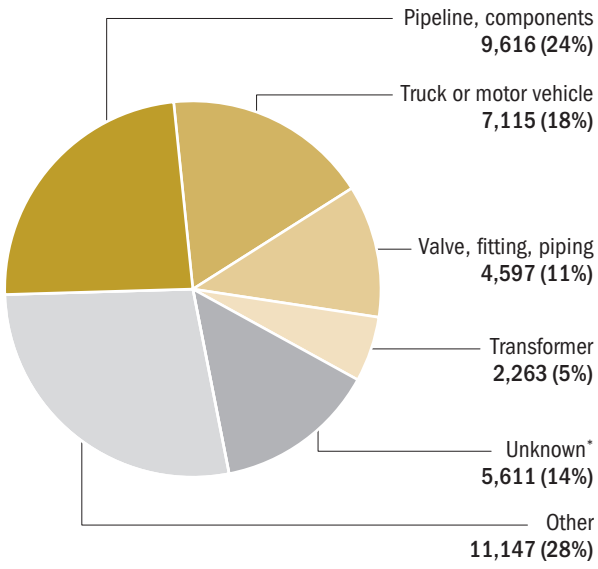


Note: The Environment Ministry has advised us that, due to a lack of overall data stewardship, data related to spills has poor to fair reliability.

* Unknown consists of spills with incident report form field "unknown," "not applicable" or blank, due to data management issues noted in **Section 4.1.**

Figure 6: Sources of Spills, 2016–2020

Source of data: Ministry of the Environment, Conservation and Parks



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environmental management framework [was] largely reactive, not preventative." Following this review, Ontario amended the *Environmental Protection Act* (Act) in 2005 and introduced accompanying regulations in 2007 to establish environmental penalties and requirements for spill prevention and contingency plans.

Under the Act, the Environment Ministry is responsible for ensuring that regulated parties have spill prevention and contingency plans (spill plans). Ontario Regulation 224/07 directs that spill plans are required to be developed by the owners/operators of 106 facilities (as of August 2021) in the following nine industrial sectors: electrical power generation (eight), industrial minerals (15), inorganic chemical products (five), iron and steel (seven), metal casting (one), mining (44), organic chemical products (12), petroleum refining (six), and pulp and paper (eight). These requirements cover the types of high-profile spills that occurred in 2003 and 2004 in the St. Clair River. For example, the 2004 Imperial Oil spill was from a petroleum refinery. Eight of these sectors were defined in the Environment Ministry's 1986 strategy to reduce surface water pollution from industrial wastewater facilities, while the ninth was included in 1994 regulations. No additional industries have been required to develop spill plans under O. Reg. 224/07.

Some other facilities also have spill plans. For example, the Environment Ministry also has some less stringent spill planning requirements specifically for vehicle disposal sites. The Environment Ministry also encourages the development of voluntary spill plans by allowing plans that meet O. Reg. 224/07 requirements (described below) to define "non-reportable" spills, which are exempt from having to be reported to the Environment Ministry. These plans can identify spills as non-reportable if they are contained in a manner ensuring they do not occur in water, are easily cleaned up and have no adverse effects. The Environment Ministry requires a spill plan as a condition of some individual environmental approvals, though these plans are not centrally tracked and may not have the same requirements.

Ontario Regulation 224/07 requirements for spill plans include:

- identifying the potential spills that may occur and have potential impacts;
- outlining ways to prevent or reduce the risk of spills of pollutants, such as containment and preventative maintenance;
- outlining ways to eliminate or reduce the negative effects if a spill occurs, such as spill response training and equipment;
- annual reviews, including tests for effectiveness such as live drills;
- reviews and updates after spills; and
- a statement of accuracy and effectiveness signed by an officer or director of the corporation.

2.4 Spill Response

When a spill occurs in Ontario, the party responsible for the substance spilled, or the "spiller," is required under both the federal *Canadian Environment Protection Act, 1999* and the provincial *Environmental Protection Act* to report the spill, contain and clean up the spill, and remediate the environment. Under the provincial *Environmental Protection Act*, the spiller is defined as the "owner." The owner of a substance is the party who had ownership of the substance immediately before it was spilled. This may or may not be the person who was in control of the substance at the time of the spill. For example, the owner may have hired a third party to transport the substance, which spilled in transit to another location.

At the federal level, Environment and Climate Change Canada leads the spills response for any spills impacting federal land, the Great Lakes and where the impacts cross provincial boundaries. The Environment Ministry also has an information-sharing relationship with neighbouring provinces and states.

2.4.1 Spill Reporting and Initial Response

When a spill occurs, the spiller is required to notify the Province by contacting the Environment Ministry's Spills Action Centre (see **Section 2.7.1**). When a report is received by the Spills Action Centre, an Environmental Officer working at the call centre gathers information to assess the impacts of the spill on human health and/or the environment. The Environmental Officer gathers and uses information, such as the type and volume of spilled material and the potential impact to human health and environment, to help determine the risk and prioritization of the spill's response. The Environment Ministry's initial response includes:

- notifying the spiller, local municipality, and emergency services, such as the local or provincial police and/or local fire departments (if they are not the party reporting the spill);
- ensuring the spiller begins remediating and otherwise responding to the spill as required; and
- notifying other authorities as necessary, such as drinking water treatment facility operators, the Technical Standards and Safety Authority (a regulatory authority that administers and enforces technical standards in Ontario), and the federal government if the spill occurs on federal land and water (such as the Great Lakes) or crosses provincial/national boundaries.

2.4.2 Oversight of Spillers' Remediation

After the initial spill response, district office Environmental Officers review the incident and determine appropriate follow-up actions. Some of the steps undertaken by Environmental Officers in overseeing the remediation of a spill can include:

- attending the scene of a spill to confirm details and oversee its cleanup;
- having discussions with the spiller to assess the current state of the spill and ensuring all necessary remediation actions have been implemented to contain/stop the spill;
- requesting documents to confirm the details of the spill, confirmation that is has stopped, and all remediation steps;
- requiring that the spiller use all available resources to monitor downwind/downstream air and water quality to specify areas of concern and estimate potential impacts;
- collecting necessary samples from the source, from upstream and downstream water and soil sources, and from nearby sewer locations;
- requesting documents such as receipts from a contractor or a confirmation from a licensed waste disposal site that shows that the spiller (or its contractor) properly disposed of the collected spill waste and contaminated cleanup equipment.

For large and more serious incidents, specialists may be brought in from other Environment Ministry divisions to provide technical support in assessing the remediation.

2.4.3 Environment Ministry Spill Remediation

When a spiller does not remediate a spill in a timely and effective manner and where the spill may have adverse effects, the Minister may give direction to the Environment Ministry to step in to remediate the spill. This may occur under the following circumstances:

- the spiller cannot be readily identified;
- the spiller will not carry out the remediation in a timely manner; or
- the spiller requests remediation assistance from the Environment Ministry.

Since 2010, the Environment Ministry has remediated only three spills. One occurred on a contaminated site that the Province was responsible for, and, in the other two, the Ministry believed that the property owners did not have the financial means to clean up the spill. See **Figure 7** for a list of these spills and the remediation actions taken by the Environment Ministry.

Figure 7: Spills Remediated by the Environment Ministry, 2010–2020

Prepared by the Office of the Auditor General of Ontario

Date of Spill	Location	Details of Spill and Actions Taken by Environment Ministry	Receiving Environment
Sep 6, 2011	Roblin Gas Station	Spill of gasoline occurred when an underground storage tank ruptured, impacting the groundwater at surrounding properties. The gas station owner and its insurance paid for initial cleanup and providing water to affected residents. When the insurance coverage ran out, and the Ministry believed the spiller's financial resources had been exhausted, the Ministry took responsibility for cleanup, testing and monitoring, and providing water to residents.	Water
Apr 29, 2015	Deloro Mine Site	Surface water and rain spilled from behind a temporary inflatable dam within the Young's Creek area. As this was at a contaminated site already taken over by the province, the Ministry was responsible for cleanup. In this case, the onsite contractor performed water monitoring and made repairs.	Water
Apr 6, 2017	Tyendinaga Township	Spill of furnace oil from a homeowner's fuel tank into the home's sump pit discharged to a municipal ditch and into the Salmon River. Since it was the Ministry's understanding that the spiller did not have the financial resources to clean up the spill, the Ministry paid $15,200 to monitor groundwater and sample soil to assess the impact of the spill.	Water and land

2.4.4 Municipal Spills Response

Large and medium-sized municipalities in the province often have their own spills response teams that may be involved in responding to and remediating spills that happen within their boundaries. Unlike the Environment Ministry's Environmental Officers, the municipalities' spills response teams carry equipment, such as shovels and booms, to reduce the spread of spills in the short term. For large spills, municipalities may also have their own specialized equipment, such as vacuum trucks that can suck up liquids and sludges to clean up a spill. Similar to the Environment Ministry, municipalities also have the authority under the *Environmental Protection Act* to recover spill response costs from the spiller. Municipalities may also conduct their own sampling of soil and water if needed to verify that remediation has been effective.

2.4.5 Other Ministries' Spills Response

Other provincial ministries are involved in responding to spills and remediation activities. For example, as the ministry responsible for maintaining provincial highways, the Ministry of Transportation leads spills response on these roads, deploying equipment that can handle fuel/oil spills on highways. The Ministry of Northern Development, Mines, Natural Resources and Forestry is to be notified of, and investigate, spills that have the potential to kill fish, and any spills of petroleum, such as gas or oil wells. The Ministry of the Solicitor General is involved in providing advice and assistance related to emergency management in response to a spill. See **Appendix 7** for a listing of other ministries' involvement in spills response and the costs they incur to respond.

2.5 Polluter Pays

Ensuring polluters are held accountable for the costs of responding to and remediating spills both encourages potential spillers to modify their operations to prevent and minimize spills, and protects the public from bearing the costs associated with remediating the environment from the impacts of spills. The Environment Ministry has adopted the "polluter pays" principle, which is a commonly accepted practice that those who produce pollution should bear the costs of

managing it to prevent damage to human health and/or the environment.

In some cases, the Province may incur significant costs preventing or minimizing adverse effects on human health and/or the environment; overseeing or performing the spill cleanup and restoring the natural environment; and preventing or reducing the risk of future spills. The Environment Ministry can attempt to recover from a spiller all reasonable expenses that the Province incurred in responding to a spill.

It is the Environment Ministry's policy to attempt to recover the Province's costs related to its spill response if the responding Environmental Officer anticipates that total costs will exceed $10,000. When assessing whether the Province's spill response costs will exceed this threshold, Environmental Officers consider factors including:

- significant environmental and health impacts;
- scientific and technical expertise required, including testing of samples;
- use of specialized provincial equipment, such as helicopters;
- extensive response by the Environment Ministry and staff at other ministries; and
- hiring private contractors for technical support or spill cleanup.

The Environment Ministry calculates the final costs to be recovered and provides this information to the relevant regional offices. The calculation of recoverable costs may include:

- staff salaries and expenses (for example, an allocation for lease costs);
- travel, food and accommodation;
- sampling, monitoring and laboratory analysis;
- costs of remediation services purchased from external providers; and
- other administrative costs.

Further costs include those incurred by other ministries as a result of the spill. See **Appendix 7** for a listing of the other ministries that may incur costs associated with spills.

The Environment Ministry initiates the cost recovery process by a direct request (via a demand payment letter) to the spiller.

Other ways the polluter pays for spills result from the Environment Ministry's enforcement activities; see **Section 2.6.**

2.6 Enforcement Tools

Enforcement of environmental laws and regulations is intended to hold polluters accountable and to protect Ontario's air, water and land. The prevention of spills and timely remediation by the spiller rely on a strong enforcement regime. The Environment Ministry has the following enforcement tools in order of escalating severity:

- **notices of violations**, which are written or verbal warnings from Environmental Officers (provincial officers with the legal authority to ensure compliance with Ontario's environmental laws);
- **voluntary abatement plans**, which are documents that Environmental Officers request from violators to correct violations or implement preventive measures;
- **orders**, which are documents with legally binding obligations that Environmental Officers or Directors issue to violators;
- **tickets**, which come with fines of less than $500 that can be appealed in court;
- **environmental penalties**, which are up to $100,000 per day, can be used in specified circumstances and can be appealed to the Ontario Land Tribunal;
- **prosecution**, which can follow investigation and lead to larger fines upon successful conviction in court; and
- **suspension/revocation/refusal of environmental approvals** that are required for businesses that release contaminants into air, land or water to operate.

These enforcement tools are broadly available to respond to environmental violations, with the exception of environmental penalties, which were specifically designed to address spills as discussed in **Section 2.1.** The purpose of environmental penalties is to protect the environment by encouraging companies to prevent spills and take swift remedial action in

the event of a spill. The Environment Ministry can impose penalties for allowing a spill, not monitoring for and reporting a spill, or not having a spill plan. As with the Spill Prevention and Contingency Plan regulation under the *Environmental Protection Act* (O. Reg. 224/07), the Environmental Penalties regulation (O. Reg. 222/07) applies only to the facilities in the nine industrial sectors identified in **Section 2.3.** Environmental penalties are costlier to violators than tickets, and more efficient and reliable for the Environment Ministry to use than prosecution and conviction in court.

2.7 Ministry of the Environment, Conservation and Parks

The Environment Ministry is mandated with protecting Ontario's air, land, and water to lead to healthier communities and economic prosperity.

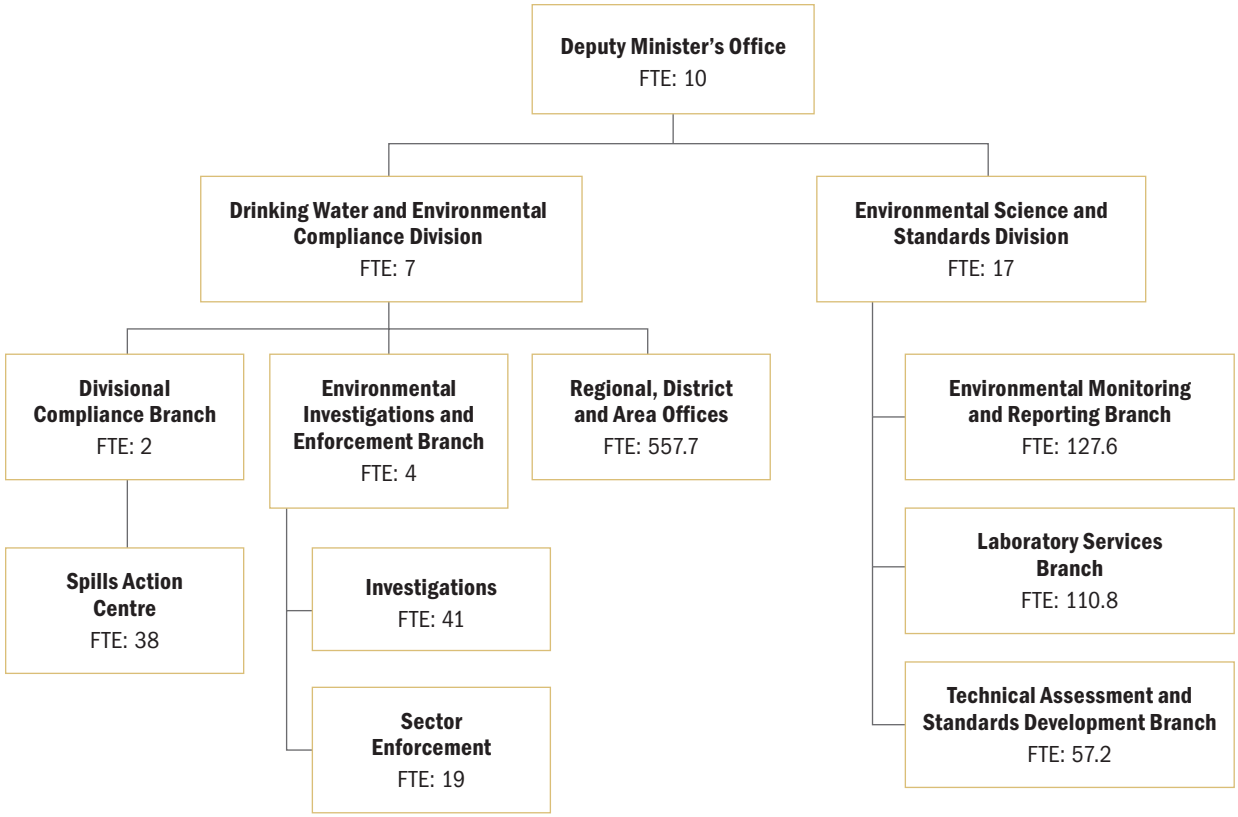
Its Drinking Water and Environmental Compliance Division has the primary role in ensuring and enforcing compliance with legislative environmental requirements. **Figure 8** presents the organizational structure of the Environment Ministry's divisions and branches primarily involved in spills prevention and response. Primary groups within the division involved in spill prevention and response are the Spills Action Centre (**Section 2.7.1**), which receives reports of spills, and the district offices (**Section 2.7.2**), which respond to spills and conduct proactive inspections to prevent spills.

Other Environment Ministry branches that provide support to spills prevention and response include:

- Sector Enforcement, which conducts proactive inspections on a sector-by-sector basis to ensure compliance with environmental policies, including the development of spill plans;

Figure 8: Environment Ministry Organizational Chart and Staff Involved in Spill Prevention and Response

Source of data: Ministry of the Environment, Conservation and Parks



FTE – full-time-equivalent employees

Note: The FTE number represents the active number of staff employed and not headcount. For example, a part-time employee working three days a week represents 0.6 FTE.

- Investigations, the group that investigates significant cases of non-compliance for prosecution, including causing a spill or failing to report a spill; and
- Technical staff from the Environmental Sciences and Standards Division, who may be called upon to perform emergency air and water modelling, analyze spill samples, maintain data on toxicological, environmental, chemical and physical properties of spilled substances, provide advice on standards associated with spills, and monitor spills using real-time data to assist first responders (fire/police/health officials).

2.7.1 Spills Action Centre

The Spills Action Centre has approximately 30 Environmental Officers who provide 24/7 spills response coverage. The Spills Action Centre receives calls, emails and e-faxes that report spills, pollution, adverse drinking water quality, and other environmental occurrences, and co-ordinates the emergency response for the Environment Ministry.

Under regulation, anyone who had control of pollutants that were spilled, or who allowed a spill to occur, must contact the Spills Action Centre without delay. Police officers, municipal employees and other public authorities are required to report spills when they believe the Environment Ministry has not been informed of the spill. The public can also contact the Spills Action Centre if they witness:

- pollution spilled on land, in water or to air;
- industrial or commercial noise pollution;
- waste being dumped into the natural environment; or
- improper disposal of commercial waste.

The Spills Action Centre is responsible for the initial spill response described in **Section 2.4.1.**

2.7.2 District Offices

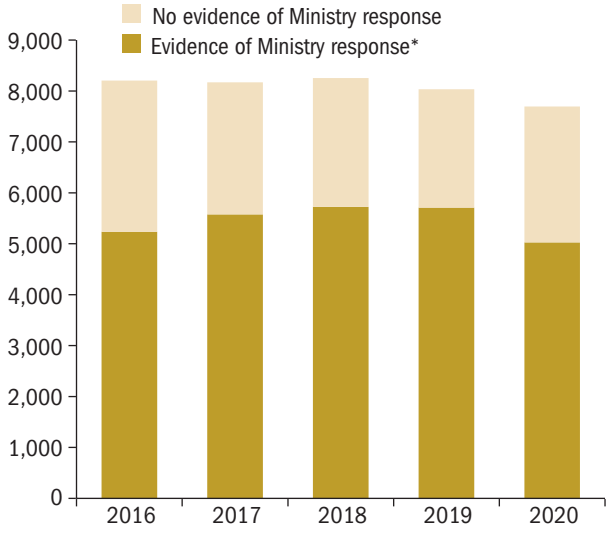
After a spill is reported, the Spills Action Centre provides information on the spill to the Environment Ministry's local district office. Environmental Officers at 16 local district offices are responsible for reviewing spills and following up as they deem appropriate. This includes overseeing the cleanup and taking enforcement and compliance actions as necessary. The Environment Ministry has Environmental Officers at 16 local district offices.

The district Environmental Officers are responsible for the oversight of spillers' remediation described in **Section 2.4.2.** Depending on the level of actual or potential risk assessed by the Environment Ministry, the district offices can make three types of responses:

- *Desktop Response*: District Environmental Officers gather information about the spill from the district office by communicating with the spiller or with response personnel, and use the information to assess ongoing remediation efforts and the need for possible compliance;
- *Planned Field Response*: District Environmental Officers follow up with a planned site visit to assess compliance at a later date, based on the level of a risk; and

Figure 9: Number of Spills Involving a Documented Environment Ministry Response, 2016–2020

Source of data: Ministry of the Environment, Conservation and Parks



Note: The Environment Ministry has advised us that, due to a lack of overall data stewardship, data related to spills has poor to fair reliability.

* The Environment Ministry's data does not clearly specify the kind of response that was provided to each spill by the district offices. The Environment Ministry's response may include a desktop response.

- *Priority Field Response*: District office deploys Environmental Officers on a priority basis to minimize the spill's environmental impact, ensure compliance and support other agencies as needed.

Figure 9 shows the number of spills that involved a Spills Action Centre documented response by Environmental Officers between 2016 and 2020.

Environmental Officers from district offices also conduct proactive inspections to confirm compliance with environmental legislation. This includes ensuring spill plans are developed. Inspections are intended to be done on a risk basis informed by local knowledge in each district office and technical knowledge from across the Environment Ministry.

3.0 Audit Objective and Scope

The objective of our audit was to assess whether the Ministry of the Environment, Conservation and Parks (Environment Ministry) has effective systems and processes in place to:

- prevent or reduce the risks and negative impacts of hazardous spills to the environment and human health;
- ensure the Environment Ministry is aware of all spills that pose a risk to the environment and/or human health;
- investigate all reported potentially hazardous spills in a timely and effective manner, and ensure that action is taken to prevent, eliminate or reduce any adverse effects that may result from the hazardous spills, including restoring the natural environment;
- ensure that the entity responsible for the substance spilled covers all reasonable costs incurred by the Province to respond to and remediate hazardous spills; and
- monitor and report, on a timely basis, to the public on hazardous spill incidents.

In planning our work, we identified the audit criteria (see **Appendix 8**) we would use to address our audit objective. We established these criteria based on a review of applicable legislation, policies and procedures, internal and external studies, and best practices. The Environment Ministry's senior management reviewed and agreed with the suitability of our objective and associated criteria.

Our audit focused on the Environment Ministry's prevention, oversight, remediation, cost recovery and public reporting of hazardous spills within the province.

Due to the impacts of COVID-19, we conducted our audit work largely remotely between January 2021 and June 2021. However, we continued to engage the Environment Ministry and other stakeholders through video-conferencing and other forms of electronic communication. We also attended two spill sites, one in York Region and another in Toronto during the spring with Environment Ministry staff to observe its spills response inspections.

In order to review spills and the associated Environment Ministry response, we met with and interviewed staff at regional and district offices throughout the province.

We also met with external stakeholders, including those representing:

- other provincial government entities (for example, the Ministry of Northern Development, Mines, Natural Resources and Forestry, the Ministry of Transportation, Ontario Power Generation, Metrolinx and the Ontario Clean Water Agency);
- provincial governments for British Columbia, Alberta, Saskatchewan, Manitoba, New Brunswick and Prince Edward Island;
- Aamjiwnaang First Nation, Toronto Water, City of Sarnia, City of Guelph and Environment and Climate Change Canada;
- Public Health Ontario and public health units such as Sarnia-Lambton Public Health, Hamilton Public Health and Greater Sudbury Public Health;
- industry representatives, such as Enbridge, Ontario Automotive Recyclers Association, Toronto Hydro, and Alectra Utilities;
- environmental organizations such as Ecojustice, Canadian Environmental Law Association, Citizens Environment Alliance, Ontario Rivers Alliance and Environment Hamilton; and

- technical experts at Ryerson University and the United States Environmental Protection Agency.

In addition, we reviewed relevant research and best practices in spills prevention and remediation in Canada, other provinces and the United States.

We received written representation from Environment Ministry management that, effective October 18, 2021, they had provided us with all the information they were aware of that could significantly affect the findings or the conclusions of this report.

We conducted our work and reported on the results of our examination in accordance with the applicable Canadian Standards on Assurance Engagements—Direct Engagements issued by the Auditing and Assurance Standards Board of the Chartered Professional Accountants of Canada. This included obtaining a reasonable level of assurance.

The Office of the Auditor General of Ontario applies the Canadian Standard on Quality Control and, as a result, maintains a comprehensive quality-control system that includes documented policies and procedures with respect to compliance with rules of professional conduct, professional standards and applicable legal and regulatory requirements.

We have complied with the independence and other ethical requirements of the Code of Professional Conduct of the Chartered Professional Accountants of Ontario, which are founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

4.0 Detailed Audit Observations — Public Reporting

4.1 Public Unaware of Hazardous Spills Impacting Their Local Area

Despite requirements in Ontario's Digital and Data Directive, the Ministry of the Environment, Conservation and Parks (Environment Ministry) has not published information on reported spills in a timely and accessible manner. This limits the public's ability to know about the quantity and potential impact of reported spills in Ontario, including those that might affect them directly.

The *Environmental Protection Act* requires regulated entities to have plans in place to notify any member of the public who may be affected by a spill. However, there is no centralized place the public can go to find out about hazardous spills that have affected their community, and spillers have not always informed the public of spills. For example, when the Environment Ministry first identified concerns about pollution from a spill in Hamilton's Chedoke Creek in July 2018, neither the Environment Ministry nor the City of Hamilton informed the public about its magnitude (24 billion litres of sewage spilled over four years). Sixteen months later, the media discovered that the City had not been reporting the size and duration of the spill to the public. During this time, the Environment Ministry, as well, did not alert the public about the accumulative magnitude of the spill, despite having received an ecological and remediation report from the City.

There is public demand for information about spills and other forms of land contamination. The Environment Ministry said that 95% of the Freedom of Information requests it received between 2016 and 2020 relate to historical environmental issues. These historical environmental issues may include spills, though the Environment Ministry could not readily determine what portion. It confirmed that these requests for information are typically made to ensure that specific properties have no environmental issues, or that land has been properly remediated. Between 2016 and 2020 the Environment Ministry received 42,000 of these Freedom of Information requests.

In 2015, the Province introduced Ontario's Open Data Directive (Digital and Data Directive as of February 2021), requiring all government data to be made public unless it is exempt for legal, privacy, security or confidentiality reasons, or is commercially sensitive. In 2017, the Environment Ministry published information in the Ontario

Data Catalogue on the type, source and impact of reported spills that occurred between 2003 and 2013. This publicly available data consists of spill date, reference number, municipality, receiving media (air, water, and land), material group (for example, oil or waste), environmental impact (confirmed, possible, not anticipated) and source/sector (for example, pipeline or truck). However, publication of this data was delayed for several years, and the Environment Ministry has not promptly updated the data to include spills that have occurred since 2013. The Environment Ministry was unable to provide a reason for the delay. During our audit, on May 31, 2021, the Environment Ministry published updated information on reported spills that occurred in the province between 2014 and 2020. However, the public information released in both 2017 and 2021 does not contain key data collected by the Environment Ministry, such as the location of the spill (the data only identifies the municipality) or name of the company or individual that spilled.

In contrast, British Columbia provides information on significant spills of oil and hazardous materials through its government website. This includes spiller name and summaries of the location, cause, response and environmental impacts. This information is kept up to date, summarizes the most recent spill response activities, and provides a map with the approximate location of each spill.

A key weakness with the Environment Ministry's reporting to the public on spills is the completeness and lack of discipline in its collection, tracking and verification of certain spills data. We found that the Environment Ministry does not consistently record and verify the accuracy of some significant information to inform the public of spills. For example, although the Ministry assesses the potential environmental and health impacts when it is informed of a spill, it does not update its assessment once more information is known. Therefore, the public cannot be made aware of the actual resulting impacts caused to human health and/or the environment from reported spills. Further, useful information for the public that the Environment Ministry does track is not recorded consistently. For spills between 2016 and 2020, the Ministry did not completely record the identity of the spiller in 11,512 spills (29%). The Environment Ministry also does not regularly collect useful information such as the root causes of spills, which the Environment Ministry identified as a weakness in its processes after analyzing spills data in 2018/19.

RECOMMENDATION 1

To improve public transparency about the quantity, location and impact of spills, we recommend that the Ministry of the Environment, Conservation and Parks improve its recording and timeliness over its publicly reporting of key information on spills while providing data and information in an accessible format that allows the public to easily identify the cause, location, impact, responsible party and status of the spills.

MINISTRY RESPONSE

The Ministry agrees with the recommendation to improve public reporting on spills. The Ministry intends to post spills data to the public Ontario Data Catalogue in an accessible format on an annual basis. In addition, members of the public may review the status of their pollution reports to the Ministry via the public portal at **https://report-pollution.ene.gov.on.ca/**. Additional data identified by the Auditor General will be considered for posting on the Ontario Data Catalogue.

4.2 Environment Ministry Lacks Performance Measurement for Spills Program

We found that the Environment Ministry has not developed a performance measurement framework for its spills program. As a result, decision-makers and the public do not know the effectiveness of efforts to reduce the frequency and negative impacts of hazardous spills.

The Treasury Board Secretariat (Secretariat) establishes policies and standards for organizational practices across the provincial government. The Secretariat has provided guidance to ministries emphasizing the importance of developing key performance indicators and targets to track performance, report on progress and drive continuous improvement. For over a decade, the Secretariat has encouraged ministries to develop performance measurement frameworks—consistent processes to collect, analyze and report information on how programs are performing and whether they are achieving their intended outcomes.

It is a best practice to establish and collect information on performance measures that show whether current actions are working. For Ontario's spills management program, such measures would help inform what corrective actions need to be taken to protect Ontario from hazardous spills. However, our audit found that the Environment Ministry has not established a performance measurement framework or any performance measures with respect to its spills program.

RECOMMENDATION 2

To assess the effectiveness of its spills management program at achieving intended objectives, improve public transparency about the quantity and impact of spills, and drive continuous improvement, we recommend that the Ministry of the Environment, Conservation and Parks establish and publicly report performance measures and targets to reduce spills and any short-term and long-term impacts on human health and the environment.

MINISTRY RESPONSE

The Ministry agrees with the recommendation and will develop spills performance measures and targets, and determine how to publicly report on them.

5.0 Detailed Audit Observations—Cost Recovery

5.1 Polluters Have Not Paid for at Least $5.6 Million in Spills Response Between 2016 and 2020

Ensuring polluters are held accountable for the full costs of responding to spills encourages potential spillers to modify their operations to reduce the risk of spills. The Environment Ministry has adopted the "polluter pays" principle, where the spiller is responsible for the full cost of promptly cleaning up the spill and remediating the environment.

However, our Office's sampling of 30 spills between 2011 and 2020 (0.04% of the 73,000 spills that occurred over this period) and the three spills where the Ministry pursued cost recovery shows that the Environment Ministry's method of tracking, calculating, and recovering costs from spillers has resulted in at least $5.6 million in unrecovered response and remediation costs being covered by taxpayers rather than the individuals or companies responsible for the spills.

In 2005, Ontario amended the *Environmental Protection Act* to provide the Environment Ministry with a mechanism to recover the reasonable costs or expenses that the Province incurs when responding to and dealing with spills. The Environment Ministry drafted its first cost recovery framework in its 2012 Spills Costs and Expenses Recovery Policy. At that time, the Environment Ministry estimated its spills response would cost $425,000 annually.

In September 2014 the Premier mandated that the Minister of the Environment and Climate Change review Ontario's legislative framework to ensure a comprehensive approach to holding polluters responsible for their environmental impacts, including putting greater emphasis on the polluter pays principle. No formal review has occurred and the Environment Ministry has told us that this is an ongoing effort. In 2015 the Environment Ministry made its first attempt to recover costs related to its

Figure 10: Environment Ministry's Spills Response Costs Incurred and Recovered

Prepared by the Office of the Auditor General of Ontario

Spill	Description	Spill Response Costs Recovered		Spill Response Costs Not Recovered		Total Spill Response Costs Incurred	
		$	%	$	%	$	%
Regan CN Train Derailment, Feb 2015	29 train cars carrying crude oil derailed, contaminating a wetlands area and stream, and eventually migrating into a nearby lake	618,765	60	419,967	40	**1,038,732**	**100**
Gogama CN Train Derailment, Mar 2015	37 train cars containing about 4 million litres of oil spilled from the track and burned, and two cars landed in the Makami River						
401 Jet Fuel Spill, Jan 2019	A tanker truck crashed into a vehicle on Highway 401 in Puslinch Township, spilling 35,000 litres of jet fuel onto roadside soil and into two streams flowing into the Grand River watershed	61,745	25	186,033	75	**247,778**	**100**
Total		**680,510**	**53**	**606,000**	**47**	**1,286,510**	**100**

spill response. This was related to two CN rail spills that occurred near Gogama.

Between 2016 and 2020, over 40,000 spills were reported in the province. Of these, the Environment Ministry documented responding to at least 27,000 spills, but recovered costs related to its spill response in just one additional instance (**Figure 10**).

In the initial days following a spills response, the Environment Ministry decides whether it believes its response will cost more than $10,000; if the response cost is not expected to meet this threshold, the Environment Ministry will not pursue cost recovery. Further, if no spiller can be identified and the Environment Ministry is unaware of whom to recover costs from, the Environment Ministry cannot pursue cost recovery. If the Environment Ministry decides not to recover costs, it does not consistently track the costs associated with its spill response.

In October 2015 the Environment Ministry requested Ontario Internal Audit Division to review the reasonableness of the methodology it used to calculate and track spill costs and expenses. The review recommended that the Environment Ministry should develop a procedure to require documentation of the rationale supporting the decision whether to pursue or to forgo cost recovery. The Environment Ministry stated that this recommendation would be addressed by March 31, 2016. However, at the time of our audit, the Environment Ministry had not yet begun documenting its rationale when forgoing cost recovery.

Because the Environment Ministry rarely tracks the costs of responding to spills, we used the best available information to estimate its unrecovered response costs. We selected a sample of 30 spills where the Environment Ministry, along with other ministries, was involved in the spill response and ongoing monitoring. We interviewed Environment Ministry staff to determine the number of hours spent responding to each spill and calculated the average cost of Environment Ministry time spent on spill response. We also calculated the Environment Ministry's costs of performing laboratory services (see **Section 5.1.5**), and used the Ministry's methodology to estimate other costs. **Figure 11** shows our calculations of the costs the Environment Ministry incurred for the sample of 30 spills between 2015 and April 2021.

Figure 11: Spill Response Costs Incurred by the Environment Ministry for a Sample of 30 Spills, 2015–2021 ($)

Prepared by the Office of the Auditor General of Ontario based on information provided by the Ministry of the Environment, Conservation and Parks

Spill Description	Staff Cost	Lab Cost	Other Costs*	Total Cost
Rideau Valley Marketplace Fire Spill	223,241	3,133,658	225,248	**3,582,147**
Fort Erie Chemical Spill	61,770	147,641	24,027	**233,439**
Bartek Ingredients Acid Spill	32,303	52,594	10,120	**95,017**
Brock Liftlock Fuels Spill	65,566	12,836	5,405	**83,807**
Pioneer Flower Farms Fire Spill	11,947	51,251	11,900	**75,098**
Picton Bay Barge Fuel Spill	19,939	19,990	2,711	**42,641**
GFL Recycling Facility Fire Spill	14,206	7,738	10,063	**32,006**
Aerospace Metal Finishing Fire Spill	3,721	18,617	8,766	**31,104**
Catfish Creek Manure Spill	4,923	23,769	2,265	**30,957**
Saugeen River Manure Spill	524	24,364	1,925	**26,813**
Fletcher's Creek Spill	6,982	17,964	1,770	**26,715**
Kawartha Lakes Herbicide Spill	3,192	20,174	1,616	**24,982**
Mink Creek Spill	660	20,863	1,444	**22,966**
Marnan Fuel Spill	10,105	11,144	1,678	**22,927**
Oxford Cattle Company Spill	5,414	13,664	1,560	**20,638**
Grand River Oil Spill	10,622	7,175	1,370	**19,167**
Niagara Fish Kill Spill	12,743	4,253	1,172	**18,168**
Manure Storage Pit Spill	1,438	15,087	1,284	**17,809**
Oak Lake Manure Spill	6,341	10,068	1,259	**17,668**
Caledon Fuel Spill	15,659	0	1,227	**16,886**
Northland Derailment Spill	8,089	5,769	946	**14,804**
Cambridge Fire Spill	12,343	0	956	**13,300**
Emo Derailment Spill	7,843	4,075	1,243	**13,161**
North West Rubber Fire Spill	4,289	0	7,381	**11,670**
Maxxit Systems Fire Spill	3,938	0	7,254	**11,191**
Eagle Tech Recycling Fire Spill	2,910	0	7,276	**10,186**
Kingston Acid Spill	8,345	0	560	**8,905**
Newmarket Soap Spill	1,307	5,950	557	**7,814**
Hwy 401 Truck Fire and Paint Spill	5,082	2,014	492	**7,588**
FS Partners Spill	3,096	0	286	**3,382**
Total	**568,536**	**3,630,659**	**343,759**	**4,542,954**

* Equipment, administration, meals.

As per **Figure 11**, we found that for our sample of spills, the Environment Ministry had incurred about $568,000 for staff time (**Section 5.1.4**), about $3.6 million for laboratory samples (**Section 5.1.5**), and about $343,000 related to other costs (for example, administration and spill response equipment). In total, we calculated that the Environment Ministry incurred costs of just over $4.5 million related to these 30 spills, none of which it attempted to recover from the spillers, even though costs exceeded the $10,000 threshold in 87% of the spills we tested. Further, the Environment Ministry is not the only ministry that incurs costs to respond to spills (see **Appendix 7** for a listing of the others). In

the three instances where the Environment Ministry attempted to recover the costs of its spills response, $606,000 was not recovered (**Section 5.1.6**). Our audit identified that the Ministry of Transportation had incurred costs of over $495,000 related to the same three spill responses between fiscal years 2016/17 and 2020/21 that has not been recovered from polluters. In total, this is $5.6 million of costs to respond to spills that have not been recovered by the Environment Ministry.

Due to an absence of information tracked by the Environment Ministry, we were unable to obtain adequate information to calculate costs in addition to our estimates associated with the Environment Ministry's response, and therefore even our estimate is understated. Additional costs would relate to:

- staff costs of staff who played a key role in the spill response who have left the Environment Ministry and thus their hours were not included in our estimates;
- laboratory samples that are not categorized as "spills" by the Environment Ministry but may relate to the spills in our sample; and
- administration costs, which the Environment Ministry calculates is around 7% of the cost of responding to a spill – significantly lower than the 12.5% used by the Ministry of Transportation, and the 25% used in British Columbia's spill cost recovery regime.

5.1.1 No Basis for Environment Ministry's Cost Recovery Threshold

In 2016, the Environment Ministry made the internal policy decision not to attempt to recover costs for its spill response if it is estimated to cost the Province less than $10,000. This was based on input from Directors within the Environment Ministry at that time. The Environment Ministry staff said the administrative effort associated with tracking and recovering response costs would outweigh the benefits of pursuing costs below this amount. Yet the Environment Ministry has made no attempt to estimate the labour and costs associated with recovering spill response costs and has no documented rationale for its $10,000 threshold.

The Environment Ministry's $10,000 cost recovery threshold is significantly higher than that used by other provinces and Ontario municipalities. For example, British Columbia has a $175 minimum for spills cost recovery. Municipalities also perform work to respond to and can remediate spills. They can recover the costs of these activities from the polluter. For example, the City of Guelph issues invoices to recover costs related to cleanup for any spill that requires more than two hours of its Environmental Protection Officers' time (approximately $112 in staff time) or when the City needs to bring in an external contractor to help with the cleanup.

The Environment Ministry's current threshold is also much higher than its pre-2016 threshold of pursuing cost recovery in cases where an Environmental Officer is expected to spend more than four hours responding to a spill (approximately $240 in staff time).

5.1.2 Environment Ministry Staff Are Not Able to Assess When $10,000 Cost Recovery Threshold Is Met

Environmental Officers, who are responsible for making the initial assessment of whether a spill should be considered for cost recovery, are not provided with adequate information to determine whether the Environment Ministry's cost recovery threshold has been met. The Environment Ministry has tasked Environmental Officers, who may consult other Ministry staff, with initiating the process to determine whether spills are expected to surpass its $10,000 cost recovery threshold. However, spill response activities that incur significant costs, such as the use of laboratory services and spill response equipment, have not been calculated and disclosed to Environmental Officers.

The Environment Ministry has identified laboratory sampling as a factor that may increase the cost of its spill response. In our testing of the costs of 30 spills in **Section 5.1.4**, we found that sampling

was performed in 23 (or 77%) of the spills that exceeded the cost recovery threshold. Environment Ministry staff informed us that they do not know the Environment Ministry's sampling costs and therefore are unable to estimate whether the cost recovery threshold has been exceeded. We found that the Environment Ministry does not disclose these costs to staff involved in the spill response as it considers these to be confidential.

Another factor that Environmental Officers need to consider when assessing whether the cost recovery threshold is met is the use of specialized equipment in spills response, such as mobile air monitoring vehicles to monitor air contaminants during fires. The Environment Ministry's cost recovery policy specifies the methodology to use when determining the cost of using this equipment for spill response. However, our audit found that the Environment Ministry had never calculated the cost of using any of its emergency response equipment, including the mobile air monitoring vehicles. When we asked the Environment Ministry to calculate this cost, we found that the estimated daily cost of dispatching the mobile air monitoring vehicles for spill response including staff time costs, exceeds the Environment Ministry's cost recovery threshold.

Our audit also identified a general lack of understanding among Environment Ministry staff of the Spill Cost Recovery regime. For example, staff informed us that costs are recovered from the spiller only in situations where Environment Ministry time spent on spill response goes beyond its normal requirements. In addition, senior staff at the Environment Ministry informed our Office that, aside from the three spills where the Environment Ministry recovered some of its costs, there have not been any other spills where the response costs exceeded the threshold. However, when we did our testing we found that this was not the case. We note that the Environment Ministry has not prepared the information it needs in order to assess whether costs surpassed its threshold, given that it has not calculated its spill response costs for nearly all individual spills.

5.1.3 Environment Ministry Does Not Always Pursue Cost Recovery Even When Threshold Met

Even when the Environment Ministry is aware that its $10,000 cost recovery threshold has been surpassed, the Environment Ministry does not consistently pursue cost recovery.

In our sample of 30 spills, we identified two instances where costs surpassed the threshold based on the hours tracked by staff responding to the spill and related laboratory costs. However, the Environment Ministry did not pursue cost recovery and did not formally document its rationale.

- In 2017, the Environment Ministry tracked both its staff time spent and laboratory samples taken to respond to a diesel fuel spill into Picton Bay. The Environment Ministry calculated that the staff time spent on spills response and laboratory costs together exceeded $18,000. The Environment Ministry told us it chose not to attempt to recover these costs from the spiller because it believed its cost recovery process was not well established at the time.
- In 2016, the Environment Ministry initially tracked 167.5 hours of staff time for staff responding to a motor oil spill into the Grand River, which our Office estimated would cost over $10,000. However, the Environment Ministry made no attempt to recover any costs.

5.1.4 Environment Ministry Has Not Pursued and Recovered More Than $568,000 in Staff Time Associated with Its Spills Response

Although staff's recording of their time and activities associated with responding to spills is identified as a best practice in Environment Ministry policy, this is not performed consistently nor tracked centrally. This limits the ability of the Environment Ministry to understand its costs associated with spill response and recover these costs from the spiller. As previously mentioned, we asked the Environment Ministry staff involved in spills response to quantify their time spent on our sample of 30 spills (see **Figure 11**), based

on available documentation and best estimates. We calculated that their time spent on spills response for these 30 spills cost the Environment Ministry about $569,000.

For example, in one of the spills we tested, which involved a release in November 2018 of over 20,000 litres of gasoline into a roadside ditch in Chamberlain Township, the spill report contained information only about Environment Ministry spill response activities in the first week after the spill, even though the spill response and follow-up continued to mid-2020. In another example, a 2016 spill of water used to douse fires contaminated a community's drinking water, resulting in a spill response and long-term monitoring that was still ongoing at the time of our audit. We noted that the spill report detailed staff's spill response activities only in the first week of the spill. Therefore, the Environment Ministry is unaware of its costs associated with responding to spills when it decides not to pursue cost recovery, for reasons including those described in **Section 5.1.3.**

5.1.5 Environment Ministry Has Not Pursued and Recovered $3.6 Million in Sampling Costs

Even when the Environment Ministry conducts its own sampling to independently assess spill remediation requirements and verify the accuracy of spillers' samples, it does not track, calculate or recover its sampling costs. Under the polluter pays principle, these costs to respond to a spill should be paid by the polluter. However, in our sample of 30 spills, we found that the Environment Ministry incurred $3.6 million in sampling costs that it did not attempt to recover from the spiller.

The Environment Ministry does not track or calculate its costs of collecting and testing water and soil samples. However, documentation provided by the Environment Ministry in its assessment of the cost of three types of laboratory samples indicated that, on average, it costs the Ministry more than twice the private sector to analyze samples. For example, to analyze whether petroleum hydrocarbons are present in a sample of water, it cost the Environment Ministry $622 per sample analysis when it factored in its direct labour and material costs, whereas a private laboratory would charge about $179 to complete the same test. This is the only attempt the Ministry has made to calculate its costs of performing laboratory samples compared to those of a private sector laboratory. We note that the Environment Ministry did not include any overhead or indirect costs in its cost calculation, which would increase its costs even higher.

We estimated unrecovered sampling costs by: requesting an Environment Ministry listing of all samples related to spills between 2015 and 2020, applying the private sector charge rate, and then increasing these costs by the Environment Ministry's estimate of the average amount that it exceeds private sector costs. See **Figure 12** for our calculations of the Environment Ministry's sampling costs incurred between 2015 and 2020.

We estimated that total sampling costs of about $143 million were incurred between 2015 and 2020. Of this amount, we estimated that the Environment Ministry did not recover at least $4.1 million in sampling costs categorized as relating to spills between 2015 and 2020. The unrecovered sampling costs are likely even higher because the Environment Ministry does not always attribute the cost of a sample to a spill. Our audit specifically identified over $45,000 of unrecovered sampling costs that were collected when the Environment Ministry was pursuing cost recovery for its response to the 2015 Regan and Gogama train derailment spills. The Environment Ministry accidently did not include these costs in the cost recovery order to the spiller because it categorized the samples as "surface water" instead of "spills." We also came across the following additional examples of samples related to spills but were not documented as attributable to spills:

- In 2017, the Environment Ministry collected samples relating to a diesel fuel spill into Picton Bay that contaminated the community's drinking water. The Environment Ministry categorized over $23,000 of laboratory samples as "water" and "contaminated sites" samples.

Figure 12: Total Sampling Costs Incurred by the Environment Ministry, 2015–2020 ($ million)

Prepared by the Office of the Auditor General of Ontario

2015	2016	2017	2018	2019	2020	Total
26.148	26.028	29.694	30.623	23.595	7.228	**143.316**

Note: The Environment Ministry could not determine what portion of these lab costs pertain specifically to spills.

- In 2017 the Environment Ministry collected samples of a black substance that had spilled into Fletcher's Creek near Brampton. The Environment Ministry categorized $18,000 of laboratory samples as "legal."

5.1.6 Even When Environment Ministry Pursues Cost Recovery for Spills, Not All Costs Can Be Requested as Reasonable to be Recovered

In the only three occasions since 2005 when the Environment Ministry has pursued cost recovery, we found the Environment Ministry did not recover all costs from the spillers. We estimated that the Environment Ministry did not attempt to recover at least $606,000 (or 47%) of the $1.3 million in response costs from these spillers because its costs were unreasonable or were not documented.

Environment Ministry Has Incurred Unreasonable Remediation Costs that Cannot Be Requested for Recovery from Spillers

The *Environmental Protection Act* states that, in order to recover costs from the spiller, costs must be reasonable. The Environment Ministry performs sampling to assess the adverse effects of spills, monitor the impacts from spills, and ensure land is properly remediated by the spiller. However, the Environment Ministry cannot recover the full costs of its sampling because these sampling costs are not reasonable.

Following the 2015 Canadian National Railway (CN) crude oil spills caused by its two train derailments in Regan and Gogama, the Environment Ministry issued an order to CN to pay about $620,000 of the Province's costs and expenses incurred in the spill response. Of this amount, CN appealed about $530,000 to the Environmental Review Tribunal (Tribunal) in 2017, arguing that the Environment Ministry's laboratory costs were not necessary to remediate the spills. The Tribunal disagreed, concluding that it was appropriate for the Environment Ministry to recover sampling costs from a spiller to independently reach its own conclusions on what was needed to clean up and verify the accuracy of the spiller's samples.

However, in its cost-recovery calculation for this spill, the Environment Ministry intentionally underestimated its sampling costs by using private laboratory rates instead of its actual costs. The Environment Ministry supported this underestimation by comparing its costs to perform three different types of sampling to the cost of having a private-sector company perform this work. It found that, on average, the Environment Ministry's costs were 150% higher than the private-sector costs, and ranged from 52% to 330% higher than private-sector costs.

In order to estimate what it actually cost the Environment Ministry to perform laboratory services for the three spills where it pursued cost recovery, we applied the Environment Ministry's estimated 150% premium to the sampling costs charged by private laboratories.

We found that, out of about $696,000 that the Environment Ministry incurred for sample analysis in the three spills where it pursued cost recovery, about $501,000 (72%) was not recovered from the spillers. Since the Environment Ministry's laboratory costs significantly surpass the cost of having the sample assessed by a private laboratory—and the Environment Ministry has shown in its cost recovery actions that it does not consider its own costs reasonable—it has demonstrated that the full costs of assessing the samples cannot be recovered from the spiller.

Even When Environment Ministry Has Pursued Cost Recovery, Significant Costs Not Included

In addition to not recovering all laboratory costs incurred in the three instances where it pursued cost recovery from the spillers, the Environment Ministry also did not include all its staff time costs and other ministries' staff time costs.

We interviewed staff who were involved in the three spills where cost recovery was pursued, and found that the Environment Ministry did not include all costs incurred by the Province, such as costs incurred by the Ministry of Transportation during the 401 jet fuel spill in Cambridge. We also found that, in all three instances, the Environment Ministry stopped tracking staff time and recovering costs once it issued its spill cost recovery order to the spillers. See **Figure 10** for the total response costs incurred and unrecovered in these three spills.

We found that, out of about $1,287,000 incurred by the Province in responding to these three spills, about $606,000 or 47% of the total cost, was not recovered from the spiller. In the specific case of the 401 jet fuel spill, about $186,000 or 75% of the total cost was not recovered from the spiller. Contrary to the polluter pays principle, these unrecovered costs were borne by the taxpayers rather than the companies responsible for the spills.

RECOMMENDATION 3

To hold polluters accountable for the Province's costs of responding to spills, and reduce the costs that must be borne by taxpayers, we recommend that the Ministry of the Environment, Conservation and Parks (Ministry):

- reassess its threshold for recovering spill response costs, so that all reasonable costs are covered by the spiller;
- formally document the Ministry's rationale when cost recovery is not pursued;
- track all relevant costs associated with its spill response;
- fully and accurately calculate the costs of its spill response;
- include all costs incurred in responding to spills when recovering the costs from the spiller;
- ensure its costs to respond to spills are reasonable and recoverable; and
- recover costs that meet its threshold from the spiller.

MINISTRY RESPONSE

The Ministry agrees with this recommendation to hold polluters accountable for the Province's cost of responding to spills, and will review our cost recovery procedures to address this recommendation.

6.0 Detailed Audit Observations—Spill Response

6.1 Environment Ministry Rarely Confirms Independently That Spillers Have Sufficiently Remediated the Environment

For the majority of spills, the Environment Ministry relies on the spiller to perform its own analysis of soil and water samples, and submit proof to the Environment Ministry that the natural environment has been sufficiently restored after the spill. This means that spillers are left to police themselves and ensure effective environmental remediation, with little risk of Environment Ministry enforcement action (**Section 8.0**).

In 2017, the Environmental Review Tribunal (now the Ontario Land Tribunal) identified that it is appropriate for the Environment Ministry to conduct sampling to independently reach its own conclusions on what was needed to clean up spills and verify the accuracy of spillers' samples. We reviewed a sample of soil and water samples from 110 spills that occurred between 2010 and 2020 that the Environment Ministry assessed as potentially having a moderate to

major environmental and/or health impact. In this sample, the Environment Ministry completed its own sampling and laboratory testing to confirm adequate remediation in only one instance: the 2015 CN train derailment in Northern Ontario near Gogama that spilled 2.6 million litres of oil into the local environment.

The Environment Ministry said that it does not conduct its own sampling or laboratory testing to ensure proper remediation if it receives information from the spiller to indicate the spill has been properly remediated, or if it determines that the spill was low risk to the environment or to human health. Specific reasons it gave us for not performing its own independent assessment in individual instances included:

- The Environment Ministry received an email from the spiller that the cleanup had been completed.
- The Environment Ministry directed the spiller to conduct sampling post-remediation.
- The Environment Ministry's observations indicated that post-remediation sampling was not required.
- The spill did not migrate off-site and was cleaned up by the spiller in a timely manner.
- The spiller had its own spill prevention and contingency plan that came into action, and it cleaned up the spill.

Our audit found instances where the Environment Ministry did not conduct its own testing and subsequently the spill was discovered to have not been remediated properly, and to have had a negative impact on the environment. For example:

- On January 13, 2019, a tanker truck accident on Highway 401 in Puslinch Township resulted in a spill of over 35,000 litres of jet fuel, which affected roadside soil and water streams. In the summer of 2019, the cleanup contractor hired by the spiller informed the Environment Ministry that the spill had been cleaned up and the environment restored. In contrast with the Environment Ministry's oversight of spills, the Ministry of Transportation hired its own contractor to take laboratory samples of the affected site to independently confirm whether it had been adequately remediated, as the spill site (a provincial highway) was under its jurisdiction. The results of the independent verification indicated that the spill had not been adequately remediated. The Environment Ministry directed the spiller to hire another cleanup contractor to properly remediate the spill.
- On July 29, 2014, the Environment Ministry was informed of a tractor trailer accident that had caused a spill of diesel and hydraulic fluid on Highway 401 near Belleville in a construction zone. The spill occurred on July 26 but was not reported until the tractor trailer was removed and the spill was noticed by the construction company that was working in the area. Since the construction zone was under the Ministry of Transportation, that Ministry brought in a cleanup contractor that was co-ordinating cleanup with the spiller's insurance company. At that time, the Environment Ministry did not request a report supporting the sufficiency of the remediation either from the spiller's cleanup contractor or the Ministry of Transportation. The Environment Ministry also did not complete its own sampling and the incident was closed in September 2014. On December 12, 2014, the Environment Ministry received a call from a different environmental contractor hired by the spiller and who advised the Environment Ministry that the spill had not been cleaned up, groundwater had been affected, and the company was now remediating the spill. Around 11,000 litres of diesel fuel and water mixture was then cleaned out of the spill site. The Environment Ministry did not require a final report to confirm that the spill had been sufficiently cleaned and did not perform any of its own sampling. On August 31, 2015, the Environment Ministry received a cleanup report from the contractor, more than a year after the spill took place.

In contrast to the Environment Ministry's approach to relying on spillers to inform or provide their own documentation confirming that effective remediation has been completed, we found municipalities, other

ministries and other Canadian provinces independently verify effective remediation. For example, the Ministry of Transportation will take its own samples and send them to private labs for analysis. The City of Guelph also sends its Environmental Protection Officers to observe the site and collect samples to independently confirm effective remediation. We also found that Saskatchewan's Ministry of Environment hires a third-party environmental consultant to review some spills on a risk-basis. This involves an in-depth assessment with sampling and monitoring of soil and/or water to verify the state of a site, identify any remaining contaminants, and assess the long-term impact on the environment.

RECOMMENDATION 4

To confirm that spill sites have been effectively restored, we recommend that the Ministry of the Environment, Conservation and Parks develop and implement a risk-based process for independently verifying the sufficient remediation of significant spill sites.

MINISTRY RESPONSE

The Ministry agrees that spills causing an adverse effect should be remediated. The Ministry's priority in a spill event is to assess environmental impacts and ensure the responsible parties promptly clean up the spill and restore the natural environment. The Ministry is committed to reviewing its guidance documentation for a consistent approach to independently verifying sufficient spill remediation for significant spill sites.

6.2 Environment Ministry Is Not Using Its Powers to Enforce Prompt Spills Remediation

Despite instances of spillers refusing, or being unprepared, to remediate spills in a timely manner, the Environment Ministry has not used its powers to step in and remediate to prevent further damage to the environment and/or human health.

Under the *Environmental Protection Act*, the Environment Ministry has the power to clean up spills and then recover the remediation costs from the spiller. However, when reviewing the Environment Ministry's response to a sample of 110 spills that the Ministry had assessed as having medium to high risks to the environment and/or to human health, we found five where the spiller initially refused, could not be found, or was unprepared to remediate the spill, delaying timely cleanup, and the Environment Ministry did not step in to ensure timely remediation, resulting in further impacts on human health and/or the environment. For example:

- On September 11, 2016, Haldimand Fire Department reported a fire at a former airplane hangar in Hagersville that was being used as a storage space for rubber materials. Environment Ministry staff were unable to oversee immediate cleanup for several hours due to safety hazards from the fire. By the following day, no cleanup arrangements had been made. Since there had not been timely remediation, the nearby Sandusk Creek was affected by that spill. The responding Environmental Officer noted that the creek was red, there were hundreds of dead fish, there was a strong odour, and his eyes and nose were irritated. After initially refusing to remediate the spill, the hangar's owner agreed to begin remediation later that day, and work began close to midnight, more than 24 hours after the spill. Heavy rainfall over the following days breached the dam containing the water used on the fire and debris, which all flowed into Sandusk Creek. Due to the volume of water, the breach could not be cleaned up. Further environmental impacts could have been avoided if the cleanup work had begun immediately, instead of 24 hours later.
- On July 6, 2018, the Environment Ministry received a public complaint concerning sewage flowing into the Chedoke Creek in Hamilton. The Environment Ministry notified the City of Hamilton to assess the water quality and find the source of the sewage. On July 18, the City found that a pipe in the main overflow was discharging

contaminated water and that the water quality in Chedoke Creek was now a confirmed health hazard. On July 27, the City submitted a report that confirmed that an error in the station's process control documentation had meant that an overflow gate had been left 5% open since January 2014, and discharged approximately 24 billion litres of sewage into the creek. Though an alarm had sounded in January 2014 in one of the City's wastewater monitoring stations, the City did not inspect as required. Further, another station gate that would have allowed the sewage to flow into the Woodward Avenue Wastewater Treatment Plant failed, sending all the sewage to the creek. Though the City cleaned up 242,000 litres of waste from the water's surface, it did not take further measures to restore the environment. In August 2018, the Environment Ministry issued its first provincial order to the City of Hamilton to evaluate the impact of the spill and to assess remediation efforts. The report from the City was deemed insufficient, and another provincial order was issued in November 2019 to revise its assessment. The Environment Ministry disagreed with the City's revised recommendations to take no remedial action to restore the creek. In late 2020, Director's Orders were issued for the City to develop a workplan to dredge parts of Chedoke Creek and provide further remediation options for the area, which the City submitted on February 19, 2021. In December 2020, the Environment Ministry laid charges for violations under the *Environmental Protection Act* and the *Ontario Water Resources Act* against the City of Hamilton for the spill and the impact it had on the environment and water quality. The charges are currently before the courts. As of August 2021, the City was waiting for the necessary permits to begin cleanup.

Between 2010 and 2020, the Environment Ministry remediated only two spills that the spiller could not or would not remediate—a spill from a fuel tank in Tyendinaga Township and a spill from an underground gasoline storage tank in Roblin Hamlet. For both of these, the Environment Ministry believed the spillers did not have the financial means to remediate the spill.

RECOMMENDATION 5

To better protect human health and the environment from the impacts of delayed remediation, we recommend that the Ministry of the Environment, Conservation, and Parks remediate spills and recover the costs from spillers in situations where the Ministry knows that a spiller is not remediating the area immediately and that additional harm to the environment or human health will result from this delay.

MINISTRY RESPONSE

The Ministry agrees with the Auditor General on the importance of spill remediation and avoiding additional harm to the environment or human health. The Ministry will develop guidance to identify the circumstances where it may remediate spills as a result of a delayed response from the spiller.

6.3 Environment Ministry Not Informed of Spills in a Timely Manner

The Environment Ministry is not always made aware of all spills when they occur. This is because the Environment Ministry needs to rely on spillers to report spills to the Environment Ministry's Spills Action Centre, and they are not doing so immediately—despite Section 92 of the *Environmental Protection Act* (Act) requiring every person having control of a pollutant that spills to notify the Environment Ministry.

Between 2016 and 2020, 16% of spills were not reported until at least the following day, and about 1% took more than 10 days to report. See **Figure 13** for the timeliness of spills reporting.

We reviewed a sample of 110 spills from the Environment Ministry's spills records between 2010 and 2020 that were assessed by the Environment

Ministry to have medium to major impacts on the environment and/or human health. Our review of these 110 spills found that, despite regulatory requirements, 45 (or 41%) were never reported to the Spills Action Centre by the spiller, as required by the Act. The Environment Ministry only learned of these spills from first responders, such as fire and police, the municipality or members of the public. Further, we found that the Environment Ministry does not ensure that spillers meet their legal obligation to report spills promptly by penalizing or prosecuting all violators. Of the 6,270 spills between 2016 and 2020 that were not reported the same day, the Environment Ministry referred only 50 spills to be investigated for failing to report immediately and eventually convicted eight spillers (or 0.14%). **Section 8.0** contains our findings on weaknesses in the Environment Ministry's enforcement. The Environment Ministry said that it does not always penalize spillers for failing to report if the spills were small, contained and remediated. However, we found that the Environment Ministry's assessment of those 6,270 spills that were not reported on the same day included 117 spills (1.9%) as having medium to major impacts on human health and/or the environment.

We identified the following example where the spiller's failure to report the incident in a timely manner led to the spill becoming larger and having a greater impact on the environment. On April 29, 2016, a member of the public informed the Spills Action Centre that there was oil draining into the Grand River in Kitchener. When Region of Waterloo staff arrived, they found further evidence of oil in several catch basins and noted that the spill had likely begun days earlier. On May 3, a towing company informed the Environment Ministry that on the night of April 29 when the business was closed, approximately 800 litres of oil spilled into its facility's floor drains, which connect to storm sewers that empty into the Grand River. When the owner discovered the spill, he attempted to clean up the spill himself and did not report it immediately to the Environment Ministry. As a result of the delay in reporting, close to 500,000 litres of liquid waste had to be removed from the Grand River and surrounding areas to clean up the spill. The Environment Ministry subsequently fined the company and its director $70,000 for the spill. However, as part of a plea bargain, the spiller did not get charged for failing to report the spill. The City of Kitchener also accrued a cost of $1.3 million for cleaning up the spill, of which $122,000 (9%) was recovered from the spiller and the rest is still outstanding.

Figure 13: Timeliness of Spills Reporting, 2016–2020

Source of data: Ministry of the Environment, Conservation and Parks

Timeliness of Spills Reporting	# of Reported Spills	% of Reported Spills
Same day	34,057	84.4
1–2 days	4,397	10.9
3–5 days	852	2.1
6–10 days	516	1.3
>10 days	505	1.3

Note: Data excludes 22 spills that were inaccurately documented as being reported before the spills occured. The Environment Ministry has advised us that, due to a lack of overall data stewardship, data related to spills has poor to fair reliability.

7.0 Detailed Audit Observations—Spill Prevention

7.1 Thousands of Spills Are Caused by Entities Not Subject to Spill Prevention Planning Requirements

The majority of spills are from entities that are not required to have spill prevention and contingency plans. These plans are documented procedures and actions an entity intends to implement to reduce the frequency of spills (prevention) and respond to spills (contingency) and reduce their impact on human health and/or the environment. The outdated requirements for spill prevention and contingency plans in regulation apply only to a group of industrial facilities identified in 1986 for being major contributors to water pollution. However, between 2016 and 2020, these facilities were responsible for a small portion (2,842, or 7%) of the 40,349 reported spills.

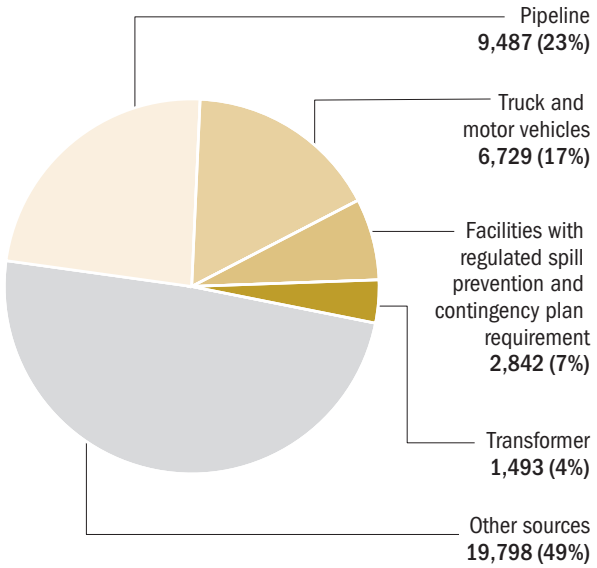
The Environment Ministry does not require spill prevention and contingency plans for many high-risk sources that require such plans in other jurisdictions. The scope of the Environment Ministry's spill planning requirements does not include oil and natural gas pipelines (the latter of which are included in California requirements), or fuel delivery trucks, electricity transmission and distribution substations, bulk fuel storage facilities and commercial fuel tanks (which are included in US requirements). These are among the sources of the most frequently reported spills in Ontario (**Figure 14**). Without the most frequent causes of spills requiring this form of planning, the Environment Ministry cannot effectively protect the environment from spills. For example, California has identified best practices to prevent natural gas leaks, including replacing pipeline valves that have designs that are known to leak, and having utility staff monitor construction near pipelines to avoid ruptures. More broadly, preventative maintenance and staff training can help prevent spills from many sources.

While the Environment Ministry also requires spill prevention and/or contingency planning as a condition of some environmental approvals, the Environment Ministry does not know how many approvals have these conditions because they are typically assessed on an individual permit basis.

In 2017, the Environment Ministry held a spill prevention workshop "to gain a better understanding of legislative framework related to spill prevention … given the potential significant risks that spills of toxic substances pose to the environment and human health." The workshop led to the Environment Ministry initiating a study in 2018 of the root causes of spills, though the project ended due to staffing changes and restructuring before the production of a previously planned final report. Environment Ministry staff at the workshop identified the limited scope of spill prevention plan requirements for pipelines as a top risk and suggested that requirements should apply to pipelines. The Technical Standards and Safety Authority regulates intra-provincial fuel pipelines, but its staff at the workshop noted it does not have spill prevention requirements. The Ontario Energy Board, which approves pipelines, requires spill contingency, but not spill prevention plans. In contrast, California requires pipelines to have spill prevention plans.

Figure 14: Spills from Facilities with Regulated Spill Prevention and Contingency Plan Requirement and from Other Sources, 2016–2020

Source of data: Ministry of the Environment, Conservation and Parks



Note: The Environment Ministry has advised us that, due to a lack of overall data stewardship, data related to spills has poor to fair reliability.

The Environment Ministry argues it is not the primary regulator of most materials in transit (with the exception of waste). For example, the federal government has authority over inter-provincial and international transportation, and the Technical Standards and Safety Authority regulates intra-provincial pipelines.

In 2017, in response to a 35,000-litre diesel pipeline spill in the St. Clair River in 2013, the Environment Ministry examined expanding the scope of the Spill Prevention and Contingency Plan regulations to oil pipelines. The Environment Ministry ultimately decided not to expand the prevention planning requirements to include oil pipelines because there were no other spills from a provincially regulated oil pipeline between 2010-2017. Most pipeline spills in Ontario are of natural gas.

The Environment Ministry's spill prevention and contingency plan requirement is an example of management-based regulation, which has been found to be successful in other jurisdictions. An academic study found that manufacturing plants in US states with toxic reduction planning requirements were more engaged with pollution prevention activities, and reduced the weight of their toxic releases by 30% more than comparable plants in states without the same requirements. Environment and Climate Change Canada found federally required pollution prevention plans reduced toxic substances by four million kilograms. The federal policy applies to Ontario but differs from spill prevention and contingency plans by targeting overall pollution (including landfill waste) as opposed to targeting spills, and by targeting particular toxic substances (such as mercury) instead of facilities. The federally regulated toxic substances that require pollution prevention plans are determined individually by the federal Minister of Environment and Climate Change and do not include the most commonly spilled contaminants in Ontario, which are natural gas and oil products.

This regulatory gap can have significant consequences. The Environment Ministry received approximately 8,800 reports of spills from natural gas pipelines between 2016 and 2020. These spills result in natural gas being released directly into the air and cannot be cleaned up. Natural gas contains mostly methane, which is a damaging greenhouse gas that contributes to climate change. Methane traps up to 87 times more heat than the same amount of carbon dioxide, and approximately 8% of Ontario's methane emissions are from natural gas leaks. Because natural gas is flammable and explosive, natural gas leaks can also have direct human health impacts. For example, a 2003 natural gas pipeline explosion killed seven people and injured four others in Etobicoke. Ontario is currently subsidizing the expansion of the natural gas pipeline system, and expansion increases the risk of natural gas leaks.

RECOMMENDATION 6

To reduce the risk of hazardous spills occurrences and of hazardous spills from all sources not being properly cleaned up or remediated, we recommend that the Ministry of the Environment, Conservation and Parks review and expand its spill prevention and contingency plan requirements to include additional sources of the most frequent and environmentally harmful spills.

MINISTRY RESPONSE

The Ministry agrees with this recommendation. The Ministry will review its approach to spill prevention and contingency planning at high-risk facilities, including expanding spill prevention planning requirements.

7.2 Environment Ministry Does Not Verify That Required Spill Plans Are Developed and Effective in Preventing Spills

Where entities are required to have plans in place to prevent and respond to spills, the Environment Ministry does not confirm that sufficient and effective plans are developed. When the Environment Ministry has inspected facilities or reviewed spill plans for completeness, it has found that some facilities do not have the required plans. However, the Environment Ministry does not approve spill plans or assess the effectiveness of spill prevention planning for even the highest risk facilities.

For example, the Environment Ministry has required vehicle waste facilities to have spill prevention and management plans since 2017. These plans have weaker requirements than spill prevention and contingency plans for large industrial facilities. Following the implementation of this regulation, the Environment Ministry conducted a one-time inspection blitz of the industry. The Environment Ministry inspected 529 registered vehicle disposal sites in 2017/18 and found 210 that did not

comply with spill prevention and management plan requirements. Through following up on the non-compliance, the Ministry identified that 34 facilities had still not complied as of February 2021.

Between 2016 and 2020, approximately 2,800 spills occurred at 193 industrial facilities with requirements to have spill prevention and contingency plans. The Environment Ministry did not review the quality of these entities' plans before any of these spills, and even after the spills the Environment Ministry did not review the plans to ensure they had been amended to effectively prevent and respond to similar uncontained spills.

In response to public concern regarding environmental degradation in Sarnia's Chemical Valley area, the Environment Ministry reviewed spill prevention and contingency plans of industrial facilities in Sarnia in December 2013 and January 2014. This review strictly checked whether plans existed, contained the required sections (for example, company name and a drawing of the facility), and were being updated as required. It did not assess whether plans were effective at preventing and responding to spills. Eleven of the 14 inspected facilities were found to be non-compliant with some spill prevention and contingency plan requirements and were brought into compliance. However, we found no evidence that this one-time inspection blitz (nor subsequent individual inspections of these facilities) of compliance with administrative requirements were effective in reducing spills; the average annual number of spills from six of these inspected facilities increased in the years since the inspections, and remained the same in four facilities.

The Environment Ministry solely relies on spillers to ensure the effectiveness of spill plans. This includes a requirement to review and revise plans annually, as well as following spills, to ensure their effectiveness. Unlike the US Environmental Protection Agency, the Environment Ministry does not require the spiller to have the plan certified by a professional engineer. Analyses of the root causes of spills, which inform updates to spill plans, are also conducted solely by the spiller. The Environment Ministry does not train its Environmental Officers, who are responsible for reviewing spill plans during inspections, in spill prevention, root cause analysis of spills, nor (with few exceptions) in the particular industries they inspect. In contrast, the California Department of Fish and Wildlife's Office of Spill Prevention and Response employs Oil Spill Prevention Specialists as part of its spill response teams. These specialists investigate spills, participate in testing spill plans, review spill plans and submit recommendations. They also analyze and consider the feasibility of requiring new spill prevention technologies.

RECOMMENDATION 7

To confirm entities' compliance with the provincial requirement for them to develop effective plans to prevent and respond to spills, we recommend the Ministry of the Environment, Conservation and Parks:

- request and receive all spill prevention plans and review them for completeness;
- require professional engineers to approve plans for high-risk facilities; and
- train Environmental Officers to critically review these plans on a risk basis, including after spills.

MINISTRY RESPONSE

The Ministry agrees there are opportunities related to spill prevention planning. The Ministry will review spill prevention plans from high-risk facilities, including consideration of the Auditor General's recommended actions. The findings from the review will inform recommendations to government for proposed changes to spill prevention and planning requirements, as well as Ministry procedures.

8.0 Detailed Audit Observations—Enforcement

Spill prevention (**Section 7**) and remediation (**Section 6**) rely on a strong environmental enforcement regime. However, our audit found that the Environment Ministry's enforcement regime was inadequate to confirm spillers' compliance with environmental legislation and regulations to prevent spills and reduce their harm to human health and/or the environment. This is because the Environment Ministry:

- lacks reliable data to inform policy and risk-based inspections (**Section 8.1**);
- is reducing its proactive inspection and enforcement activities (**Section 8.2**);
- has limited ability to penalize spillers (**Section 8.3**), and is reducing the amount it can penalize spillers (**Section 8.4**);
- rarely investigates, prosecutes, convicts and fines spillers who are not subject to penalties and who harm the environment (**Section 8.5**); and
- allows spillers who repeatedly violate environmental laws and regulations to continue operating and avoid fines from prosecution (**Section 8.6**).

Overall, we found the Environment Ministry's approach to enforcement was lenient and relied mostly on only asking violators of environmental laws and regulations to comply, instead of using its powers to verify and require compliance. Between 2016 and 2020, the Environment Ministry relied on voluntary plans of action, violation notices and warnings for 22,556 (90%) of the incidents of non-compliance it identified, compared to 2,622 (10%) legally binding orders. Further, the Environment Ministry only occasionally uses financial tools to enforce compliance.

8.1 Environment Ministry Lacks Complete Data to Perform Risk-Based Enforcement of High-Risk Entities

The Environment Ministry has not ensured that spills data is recorded accurately and that all key risk information on entities is completely input into its information system. The resulting lack of complete and accurate data limits the Environment Ministry's ability to identify and inspect high-risk entities and confirm that they are complying with spill prevention requirements. Further, this lack of reliable data limits the Ministry's ability to inform and adapt spills policy to address evolving risks. The Environment Ministry's data limitations to effectively conduct inspections on a risk basis and adjust policy undermines the effectiveness of its laws and regulations to address spills.

Historical information on environmental non-compliance, including with respect to spills, can be used to develop risk profiles and understand which activities, industries and entities are at highest risk for hazardous spills. The Environment Ministry said it does not have adequate spills data to effectively analyze and target risk-based inspections to reduce the risks from spills on human health and/or the environment. Further, such information could be used to not only inform risk-based inspections but to inform policy development. For example, had the Environment Ministry effectively recorded and analyzed data identifying the highest risk areas for spills, it should have led it to propose legislation enabling it to apply environmental penalties to deter the most common hazardous chemical spills to air (see **Section 2.2.1**).

In our 2016 Environmental Approvals audit, we noted that the Environment Ministry does not compile historical emitter-specific information to form risk profiles for individual emitters. In response, the Environment Ministry indicated it would develop a new information system that would "allow it to strengthen its risk-based process for inspections." However, despite this commitment, the Environment Ministry has not begun preparing historical data in a manner that would enable its migration to this new system.

In March 2019, the Environment Ministry proposed a new information system, noting in its business case for the new system that its environmental program, compliance and enforcement activities have not historically been outcome-focused. Instead, the

Ministry has assessed the success of many of its compliance programs by how many activities are undertaken/completed, and not necessarily prioritized by areas of highest environmental risk. Through the use of this new information system, the Environment Ministry intends to focus its compliance and enforcement processes on high-risk polluters.

The Environment Ministry recognizes that ongoing compliance efforts require access to historical information. However, when proposing the new IT system, it decided that data migration for the project would be minimal and limited only to basic information (for example, company and owner name, location). Despite investing $19 million to develop the new system, and $9 million to maintain it over the next 10 years, the Environment Ministry will not be migrating and using any historical data for its risk-based inspections. Without the transfer of historical spills data, the Environment Ministry will have to wait for adequate data to accumulate in the new system to make use of its primary function—assessing risk for inspection purposes.

The Environment Ministry did not formally assess the cost, timelines and benefits of transferring the historical data to the new system. The Environment Ministry informed us that it believed it would take a significant effort to migrate data to the new system, because it believes the data is significantly incomplete and inaccurate. Concerns with the data included:

- information not structured nor consistently entered;
- no spelling/grammar check feature, limiting the use of keyword searches;
- location information inconsistently entered, resulting in limited geographic understanding of spills information; and
- many key fields not being mandatory (for example, company name, location of spill, substance spilled, and cause of spill), resulting in thousands of incomplete records.

The lag in acquiring data in the system will hinder the Environment Ministry's ability to effectively assess and respond to risk, delaying the Environment Ministry from realizing the full capacity and primary purpose of its new information system.

RECOMMENDATION 8

So that the Ministry of the Environment, Conservation and Parks (Ministry) has accurate, reliable and historical data to inform policy and enforcement to protect human health and the environment, we recommend that the Ministry:

- consistently review and ensure the accuracy of its data; and
- migrate validated data into its new information system.

MINISTRY RESPONSE

The Ministry agrees with the recommendation to review and ensure the accuracy of data. The Ministry has created a team to consistently review and help ensure the quality and accuracy of data in the new Environmental Compliance Hub of Ontario (ECHO) system. Migration of validated data into the new information system is ongoing.

8.2 Environment Ministry Decreasing Proactive Inspection and Enforcement of Environmental Requirements Despite High Rates of Non-compliance

Despite 42% of proactive inspections from 2016 to 2020 identifying non-compliance with environmental requirements, the Environment Ministry continues to reduce the number of inspections it performs. When non-compliance with environmental requirements, such as spill prevention requirements, is identified, the Environment Ministry relies on the offender voluntarily coming into compliance, although the Environment Ministry's 2019/20 compliance data indicates that this approach has been shown to be ineffective 30% of the times it was used in that period. The Environment Ministry rarely uses the stronger enforcement tools that are available to it.

The Environment Ministry attempts to target its proactive inspections on higher risk areas using the judgment of Environmental Officers and other staff. There is no centralized quantitative analysis of risk. There is also no policy guiding inspection frequency of spill prevention requirements. Not all spill plans are inspected, nor are all facilities with these plans inspected.

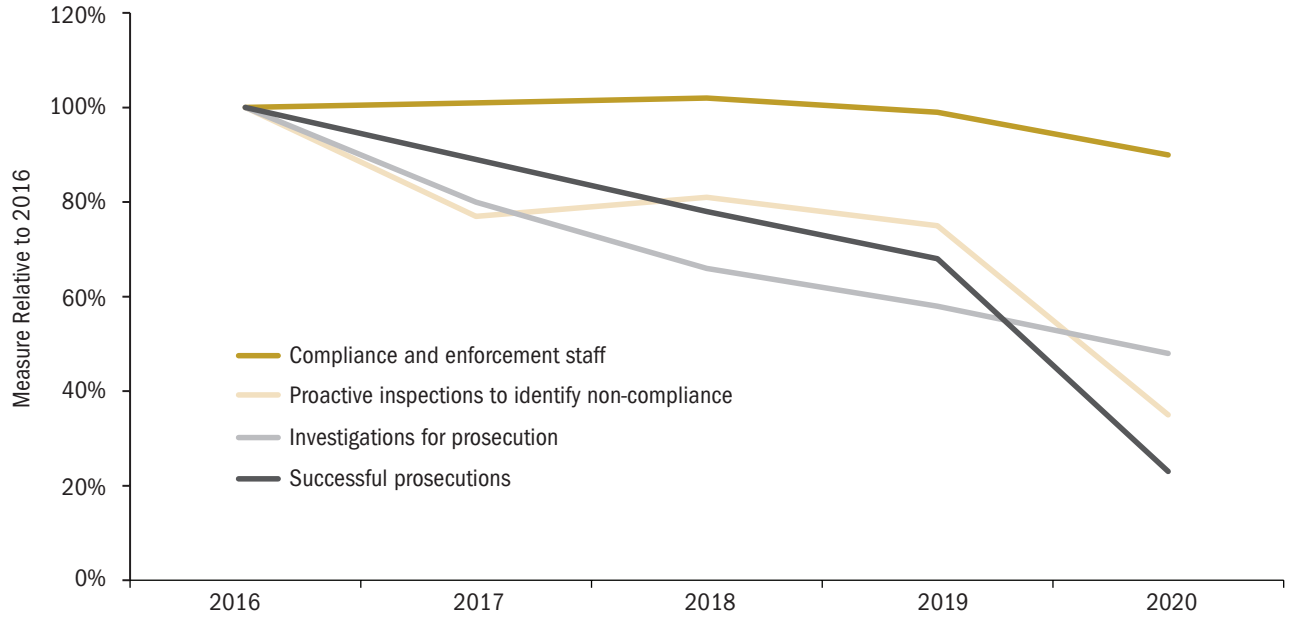
In addition to the spill plan requirements, the Environment Ministry has other requirements that are meant to help prevent spills as part of regulatory or environmental approval conditions. For example, large industrial facilities with wastewater systems must also monitor their discharges for potential spills. Additionally, the Environment Ministry requires vehicle disposal sites to have a containment system to catch spills of vehicle fluid such as fuel, oil and antifreeze. Non-compliance can range from not having a spill prevention plan (see **Section 7.2**), to providing false information (see **Section 8.6**), to not reporting spills (see **Section 8.5**) to causing a spill with an adverse effect.

It should be noted, proactive compliance activities in 2020 were significantly reduced due to the pandemic and related public health measures. However, even before the pandemic started, the Environment Ministry began reducing enforcement activity. From 2016 to 2019, the Environment Ministry reduced annual proactive inspections to ensure compliance with environmental laws and regulation by 25%, investigations of non-compliance for prosecution by 42%, and successful prosecutions of non-compliance fell by 32% (**Figure 15**). In addition to fewer inspections, there has been a 60% reduction in issuing environmental penalties and fines, from $9.6 million in 2016 to $3.8 million in 2019 (**Figure 16**). In 2020, in response to its budget being reduced, the Environment Ministry reduced compliance and enforcement staff by 9% from 2019, and enforcement activity dropped.

High rates of identified non-compliance (ranging from a low of 41% to a high of 45% between 2016 and 2020) indicate that reducing proactive inspection activity will further reduce the Environment Ministry's

Figure 15: Environment Ministry Proactive Inspections and Compliance, 2016–2020

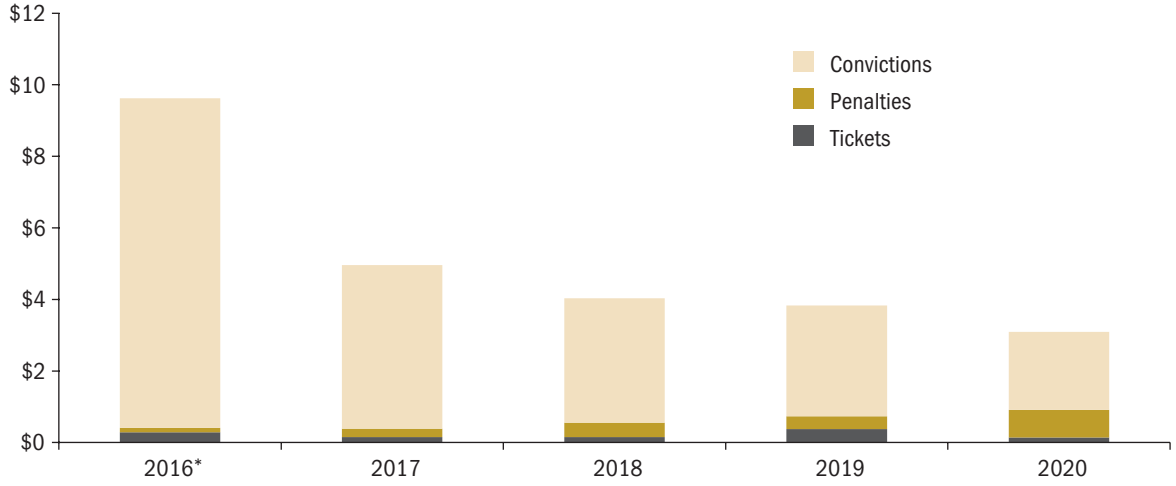
Source of data: Ministry of the Environment, Conservation and Parks



Note: Emergency measures to ensure public safety during COVID-19 affected the number of inspections in 2020.

Figure 16: Environment Ministry Use of Financial Enforcement Tools, 2016–2020 ($ million)

Source of data: Ministry of the Environment, Conservation and Parks



* Includes conviction for the 2008 Sunrise Propane explosion with fines totaling $5 million.

ability to detect non-compliance and prevent negative impacts on human health and/or the environment. Due to reduced inspections, instances of identified non-compliance from Environment Ministry proactive inspections have consequently declined from 3,980 in 2016 to 3,264 in 2019.

RECOMMENDATION 9

To optimize inspection resources used to identify instances of non-compliance with environmental regulations (that are intended to deter and reduce the frequency and environmental impact of spills), we recommend that the Ministry of the Environment, Conservation and Parks:

- regularly analyze collected data on key risks and sources of spills to determine the inspection frequency and approach needed to effectively address non-compliance;
- reassess assigned inspection resources to ensure that the intent of the *Environmental Protection Act* is being met; and
- undertake inspections with the frequency, resources and approach needed to identify and effectively address non-compliance.

MINISTRY RESPONSE

The Ministry agrees with this recommendation. The Ministry will review our assessment and use of spills data in our planning and inspection processes, and take corrective action as needed.

8.3 Environmental Penalties Cannot Be Issued to All Spillers

Because O. Reg. 222/07 applies to only approximately 106 industrial facilities, environmental penalties cannot be used to hold other spillers accountable or to deter spills. Between 2016 and 2020, spillers responsible for 94% (38,124 of 40,349) of reported spills could not be penalized. Although all spillers could be fined following successful investigation, prosecution and conviction in court, a study of international best practices by the Organisation for Economic Co-operation and Development has found that enforcement tools need to be easy enough to be used when needed, while strong enough to outweigh potential profits from non-compliance.

The Environment Ministry's environmental penalties are a financial enforcement tool used to protect the air, water and land and hold polluters accountable for environmental harm. Environmental penalties

are intended to encourage quick and effective compliance. This is in contrast to the other enforcement measures such as orders, which do not have a monetary component, and prosecutions, which can take a significant amount of time to pursue.

While revenues from paid tickets and fines go to the municipalities where the offence occurred, revenues from environmental penalties go toward the Province's Ontario Community Environment Fund, which funds environmental improvement projects in communities where violations occurred. A potential benefit of environmental penalties is that they can be issued once a spill is reported; this contrasts with prosecutions, where investigators are required to collect detailed evidence to prove the violation. This means investigators need to spend, on average, 16 months gathering evidence before they can begin legal proceedings.

Under the *Environmental Protection Act*, penalties apply only to certain facilities in nine industrial sectors (for example, petroleum, iron and steel, and metal mining) that may pollute land and surface waters. Penalties cannot be applied to other entities or activities, including the transportation of substances such as hazardous waste. **Figure 17** lists the types of recent spills not directly associated with a facility and therefore excluded from the application of environmental penalties. As noted, between 2016 and 2020, these amounted to 38,124 reported spills. Extrapolating from the $1.9 million in penalties issued for 2,225 reported spills between 2016 and 2020 from the nine industrial sectors, an estimated $32.4 million could have been charged for the remaining 38,124 that environmental penalties currently do not apply to.

The Environment Ministry is also unable to issue penalties to most spills to air from these nine industrial sectors. The only penalties that exist for spills to air is for petroleum facilities that discharge sulphur dioxide to the air. In July 2019, the Environment Ministry began issuing penalties for discharges of sulphur dioxide that exceed the Environment Ministry-approved maximum allowable amount. Between 2019 and March 2021, 21 penalties related to sulphur dioxide were issued, amounting to $1.6 million in total penalties.

Figure 17: Sources of Spills in Ontario Where Environmental Penalties Could Not Be Applied, 2016–2020

Source of data: Ministry of the Environment, Conservation and Parks

Source of Spill	# of Spills
Pipeline/components	9,619
Motor vehicle	3,379
Truck – transport/hauling	1,865
Sewer (private or municipal)	1,460
Truck – only saddle tanks	1,401
Sewage treatment	1,376
Container/drum/tote	1,084
Tank – above ground	899
Structure	458
Truck – tanker	357
Other*	16,226
Total	**38,124**

Note: The Environment Ministry has advised us that, due to a lack of overall data stewardship, data related to spills has poor to fair reliability.

* Other includes transformers, watercraft, waste disposal sites, underground tanks, trains and other spill sources.

These penalties are significantly weaker than those applied in some other jurisdictions. For example, the South Coast Air Quality Management District in California administers penalties for spills of sulphur dioxide emissions. **Figure 18** details the $14.7 million in penalties that would have been applied through the South Coast Air Quality Management District approach compared with the $1.6 million penalties actually applied in Ontario. This air quality management district has recorded decreasing annual peak sulphur dioxide concentrations since it implemented its refinery emissions policy in 1998.

Although Sarnia has seen air quality improvements over time, its petroleum refineries remain outliers with uniquely high emissions. Data compiled by Environment and Climate Change Canada shows Canada's 15 refineries emit more sulphur dioxide than 127 US refineries combined. Among Canadian facilities, Sarnia's Imperial Oil refinery is the worst

Figure 18: Comparison of Ontario and California Flaring Penalties, July 2019–March 2021

Prepared by the Office of the Auditor General of Ontario

Facility	# Flaring Events	Total Duration of Events (Hours)	Total Sulphur Dioxide Emitted (kg)	Penalties Applied by Environment Ministry ($ million Cdn)	Equivalent Penalties in California* ($ million US)
Imperial Oil – Nanticoke	2	61	12,291	0.1	1.3
Imperial Oil – Sarnia	9	76	92,243	0.8	9.7
Shell – Corunna Refinery	9	56	32,514	0.6	3.4
Suncor – Sarnia	1	26	3,140	0.1	0.3
Total	**21**	**219**	**140,187**	**1.6**	**14.7**

* Our Office's calculations based on the actual Ontario flaring events and the hypothetical results of applying California's South Coast Air Quality Management District approach to these events.

performing in terms of sulphur dioxide, relative to annual production from US plants with similar technology. The same Sarnia facility was also the worst performer in terms of fine particulate matter and nitrogen oxide, while Sarnia's Suncor refinery was worst in terms of carbon monoxide emissions. The Environment Ministry has issued 17 special air quality statements for Sarnia between 2016 and 2020. Although these are a result of many sources of air pollution, the Ministry explicitly recommends avoiding exposure to industrial emissions when these statements are issued.

In the 2018 *Made-in-Ontario Environment Plan (Preserving and Protecting our Environment for Future Generations)*, the Province committed to holding polluters accountable by strengthening enforcement measures. The Environment Ministry told us that recent changes resulting from the *Better for People, Smarter for Business Act, 2019* will enable the Environment Ministry to apply environmental penalties to all sectors. This will require the creation of a regulation that specifically enables further penalties.

RECOMMENDATION 10

To hold polluters accountable and encourage preventing spills that have potential impacts on human health and the environment, we recommend that the Ministry of the Environment, Conservation and Parks expand the application of its environmental penalties to enable it to penalize all spills.

MINISTRY RESPONSE

The Ministry agrees with the Auditor General's recommendation and has begun the process of expanding the administrative monetary penalties regime. The Ministry has begun the process of expanding the administrative monetary penalties regime as part of Bill 132, the *Better for People, Smarter for Business Act, 2019*. The Ministry engaged with stakeholders in spring 2021 to discuss the proposed path forward for administrative monetary penalties.

The Ministry will consider spills when determining potential contraventions that may be subject to an administrative monetary penalty.

8.4 New Penalty Limits May Reduce the Incentive to Prevent and Promptly Remediate Spills

Upcoming changes to Ontario's penalty regime may further weaken Ontario's environmental enforcement regime, reducing the incentive for spillers to prevent and remediate the impacts from spills in a timely manner. The upcoming changes will put a cap on the maximum penalties per spill, limiting

the Environment Ministry's ability to compel timely remediation through cumulative daily penalties.

The purpose of environmental penalties is to protect the environment by encouraging companies to comply with environmental legislation and take swift remedial action in the event of a spill, discharge or other environmental violation. The Environment Ministry can impose penalties for causing a spill or not reporting a spill.

Currently, Ontario has the highest stipulated maximum penalty per day in Canada, at $100,000. Despite this, Ontario routinely issues the lowest total amount of monetary penalties. This is because Ontario issues cumulative penalties to violators less than $100,000 per day and less frequently than other provinces. This means that there is a lower cost to spillers for negatively impacting human health and/or the environment in Ontario than in some other provinces. See **Figure 19** for the number of penalties issued in the last five years by Ontario and three other provinces, and their total dollar amount.

The *Better for People, Smarter for Business Act, 2019*, which has not yet been proclaimed, makes changes to the Environment Ministry's authority to issue penalties. Amongst other things, these changes will result in penalty limits being calculated per spill rather than per day the spill has not been remediated. This will make Ontario the only province in Canada that does not set a penalty for each day a spill continues. The changes will also limit the total penalties to $200,000 per spill and further restrict the Environment Ministry's ability to issue cumulative penalties. The Ministry noted that it can also increase the total penalty issued by the amount the spiller economically benefitted from delaying its response to the spill. However, the Ministry has never attempted to quantify an economic benefit. The new penalty regime will come into force at a future date upon proclamation by the Lieutenant Governor.

The Environment Ministry is in the process of updating the amount and application of its environmental penalties. Environmental organizations, including Ecojustice, have raised concerns that these changes would undermine the penalties' effectiveness. An objection to the changes supported by Environmental Defence and 39 other environmental and community groups stated that "the proposed changes to introduce a maximum per contravention … represents a weakening of the framework." The Environment Ministry has completed its stakeholder engagement and is currently reviewing the feedback received to develop the new regulations and guidance documents, with the intention of a fall 2021 release. Some of the feedback received by the Environment Ministry was that environmental penalties should be high enough for companies to have an incentive to improve their operations, and that the current framework of penalizing per day helps to ensure that the cleanup is prompt. The new environmental penalty framework is expected to be in effect at the beginning of 2022.

RECOMMENDATION 11

To compel spill prevention and timely spill remediation, we recommend that the Ministry of the

Figure 19: Provincial Comparison of Environmental Penalties Issued, 2016–2020

Prepared by the Office of the Auditor General of Ontario

	2016		2017		2018		2019		2020		Total	
	(#)	($ 000)	(#)	($ 000)	(#)	($ 000)	(#)	($ 000)	(#)	($ 000)	(#)	($ 000)
ON	11	123	12	255	19	398	19	363	18	771	79	1,910
BC	8	126	16	284	21	316	31	545	23	339	99	1,610
AB	30	2,308	26	2,516	21	1,591	28	1,771	25	8467	130	16,653
QC	456	1,865	432	1,728	433	1,750	520	2,264	223	1,105	2,064	8,712

Note: This table includes all penalties and not just those directly relating to spills.

Environment, Conservation, and Parks reassess its pending environmental enforcement regime to be consistent with the approach used throughout Canada to impose daily financial penalties at amounts significant enough to encourage spill prevention and deter delayed remediation.

MINISTRY RESPONSE

The Ministry agrees with the recommendation to assess its environmental enforcement regime. The Ministry is currently assessing and consulting on administrative monetary penalties and will propose to government financial penalty amounts significant enough to encourage spill prevention and deter delayed remediation.

8.5 Environment Ministry Rarely Investigates and Fines Spillers for Failing to Report a Spill

The Environment Ministry rarely investigates spillers who harm the environment. Out of the over 40,000 spills known to have occurred between 2016 and 2020, the Environment Ministry has referred only 153 spills to the Investigations and Enforcement Branch (Enforcement Branch) to be investigated; and only eight of these led to convictions against the spiller for failing to report a spill.

As shown in **Figure 17**, the Environment Ministry does not issue penalties for the majority of reported spills. When we inquired how the Environment Ministry holds spillers accountable to protect the environment, Environment Ministry staff advised us that, in cases where it cannot issue penalties, Environmental Officers can recommend that the Enforcement Branch investigate the spiller. The Enforcement Branch can then decide whether it should lay charges under the *Environmental Protection Act*. However, we found that Environmental Officers rarely refer spills to the Enforcement Branch. Between 2016 and 2020, we found that Environmental Officers have referred only 153 spills to be investigated, equivalent to less than 1% of the over 40,000 spills that occurred during this period.

Further analysis of the 153 spills that were referred to the Environment Ministry's Enforcement Branch to be investigated shows that 54 were investigated to be prosecuted for failing to report a spill, but of these only eight were prosecuted for failing to report a spill. Cases for 12 spills are currently pending a decision whether to prosecute and nine cases are before the courts. Cases for 25 spills were either declined after being referred (eight) or closed following investigation (17). According to the Ministry, some of the reasons why the 25 cases were either closed or declined include the following:

- the spill was small and contained;
- the Environmental Officer did not gather the necessary samples on time;
- the samples gathered by the Environment Ministry, other agencies, such as Environment and Climate Change Canada, or the municipality were not sufficient or conclusive;
- the Environment Ministry did not make a timely response to the spill;
- the Environmental Officer did not take the necessary photographs that could be used as evidence;
- the Environment Ministry withdrew the charges because the spiller did not have the financial means to pay the fine and the spill had a low impact on the environment;
- there was no evidence of adverse impact on the environment and/or human health;
- the Environmental Officer delayed referring the spill to the Enforcement Branch;
- charges would not be in the public interest. This includes the Environment Ministry not pursuing charges against a provincial agency under the Ministry of Heritage, Sport, Tourism and Culture Industries;
- the spiller failed to report the spill in a timely manner, but there was no indication that this failure was intentional; and
- the conviction would have no additional benefit as the spiller had already cleaned up the environment.

RECOMMENDATION 12

To protect the environment through an effective enforcement regime, we recommend that the Ministry of the Environment, Conservation and Parks senior management verify that spill incidents are investigated, appropriately prosecuted and fines are sought for spillers who fail to report in a timely manner and in doing so:

- provide clear direction to Environmental Officers on all significant steps to be taken and documented;
- review the documented spills response actions on a risk basis to ensure all steps are completed; and
- use the reviews to identify prevalent issues that limit the Ministry's ability to effectively penalize and prosecute spillers, and take corrective action as needed.

MINISTRY RESPONSE

The Ministry agrees that continuous improvement of program delivery is critical and is working to improve procedures that provide clear direction for compliance and enforcement activities and documentation of actions through the implementation of our new Information Technology System Environmental Compliance Hub of Ontario (ECHO). The Ministry agrees to undertake a review of spills response actions and take corrective actions needed to address issues that are barriers to prosecution.

8.6 Environment Ministry Does Not Stop Repeat Offenders

The Environment Ministry allows companies that repeatedly spill and violate environmental laws and regulations to continue operating, despite Ministry policy that allows it to revoke environmental approvals.

In response to our Office's 2016 audit of Environmental Approvals, the Environment Ministry developed a strategy to focus compliance and enforcement efforts on repeat violators. The strategy, put in place in 2018, includes a process to revoke environmental approvals for offenders who have not been brought into compliance. The process is initiated by Environmental Officers, but requires involvement by several individuals and branches: their manager/supervisor, regional/branch director, district manager, district supervisor, the Environmental Investigations and Enforcement Branch, the Environmental Permissions Branch, the Client Services and Permissions Branch, and Legal Services.

The Environment Ministry consulted with staff and identified this bureaucratic process as "very onerous and time consuming." Despite the Environment Ministry identifying that 41 of 54 repeat violators remained non-compliant as of October 2021, the Environment Ministry's implementation of the 2018 strategy has led to only two companies losing their environmental approvals. One is 1076330 Ontario Inc. operating a waste transfer/processing site that mismanaged hazardous waste, and did not comply with orders nor pay fines. The other is O@B Waste Management System, which was non-compliant with nearly all terms and conditions of the environmental approval and was illegally dumping. Additionally, the Environment Ministry has found that small companies that have had their environmental approvals revoked can simply operate as a new company.

The Ministry identified to our Office 41 repeat non-compliant violators, including one of the 30 most frequent spillers in Ontario—GFL Environmental Inc. (See **Appendix 9** for a list of the most frequent spillers.) Other repeat non-compliant violators identified by the Ministry included Rain Carbon Inc. (formerly Ruetgers Canada Inc.), Parmalat Canada Inc. (now Lactalis Canada), and Ontario Graphite Ltd.

The Ministry's list of repeat non-compliant violators may not include all repeat offenders. For example, Domtar Inc., a paper mill company that is one of Ontario's 30 most frequent spillers, has received 10 penalty orders for 54 different violations, as well as two convictions. During the 2021 review of its repeat non-compliant violator

strategy, the Ministry identified that the existing procedure could be burdensome, which may have discouraged staff from identifying repeat violators. The strategy required developing a compliance plan that staff described as redundant extra work. Staff indicated there was little value added because steps to bring violators into compliance would already be documented and the process of investigating companies for potential conviction does not change.

GFL Environmental Inc. is a waste management company that was identified as a repeat offender in 2018/19 and has had 78 reported spills between 2016 and 2020. This includes a spill that contributed to a fire that resulted in at least $32,000 in Environment Ministry response costs (**Figure 11**). In its repeat offender documentation, the Environment Ministry staff noted that GFL "regularly contravenes the acts, regulations and legal documents overseen by the ministry." Despite this continued non-compliance, the Environment Ministry continues to grant environmental approvals to GFL Environmental to expand its operations throughout the province. For example, the Environment Ministry found that GFL was contaminating surface water in the township of North Stormont by repeatedly discharging treated leachate (liquid passed through landfill) at concentrations lethal to fish, in violation of its environmental approval. It also found that GFL was falsely reporting to the Environment Ministry that test results showed no fish mortality. Despite this, the Environment Ministry issued GFL new environmental approvals, including for the expansion of the landfill where this non-compliance was occurring. This is in part because the Environment Ministry's Environmental Permissions Branch relies on staff judgment and does not yet have a policy to ensure consistency when considering non-compliance prior to issuing environmental approvals. The Environment Ministry's 2021 review of its repeat violator strategy also found a lack of a process to co-ordinate among district offices to address repeat violators with sites in multiple districts.

The Environment Ministry's financial enforcement tools have not been strong enough to deter repeat offenders. As discussed in **Section 8.3**, Ontario penalties are much lower than those in the South Coast Air Quality Management District of California. In 2017, the Technical Standards and Safety Authority (TSSA) also advised that the Environment Ministry's penalties were too low to impact multi-million-dollar companies. Although fines from convictions may be higher, there are also over $25 million in unpaid fines as of April 2021 for violations of the Environment Ministry's environmental policies since 1988. The Environment Ministry is not responsible for collecting these fines. Instead, this is the responsibility of the local municipality that oversees the court that issued the fine. Although the *Environmental Protection Act* allows the Environment Ministry to suspend permissions due to unpaid fines, it has not done this since at least 2016, and cannot confirm that it has ever done so.

The TSSA advised the Environment Ministry in 2017 that large companies can be motivated to protect their reputation. In response to our 2016 audit report, the Environment Ministry stated internally it would publish convictions as part of a repeat violator strategy. However, publishing convictions is not part of the Environment Ministry's current strategy. While there were 378 Environment Ministry convictions from 2016-2020, there are only 288 Environment Ministry court bulletins published online. The Environment Ministry also does not publish repeat violators or even inform all repeat violators themselves that they have been identified as such.

RECOMMENDATION 13

To reduce repeated violations of environmental laws and regulations by the same offenders, we recommend that the Ministry of the Environment, Conservation and Parks (Ministry) revise its repeat offender strategy to ensure chronic repeat violators are:

- penalized or prosecuted considering violations on all company operations within Ontario;
- publicly identified with consolidated information published on the Ministry's website on prosecutions, penalties, tickets, orders and details of violations;
- provided with written communication of the risk of the cancellation of their environmental approvals with repeat offences; and
- denied additional environmental approvals regardless of site location or company name.

MINISTRY RESPONSE

The Ministry agrees to review its Repeat Non-Compliant Violator Strategy, considering recommendations made by the Auditor General, and propose corrective revisions as needed.

Appendix 1: Indigenous Reserves with Most Spills within 1 Kilometre, 2016–2020

Prepared by the Office of the Auditor General of Ontario

Indigenous Reserve	Reported Spills
Fort William Indian Reserve No. 52	162
Sarnia Indian Reserve No. 45	69
Six Nations Indian Reserve No. 40	41
Akwesasne Reserve No. 59	38
Glebe Farm Indian Reserve No. 40b	29
Whitefish Island Indian Reserve	21
Tyendinaga Mohawk Territory	20
Rankin Location Indian Reserve No. 15d	18
Saugeen Indian Reserve No. 29	11
Whitefish Lake Indian Reserve No. 6	11
Henvey Inlet Indian Reserve No. 2	11
Indian River Reserve	11
Kitchenuhmaykoosib Aaki No. 84	11
Chippewas of Rama First Nation	10
Gull River Indian Reserve No. 55	9
Islands in the Trent Waters Indian Reserve No. 36a	8
New Credit Indian Reserve No. 40a	8
Nipissing Indian Reserve No. 10	7
Hiawatha First Nation	7
Fort Albany Indian Reserve No. 67	7
Serpent River Indian Reserve No. 7	6
Agency Indian Reserve No. 1	6
Shawanaga Indian Reserve No. 17	6
Mississagi River Indian Reserve No. 8	6
Chapleau Indian Reserve No. 74	5
Lac Seul Indian Reserve No. 28	5
Chapleau Indian Reserve No. 74a	5
Ginoogaming First Nation	5
Chapleau Indian Reserve No. 61a	5
Kettle Point Indian Reserve No. 44	5
Other	134
Total	**697**

Note: The Environment Ministry has advised us that, due to a lack of overall data stewardship, data related to spills has poor to fair reliability.

Appendix 2: Environment Ministry's Assessment of Impact of Spills Prior to Remediation, 2016–2020

Source of data: Ministry of the Environment, Conservation and Parks

Category	Description	Reported Spills
No impact	No actual or potential impacts on human health and/or the environment	2,348
Administrative	No actual or potential impacts on human health and/or the environment; however, there was administrative non-compliance (e.g., failure to report information to the Ministry)	334
Minor environmental	Non-lethal impacts on animal life and the natural environment; impacts are short-term or localized, and require little or no action to restore the environment	36,546
Minor health	No hospitalization or emergency treatment required	85
Medium environmental	Non-lethal widespread impact on animal and plant life; action required to restore the environment	921
Major environmental	Lethal impacts on animal life and the natural environment	13
Medium/ Major health	Impacts resulting in hospitalization or emergency treatment	8
Unknown	No assessment	94

Note: The Environment Ministry's assessment of spills is based on initially reported information. The Environment Ministry does not update the assessment if additional information is reported, such as after remediation, so rankings may not reflect real-world impact. The Environment Ministry has advised us that, due to a lack of overall data stewardship, data related to spills has poor to fair reliability.

Appendix 3: Spills Assessed as Having a Negative Impact on Human Health, 2020

Source of data: Ministry of the Environment, Conservation and Parks

Date	Description	Degree of Impact on Human Health	Receiving Environment
Jan 13	Spill of oily water to parking lot and stormceptor	Minor	Land
Jan 15	Spill of hydrogen sulfide to the air	Minor	Air
Mar 2	Spill of natural gas from a damaged pipeline in a residence	Minor	Air
Mar 13	Spill of cooking grease to pavement	Minor	Land
Mar 26	Plume resulting from a generating station's cooling tower	Minor	Air
Apr 3	Spill of hydraulic oil to asphalt	Minor	Land
Apr 10	Spill of diesel oil alongside Highway 11	Minor	Land
Apr 15	Plume resulting from a fire at a facility	Minor	Air
May 19	Spill resulting of water main break, impacting nine homes	Medium/Major	Water
Jul 16	Spill from an oxygen tanker facility	Medium/Major	Air
Aug 26	Spill of hydraulic oil to gravel	Minor	Land
Oct 19	Plume resulting from generating facility's cooling tower	Medium/Major	Air
Nov 12	Spill of natural gas after contractor hit plastic service line	Minor	Unassessed
Dec 4	Spill of douse water and plume resulting from a fire at a Toledo beach	Minor	Air, water

Appendix 4: Substances Spilled to Air and Associated Impacts, 2016–2020

Prepared by the Office of the Auditor General of Ontario

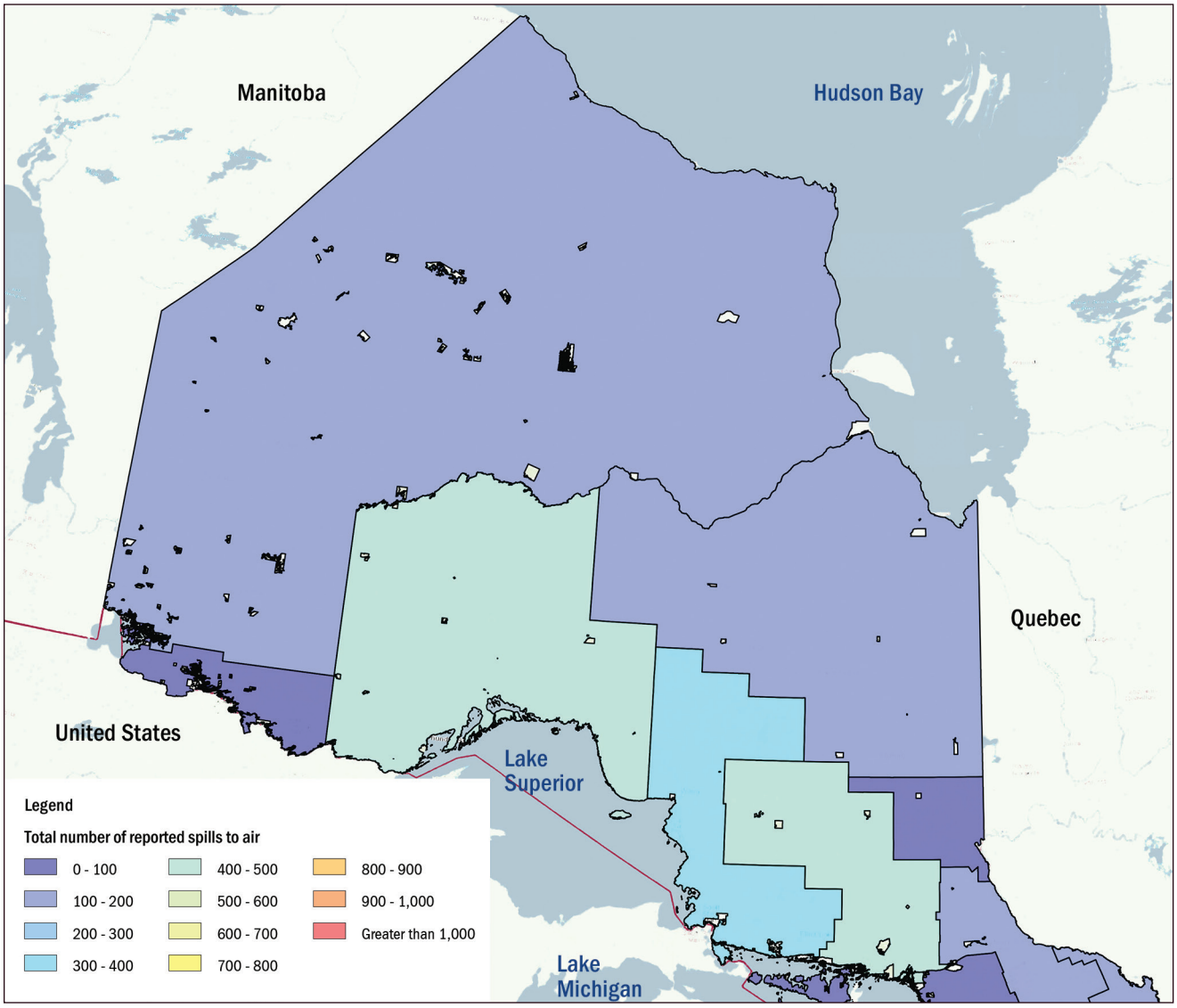
Substance	Potential Health and Environmental Impacts	Reported Spills
Natural gas	Natural gas is flammable and explosive; can cause asphyxiation by displacing oxygen in the air and symptoms of hypoxia (e.g., headache, decreased vision, fatigue, shortness of breath and loss of consciousness); and it is composed primarily of methane, which is a highly potent greenhouse gas.	12,294
Refrigerant gas	Refrigerants can deplete the ozone layer and be a highly potent greenhouse gas contributing to climate change.	1,048
Smoke	In the environment, smoke obscures visibility and decreases air quality. In humans, fine particles from smoke can penetrate the lungs and cause aggravated chronic heart and lung disease, which is linked to death.	321
Methane gas	An extremely flammable greenhouse gas, methane traps heat in the atmosphere, contributing to increasing global warming. It decreases air quality. In humans, fine particles from smoke can penetrate the lungs and cause aggravated chronic heart and lung disease, which is linked to death.	176
Propane	Propane is an asphyxiant. In humans, exposure to high concentrations can harm the nervous system and lead to unconsciousness.	109
Ammonia gas	In humans, ammonia causes immediate burning of the eyes, nose, throat and respiratory tract and can result in blindness, lung damage or death. Inhalation of lower concentrations can cause coughing, and nose and throat irritation.	65
Other	Other substances spilled to air include sulphur dioxide (31 spills), sulphur hexafluoride (26 spills), hydrogen sulfide (24 spills), carbon monoxide (12 spills), among others, all of which have negative impacts to both human health and the environment.	1,360
Total		**15,373**

Note: The Environment Ministry has advised us that, due to a lack of overall data stewardship, data related to spills has poor to fair reliability.

Appendix 5: Maps of Reported Spills in Ontario, 2016–2020

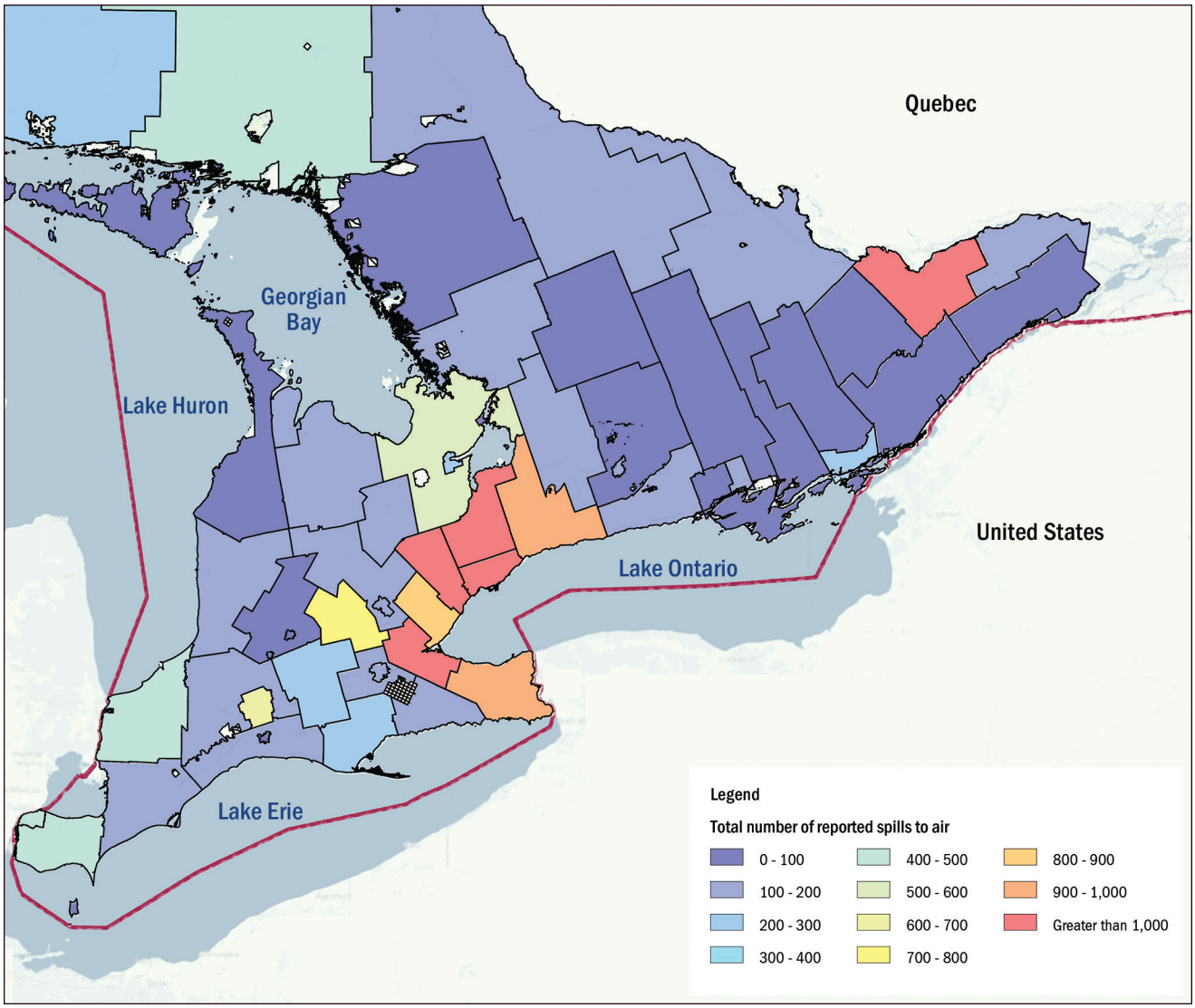
Prepared by the Office of the Auditor General of Ontario

Reported Spills to Air, Northern Ontario, 2016–2020



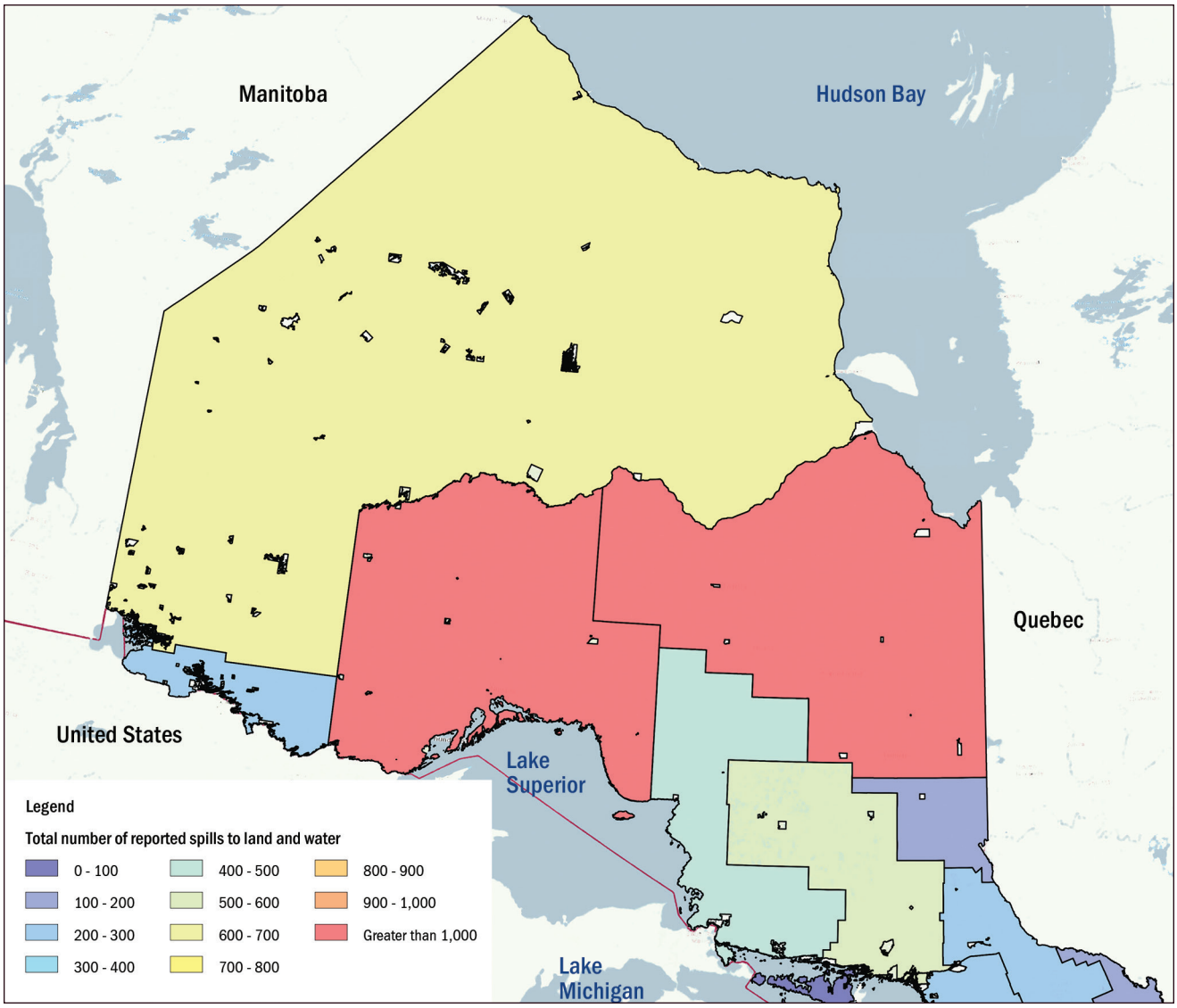
Note: These maps are based on data provided by the Ministry of the Environment, Conservation and Parks. The Environment Ministry has advised us that, due to a lack of overall data stewardship, data related to spills has poor to fair reliability.

Reported Spills to Air, Southern Ontario, 2016–2020



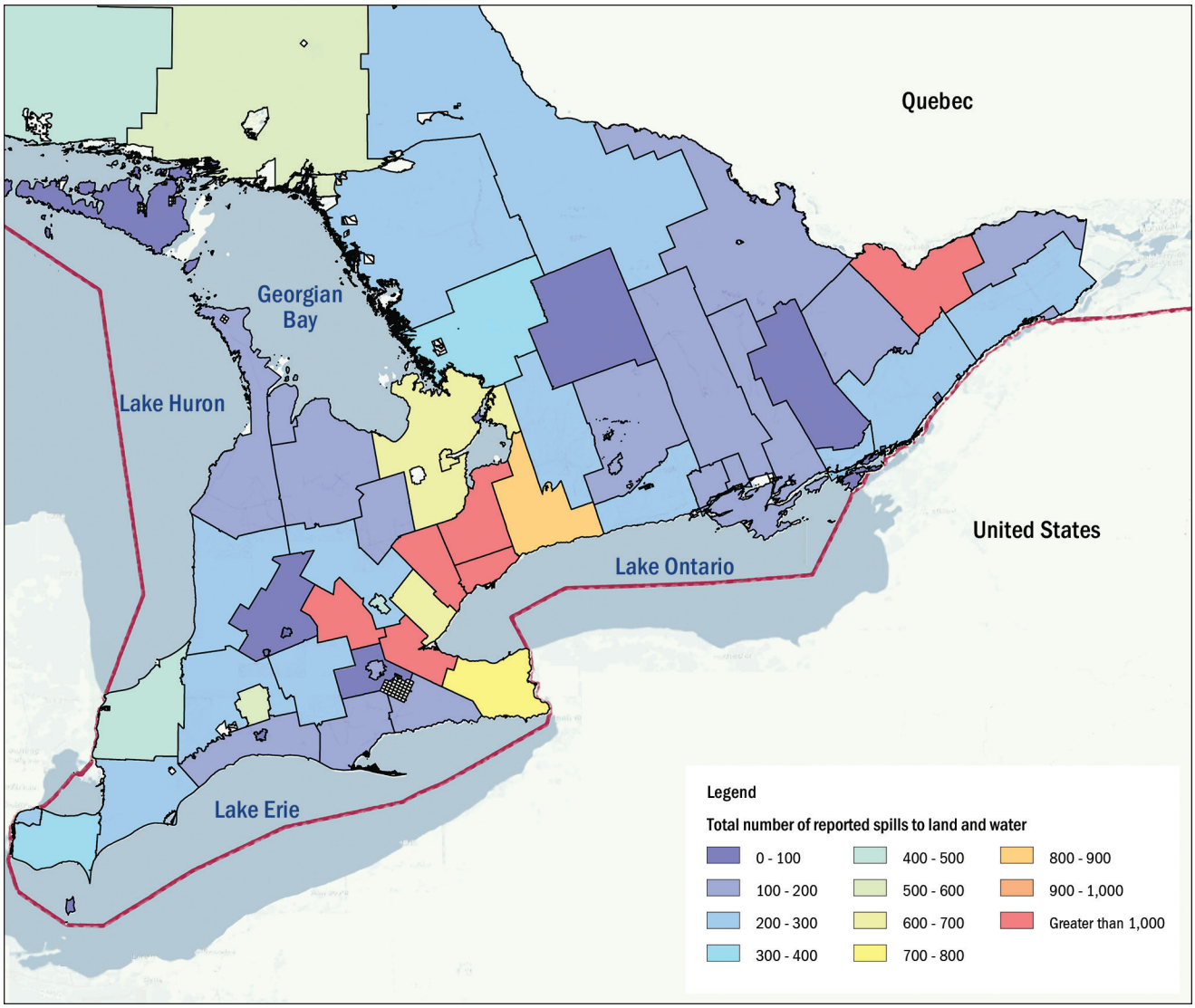
Note: These maps are based on data provided by the Ministry of the Environment, Conservation and Parks. The Environment Ministry has advised us that, due to a lack of overall data stewardship, data related to spills has poor to fair reliability.

Reported Spills to Land and Water, Northern Ontario, 2016–2020



Note: These maps are based on data provided by the Ministry of the Environment, Conservation and Parks. The Environment Ministry has advised us that, due to a lack of overall data stewardship, data related to spills has poor to fair reliability.

Reported Spills to Land and Water, Southern Ontario, 2016–2020



Note: These maps are based on data provided by the Ministry of the Environment, Conservation and Parks. The Environment Ministry has advised us that, due to a lack of overall data stewardship, data related to spills has poor to fair reliability.

Appendix 6: Municipalities with Most Spills within Wellhead Protection Areas, 2016–2020

Prepared by the Office of the Auditor General of Ontario

Municipality	Reported Spills
Guelph	473
Cambridge	374
Kitchener	322
Barrie	219
Waterloo	128
Aurora	95
Newmarket	64
Centre Wellington	55
King	34
New Tecumseth	32
Woolwich	30
Woodstock	25
Halton Hills	22
Wellington North	21
St. Marys	20
Guelph/Eramosa	19
Midland	19
Minto	18
Ingersoll	18
Wilmot	17
Sault Ste. Marie	15
East Gwillimbury	15
Ottawa	14
Greater Sudbury	13
Puslinch	13
East Zorra-Tavistock	13
Vaughan	11
Central Huron	11
Whitchurch-Stouffville	10
Blandford-Blenheim	10
Other	215
Total	**2,345**

Note: The Environment Ministry has advised us that, due to a lack of overall data stewardship, data related to spills has poor to fair reliability.

Appendix 7: Other Ministries' Spill Response Costs

Prepared by the Office of the Auditor General of Ontario

Ministry	Response Actions	Type of Costs Incurred
Ministry of Northern Development, Mines, Natural Resources and Forestry	• Site visitation by helicopter and on-the-ground monitoring • Use of drones and staff to survey the site and create visual images • Reviewing restoration plans and providing comments and recommendations to spillers	• Staff salary costs and travel expenses • Transportation expenses • Helicopter costs
Ministry of the Solicitor General – Office of the Fire Marshal and Emergency Management	• Co-ordinating and deploying field staff to the affected municipality • Providing advice and co-ordination between municipalities, ministries, federal departments and First Nations • Providing advice and assistance to local emergency management co-ordinators • Providing situation awareness through reports to all ministry, federal, municipal, and First Nations stakeholders	• Staff salary costs and travel expenses
Ministry of Transportation	• Co-ordinating with different regions responsible for area maintenance, communications and issue management • Liaising with Transport Canada and Provincial Emergency Operations Centre • Deploying traffic control mechanisms and road repair • Responding to highway spills to contain and clean up the contaminant if Ontario Provincial Police requests assistance at spill site and when spiller cannot be identified • Contracting environmental consultants to perform laboratory analysis services to confirm spill remediation on highways	• Staff salary costs • Transportation costs • Lab sample analysis costs • Direct materials costs for spill response (such as booms and pads)
Ministry of Health	• Assessing the incident and impacts on human health • Notifying local health system partners to ensure local awareness of incident and assessing whether additional provincial support is required • Liaising with local health units to assess health risks and impacts and support local decision-making regarding emergency response activities	• Staff salary costs

Appendix 8: Audit Criteria

Prepared by the Office of the Auditor General of Ontario

1.	High-risk activities are regulated in a manner that reduces the risk and impact on human health and the environment from hazardous spills.
2.	When spills occur, they are identified and responded to in a timely and effective manner.
3.	Spills are remediated in a timely and effective manner.
4.	Reasonable costs associated with responding to and remediating hazardous spills are fully covered by the responsible parties.
5.	Information on spills and their impacts are readily available to the public in a timely and accessible manner.
6.	Meaningful performance measures and targets are established, monitored and compared against actual results and publicly reported on, and corrective actions are taken on a timely basis when issues are identified, to ensure that intended outcomes are achieved.

Appendix 9: Most Frequently Reported Spillers, 2016–2020

Source of data: Ministry of the Environment, Conservation and Parks

Company Name	# of Spills
Enbridge	7,327
Union Gas Limited	2,698
Hydro One	684
Toronto Hydro	592
The Regional Municipality of Peel	571
City of Toronto	482
Resolute Forest Products	478
ArcelorMittal	329
Alectra Utilities Corporation	294
City of Ottawa	235
Loblaws	209
Detour Gold Corporation	207
Toronto Transit Commission	170
CRH Canada Group Inc.	158
Canada Cartage Limited	131
Domtar Inc.	128
407 General Partnership	127
Canadian National Railway	126
AV Terrace Bay Inc.	119
City of Hamilton	116
Algoma Steel Inc	112
Metrolinx	105
Neelands Refrigeration Limited	103
Kiewit Eurovia	90
Imperial Oil	84
Ontario Clean Water Agency	81
GFL Environmental Inc.	78
Highstone Logging	71
Shell Canada	71
London Hydro	64

Note: The Environment Ministry has advised us that, due to a lack of overall data stewardship, data related to spills has poor to fair reliability.

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