

## Environmental Approvals

## 1.0 Summary

Under the *Environmental Protection Act* and the *Ontario Water Resources Act*, anyone who wants to engage in activities in Ontario that release contaminants into the air, land or water—or transport, store or dispose of waste—must obtain an environmental approval from the Ministry of the Environment and Climate Change (Ministry). In this report, anyone releasing a contaminant or pollutant is referred to as an emitter. The *Environmental Protection Act* broadly defines a contaminant to include solids, liquids, gases, odours, heat, sound, vibrations and radiation resulting from human activities that can cause harm to the environment and human health.

In 2010, the Ministry launched its Modernization of Approvals initiative intended to make the environmental approvals program more accessible, flexible and efficient. As part of the initiative, the Ministry:

- introduced the self-registration process for lower-risk activities such as automotive refinishing, non-hazardous waste transportation and commercial printing (prior to this, all emitters had to apply for and receive Ministry approval); and

- implemented an online database of emitters that is intended to allow the public to search for approved emitters within their neighbourhood.

According to the Ministry, air quality in Ontario has improved significantly over the past 10 years due to measures such as the closing of coal-burning plants that resulted in decreases in air pollutants such as sulphur dioxide, volatile organic compounds and fine particulate matter. These decreases are in line with trends in other provinces in Canada. However, according to Environment Canada, Southern Ontario has the highest level of sulphur dioxide and second-highest level of fine particulate matter emissions compared to four other large Canadian regions.

In addition, based on the most recently available data from Environment Canada, from 2010 to 2012, water quality in 22% of freshwater rivers in Ontario was rated as being less than fair—that is “marginal” or “poor” quality—worse than the national average of 14%. Also, in 2013, Ontario released the largest amount of mercury and lead into its water compared to other provinces, representing 33% and 28%, respectively, of the total national releases.

Overall, our audit found that the Ministry’s environmental approvals program is not effectively managing the risks to the environment and human health from polluting activities. The weaknesses we identify below undermine the objective of the

*Environmental Protection Act* and the *Ontario Water Resources Act*, which is to protect and conserve the province's natural environment. Specifically:

- **A significant number of emitters may be operating without proper environmental approvals:** While the Ministry has some processes to identify emitters that are operating without the required environmental approvals, its approach is largely reactive. By the time the emitters are identified and the Ministry takes action, the emitters have often been operating without proper approvals for years. The Ministry has not taken a proactive approach. For example, it has not established information-sharing agreements with other Ontario ministries with information on newly operating emitters that could help the Ministry identify illegal emitting activities at an earlier stage. Our analysis of data we obtained from a leading business directory that collects the names of businesses for each business sector indicates that there may be about 12,000 emitters in the province that are not in the Ministry's emitter database. The Ministry has not performed a similar comparison to identify potential emitters that may be operating without a proper approval.
- **Over 200,000 approvals issued more than 15 years ago have not been updated to meet current environmental standards or to reflect emitters' current operations:** Approvals prior to 2000 did not contain many of the operational requirements that similar current approvals include, such as having properly trained staff and well-maintained equipment. The Ministry largely relies on the emitter to request that its approval be updated when it changes its operations, but emitters do not always do so. The Ministry does not know how many of the emitters that were issued those approvals are still operating.
- **The Ministry's monitoring efforts are not sufficient to prevent and detect emitters that violate regulatory requirements and**

**therefore pose a risk to the environment and human health:** Approximately 80% of the 32,500 emitters that have been issued approvals in the last 15 years have never been inspected—despite the fact that there is a high level of non-compliance by emitters that *have been* inspected. For example, in the last five years, 20% of the 4,147 hazardous-waste-related inspections, 35% of the 4,876 air-related inspections and 47% of the 1,228 sewage-related inspections identified emissions in excess of environmental standards. Also, in 2014/15, 63 inspections of automotive refinishing facilities indicated that 86% did not comply with environmental requirements. For example, facilities were closer than the minimum distance of 120 metres from the places where people live, work and play, or they did not retain records of how much air pollution they had emitted.

- **Penalties levied by the Ministry often did not deter repeat offenders:** One-third of the emitters that were issued penalties from 2009 to 2016 were issued penalties for more than three violations. For example, one emitter was issued penalties for 24 violations in eight of the last nine years, totalling more than \$173,000. Another emitter was issued penalties for 13 violations in seven of the last nine years, totalling more than \$192,000. The Ministry had not assessed whether its penalties were effective in discouraging individual companies from repeatedly violating environmental regulations.

We also found that, despite being mandated by the Premier in 2014 to “put greater emphasis on the ‘polluter pays’ principle,” the Ministry bears the brunt of the costs of delivering the environmental approvals program, including costs of future clean-up. Specifically:

- **The Ministry only recovers 20% of its cost of delivering the program:** Application and self-registration fees obtained from emitters do not cover all of the Ministry's costs for

administering the environmental approvals program. In 2014/15, such fees covered only about 20% of the program's \$23 million costs. The application fees have not been updated since 1998.

- **Financial security is not required for many high-risk activities:** The *Environmental Protection Act* gives the Ministry the authority to require financial security from emitters to cover future clean-up costs. However, we found that the Ministry does not always require financial security from high-risk activities such as hazardous waste transporters, industrial sewage systems and other industrial activities that are likely to result in contaminant spills.
- **Financial security amounts collected are less than estimated future clean-up costs:** The amount required from emitters—and imposed as a condition of the Environmental Compliance Approval—is usually based on the most reasonable estimate for future clean-up. However, our review of a sample of emitters has indicated that the Ministry has collected approximately \$10 million less than what it estimated would be required for future clean-up.
- **The Ministry is at risk of paying clean-up costs due to outdated remediation estimates:** Even though our audit work indicated that the estimated remediation costs (the costs to reverse or stop environmental damage) could increase greatly over a period of 10 or more years, in many cases the Ministry does not re-evaluate its long-term remediation cost estimates to determine whether it needs to collect more in financial security from emitters to cover the costs. This exposes the Ministry to the risk of having to pay potentially large clean-up costs if the emitter is unable or unwilling to pay for remediation.

With regard to public involvement in the environmental approvals program, we found the following:

- **Public input is blocked for self-registered emitters:** The public does not have an opportunity to provide input on any of the self-registered activities—which include end-of-life vehicle processing facilities (wrecking yards) as well as commercial printing and others—prior to the emitters starting operations. Given that the Ministry—as part of its modernization initiative—plans to convert many more activities that are currently subject to public input to those that are not, opportunities for meaningful public input will be reduced in the future.
- **Public complaints are not well managed:** The Ministry received approximately 78,000 public complaints and reports of contaminant spills in the last five years, which it tracks in a database. However, the Ministry does not consistently follow up on complaints or reports of contaminant spills on a timely basis or categorize them by their underlying problem. As a result, it is not able to identify and act upon systemic issues to improve the environmental approvals process. For example, at the time of our audit, over 1,800 complaints had not yet been assigned to a Ministry field inspector for follow-up. In addition, about 900 complaints that the Ministry determined to have warranted a field inspection had not yet been addressed.
- **The publicly accessible emitter database is not functioning as intended:** The publicly accessible emitter database maintained by the Ministry cannot perform the basic searches for which it was designed, such as searching for emitters in a particular neighbourhood.

The Ministry does not know whether its environmental approvals program is effectively regulating polluting activities and how much impact such activities have on human health. In particular, self-registered emitters are not required to provide the Ministry with emissions information. This results in the Ministry not knowing whether levels of pollution from these activities are above approved levels.

At the same time, when the Ministry does receive emissions information from higher-risk emitters, it does not assess the environmental and health impacts of those emissions within various regions of the province. Instead, each emitter's data is only reviewed by the Ministry for compliance with its environmental approval limits.

This report contains 12 recommendations, consisting of 31 actions, to address our audit findings.

## OVERALL MINISTRY RESPONSE

The Ministry appreciates the Auditor General's observations and recommendations regarding the environmental approvals program and will continue to take actions to improve it.

The protection of Ontario's natural environment is done through a comprehensive approach, which includes legislation, regulations, compliance, enforcement and monitoring activities as well as the issuance of environmental approvals. In addition, it includes the development of rigorous standards for emissions in order to protect human health and ecosystems.

The Ministry recognizes the importance of ensuring that environmental approvals are effective at managing risks to the environment. This includes stringent standards that are among the most protective in North America. These standards are updated on a regular basis.

Ontario has one of the most broadly based financial assurance approaches in Canada. The Ministry will pursue improvements to further strengthen its financial assurance program.

The Ministry is proud of the work it has done in the past 10 years to the significant improvement of Ontario's air quality. It is committed to further integrating the assessment of cumulative effects into its decision-making to continue improving Ontarians' health and the province's environmental quality.

The Ministry will continue focusing its compliance efforts and resources on higher-risk sectors and activities that have the greatest

potential to have impacts on the environment and human health. Utilizing this approach, combined with the Ministry's suite of abatement and enforcement tools, best ensures effective environmental oversight of emitters.

The Ministry is modernizing its compliance system, which will allow it to strengthen its risk-based process for inspections. This new system will facilitate the risk ranking of individual facilities and will include performance metrics to allow the Ministry to measure the efficacy of the inspection program. This further ensures it is targeting high-risk emitters.

The Ministry appreciates the efforts of the Office of the Auditor General in helping to further improve the protection of the environment through the approvals program.

## 2.0 Background

### 2.1 Overview of Environmental Approvals in Ontario

The environmental approvals program began in 1957 after the *Ontario Water Resources Commission Act* was passed. This act, which prohibited the discharge of polluting substances that may impact water quality, was later replaced by the *Ontario Water Resources Act* in 1972. The *Environmental Protection Act*, passed in 1971, expanded the scope of environmental approvals to protect the air and land.

The *Environmental Protection Act* and the *Ontario Water Resources Act* require anyone planning to engage in activities in Ontario that release contaminants or pollutants into the air, land or water—or transport, store or dispose of waste—to obtain an environmental approval from the Ministry of the Environment and Climate Change (Ministry). Such environmental approvals are required of all emitters—private-sector businesses as well as municipalities and provincial ministries and agencies.

A contaminant is defined in the *Environmental Protection Act* as “any solid, liquid, gas, odour, heat, sound, vibration and radiation resulting from human activities that may cause harm to the environment or human health.” There are currently three categories of activities for which an environmental approval is required, depending on which aspect of the environment is affected by the emissions:

- air and noise emission into the air;
- waste management activities on land; and
- sewage emission into the water or land.

There are two ways to obtain an environmental approval from the Ministry:

- Emitters involved in lower-risk activities can self-register by completing an online form. Examples of such activities include commercial printing, automotive refinishing and wrecking yards.
- Emitters involved in higher-risk activities must apply to the Ministry for an Environmental Compliance Approval. Examples of such activities include operating landfills, steel mills and chemical manufacturing facilities.

The differences between the two types of environmental approvals are described in **Section 2.2**.

This two-stream approvals framework was implemented in 2011. Prior to the introduction of the self-registration process for lower risk activities, all emitters had to receive Ministry approval.

### 2.1.1 Modernization of Approvals Initiative

In October 2010, the Ministry launched its Modernization of Approvals initiative, which was intended to make the environmental approvals program more accessible, flexible and efficient. The initiative involved legislative and administrative changes, as well as the implementation of new information systems.

### Legislative and Administrative Changes

The *Open for Business Act, 2010* amended the *Environmental Protection Act* and the *Ontario Water Resources Act* to create the self-registration process for certain lower-risk or less complex activities. The Ministry did this to reduce “unnecessary regulatory requirements.” These activities are listed within regulations in the *Environmental Protection Act*. All remaining activities—those that are more complex and unique—require Environmental Compliance Approvals.

### Information System Changes

In 2011, the Ministry implemented the following two information systems:

- the Environmental Activity and Sector Registry—a public, web-based system that allows lower-risk emitters to self-register eligible activities by completing an online form; and
- Access Environment—a publicly accessible database of those emitters to which the Ministry has issued environmental approvals. Its purpose is to allow the public to search for approved emitters in their neighbourhoods and view the conditions of those environmental approvals.

The Ministry is currently developing an Electronic Environmental Compliance Approval system that will allow higher-risk emitters to electronically submit their applications for Environmental Compliance Approvals. In March 2015, the Ministry began a “graduated launch” of the new system, which allowed certain emitters to submit applications and supporting documents electronically.

### 2.1.2 Ministry Organizational Structure

The Operations Division—the Ministry’s main service delivery arm—delivers the environmental approvals program. Approximately 90 staff in the Ministry’s head office in Toronto conduct technical reviews across many Ministry programs, including reviews of environmental approval submissions. In

addition, approximately 190 staff in the Ministry's five regional and 22 local offices across the province assist in the technical reviews and are responsible for enforcing the environmental approvals program as well as other programs.

In 2014/15, the Ministry spent over \$23 million to deliver the environmental approvals program, most of which was in salaries. This amount does not include the cost of enforcement activities.

## 2.2 Types of Environmental Approval

Depending on the nature of their activities, emitters must obtain an environmental approval either by completing an online registration form or applying to the Ministry for an Environmental Compliance Approval.

In the last five years, approximately 4,300 lower-risk emitters have self-registered their activities, and about 7,900 higher-risk emitters have applied for and received Environmental Compliance Approvals from the Ministry. **Figure 1** shows the

**Figure 1: Self-Registrations and Environmental Compliance Approvals, 2011/12–2015/16**

Source of data: Ministry of the Environment and Climate Change

	2011/12	2012/13	2013/14	2014/15	2015/16	Total Over 5 Years
<b>Self-Registrations</b>						
Automotive refinishing <sup>1</sup>	102	375	59	60	108	<b>704</b>
Heating systems <sup>2</sup>	252	960	176	136	256	<b>1,780</b>
Standby power systems <sup>3</sup>	157	422	172	292	209	<b>1,252</b>
Non-hazardous waste transportation <sup>4</sup>	n/a	30	118	152	149	<b>449</b>
Solar facilities <sup>5</sup>	n/a	9	42	46	52	<b>149</b>
Commercial printing <sup>6</sup>	n/a	n/a	1	4	6	<b>11</b>
End-of-life vehicle processing <sup>7</sup>	n/a	n/a	n/a	n/a	n/a	n/a
<b>Total Self-Registrations<sup>8</sup></b>	<b>511</b>	<b>1,796</b>	<b>568</b>	<b>690</b>	<b>780</b>	<b>4,345</b>
<b>Environmental Compliance Approvals<sup>9</sup></b>						
Air/noise <sup>10</sup>	706	391	331	426	557	<b>2,411</b>
Industrial sewage	144	144	134	84	149	<b>655</b>
Municipal and private sewage	987	1,111	1,004	897	1,014	<b>5,013</b>
Waste disposal sites	38	33	18	24	27	<b>140</b>
Waste management systems	170	142	42	35	40	<b>429</b>
<b>Total Environmental Compliance Approvals</b>	<b>2,045</b>	<b>1,821</b>	<b>1,529</b>	<b>1,466</b>	<b>1,787</b>	<b>8,648</b>

- Includes the repair or customization of a motor vehicle body or its interior. Activity became eligible for self-registration on October 31, 2011.
- Includes the operation of any apparatus or mechanism that uses natural gas or propane to produce heat or to supply heat to the interior of a building or structure. The activity became eligible for self-registration on October 31, 2011.
- Standby power systems that use biodiesel, diesel, natural gas or propane, the rated capacity of which does not exceed 700 kilowatts. The activity became eligible for self-registration on October 31, 2011.
- Waste must be transported by trucks or other similar motor vehicles, such as vans, pickup trucks, and cars, on public roads. Transportation by air, rail or barge is not eligible for self-registration. In addition, waste cannot be stored even overnight. The activity became eligible for self-registration on November 18, 2012.
- Solar facilities with solar photovoltaic collector panels that are not mounted on the roof or wall of a building (i.e., ground-mounted) and have a maximum power output of less than 750 kilovolt-amps. The activity became eligible for self-registration on November 18, 2012.
- Commercial printing—including lithographic, screen and digital printing—became eligible for self-registration on November 18, 2012.
- End-of-life vehicle processing sites (i.e., wrecking yards) became eligible for registration on September 30, 2016.
- If any of the above eligibility requirements are not met, then an Environmental Compliance Approval is required.
- Includes new Environmental Compliance Approvals only (i.e., does not include amendments to existing Environmental Compliance Approvals).
- Environmental Compliance Approvals are issued based on the activity and which aspect of the environment is affected by the emissions. For example, air/noise approvals are issued for emissions into the air.

number of self-registrations and Environmental Compliance Approvals that have been issued by the Ministry in the last five years.

### 2.2.1 Self-Registrations

The Ministry determines whether an activity is eligible for the self-registration process based on how common the activity is in Ontario, its complexity (that is, whether the industry uses complex processes or pollution control measures), the historical results of that industry's compliance rate with environmental standards, and the risks to the environment if its emissions are not controlled. The self-registration process is intended for activities that:

- pose minimal risk to the environment and human health as long as specific rules are followed; and
- use equipment and processes that are standard to the industry with known environmental impacts.

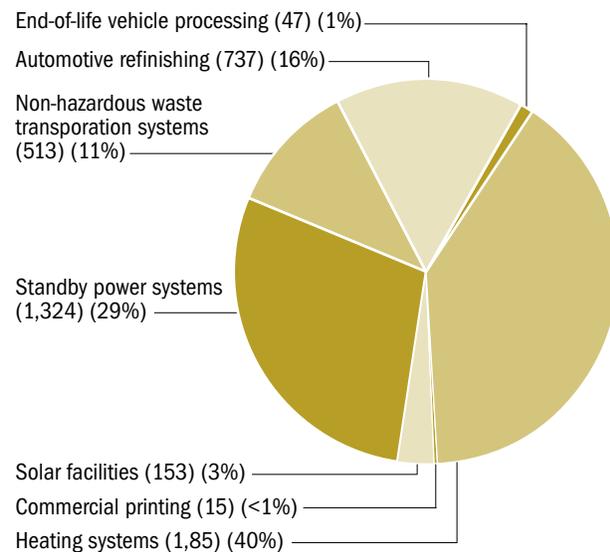
Once the Ministry determines that a particular activity meets the criteria for self-registration, it passes a regulation under the *Environmental Protection Act* making that activity eligible for self-registration and setting the standards that the emitters must follow in conducting the registered activities. The emitter can start operations after completing the online registration form and paying a one-time registration fee of \$1,190.

Currently, emitters can self-register seven types of commercial activities: automotive refinishing, commercial printing, non-hazardous waste transportation, wrecking yards, heating systems, solar facilities and standby power systems. Approximately 4,600 emitters have self-registered since the registration process was launched in 2011. **Figure 2** provides the breakdown of self-registered emitters as of July 31, 2016.

Self-registered emitters must comply with environmental standards and operate appropriate equipment and controls as set out in the regulation. If a self-registered emitter does not comply with the

**Figure 2: Self-Registrations by Type of Activity<sup>1</sup> as of July 31, 2016<sup>2</sup>**

Source of data: Ministry of the Environment and Climate Change



1. The figure above includes seven activities currently eligible for registration, and reflects only emitters that have registered. These numbers do not reflect all emitters that are currently engaging in these activities because the onus of registering is on the emitter. See **Section 4.1.2** of this report for more details on whether the volume of registrations above accurately reflects the number of emitters engaging in such activities.
2. The figure data is as of July 31, 2016, instead of the end of the 2015/16 fiscal year (March 31, 2016). This is the most recent data available for self-registrations. This most recent data allows us to include the 47 end-of-life vehicle processing self-registrations (all occurring after March 31, 2016). Although end-of-life vehicle processing became eligible for self-registration on September 30, 2016, emitters could register early as of March 31, 2016.

eligibility or operational requirements outlined in the regulation, then the emitter is required to apply for an Environmental Compliance Approval.

### 2.2.2 Environmental Compliance Approvals

An Environmental Compliance Approval is required for all activities that are not eligible for self-registration. Such activities include operating chemical manufacturing plants, sewage treatment plants and landfills. The Ministry issued approximately 30,900 new approvals to about 24,600 emitters between December 1999—when it implemented the information system it currently uses to administer the environmental approvals program—and 2011,

when it introduced the self-registration system for lower-risk emitters.

Since 2011, 8,600 Environmental Compliance Approvals have been issued to 7,900 emitters for higher-risk activities. As of March 31, 2016, about 28,500 emitters were holding Environmental Compliance Approvals. **Figure 3** provides the breakdown of these Environmental Compliance Approvals by type of activity.

### Application Fees

The Ministry charges an application fee for reviewing applications for Environmental Compliance Approvals. The application fee includes a \$50–\$200 non-refundable administrative processing fee, plus a technical fee that varies depending on the type of application. The application fee can range from \$50 for a less complex application, such as for a bio-solids waste transportation system, to \$60,000 for a more complex application, such as for a landfill site for hazardous or liquid industrial waste. See **Appendix 1** for the schedule of fees for certain types of activities.

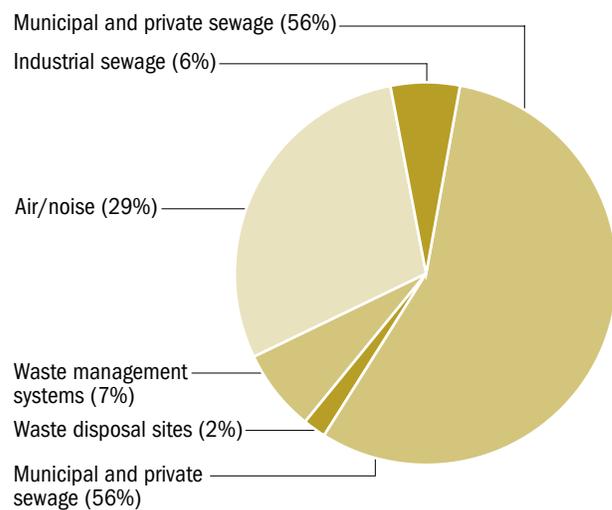
### Ministry Review of Application for Environmental Compliance Approvals

Ministry staff first screen the application to determine whether it is complete. A complete application must include, for example, a detailed description of proposed activities, types of emissions, waste characteristics (hazardous or non-hazardous), and pollution control equipment or measures used. Incomplete applications are returned to the applicant.

The *Environmental Bill of Rights* requires that the public be notified (through the online Environmental Registry maintained by the Ministry) of applications for Environmental Compliance Approvals. When the Ministry receives such an application, pertinent details regarding the application are posted on the Environmental Registry for a minimum of 30 days for public comment. Members of the public can submit their comments through

**Figure 3: Environmental Compliance Approvals by Type of Activity as of March 31, 2016**

Source of data: Ministry of the Environment and Climate Change



Note: This figure includes all environmental approvals issued from December 1999, when the Ministry implemented the information system it currently uses to administer the environmental approvals program. Approvals issued prior to this date are currently stored in boxed paper files, and therefore could not be counted. See **Section 4.1.1** for details. Percentages are based on the 33,800 approvals that have been issued to 28,500 emitters and are still active (i.e., have not been revoked and/or replaced) as of March 31, 2016.

the Environmental Registry during this period. The Environmental Commissioner of Ontario comments in its annual report on how well the Ministry has fulfilled its responsibilities regarding the *Environmental Bill of Rights*.

Ministry staff review the application and the related public comments, and prepare a recommendation to either approve the application (with recommended conditions of approval) or refuse it. The Ministry must consider all public input and notify the public of its decision (also through the Environmental Registry), including what impact public comments had on its decision.

The decision is posted on the Environmental Registry, at which time the emitter and members of the public have the opportunity to request a hearing with the Environmental Review Tribunal. The Tribunal is a separate entity reporting to the Ministry of the Attorney General that holds hearings to assess the merits of activities that impact the environment.

Hearings are conducted by a panel of one to three members, and are usually held in-person. The Tribunal's objective is to consider all evidence presented, and make a decision in a manner that is consistent with the Act under which the application is submitted. (Appeals for environmental approvals are submitted under either the *Environmental Protection Act* or the *Ontario Water Resources Act*.) The Tribunal will issue a written decision—to confirm, amend or revoke the Ministry's decision—and the reasons for its decision within 60 days following the hearing. The Tribunal's decision may be appealed to the Minister of the Environment and Climate Change or to the Divisional Court.

**Figure 4** provides a breakdown of the number of applications received in the last five years, and the decisions associated with the applications.

### Financial Security for Future Clean-Up Costs

Financial security—in the form of cash, letter of credit, securities and/or bonds—must be provided by emitters for all large privately owned landfills that accept municipal waste and for mobile facilities that destroy PCBs (chemicals that are hazardous to human health and are difficult to destroy). For all other activities, the Ministry has discretion over whether to require financial security.

The amount of financial security required by the Ministry varies by the activity. For some activities, the amount is set (for example, \$50,000 for a mobile PCB destruction facility). For others, such as landfills, the amount is based on the volume of activity (such as per tonne of anticipated waste).

The purpose of financial security is to ensure that funds will be available to cover future

**Figure 4: Breakdown of Applications for Environmental Compliance Approvals**

Source of data: Ministry of the Environment and Climate Change

	2011/12	2012/13	2013/14	2014/15	2015/16	Total Over 5 Years
Received <sup>1</sup>	4,361	4,008	3,866	3,504	3,701	<b>19,440</b>
Returned <sup>2</sup>	393	311	215	185	265	<b>1,369</b>
Cancelled <sup>3</sup>	415	407	341	302	498	<b>1,963</b>
Approved	3,506	3,233	2,737	2,795	3,362	<b>15,633</b>
New applications <sup>4</sup>	2,045	1,821	1,529	1,466	1,787	<b>8,648</b>
Administrative changes <sup>5</sup>	513	494	311	355	443	<b>2,116</b>
Amendments <sup>6</sup>	835	814	731	881	995	<b>4,256</b>
Revocation and Voluntary Surrender <sup>7</sup>	113	104	166	93	137	<b>613</b>
Refused <sup>8</sup>	17	10	18	8	20	<b>73</b>
Appealed						
By the emitter	4	5	4	4	4	<b>21</b>
By a third party	5	4	6	2	4	<b>21</b>

- Number of applications received approximates caseload and consists of total applications received, including new applications, applications to make administrative changes or major amendments to existing Environmental Compliance Approvals, as well as re-submitted applications that were previously returned to the applicants.
- Applications are returned to the emitter if incomplete, incorrect or missing the appropriate fee, or if the activity is eligible for self-registration.
- Applications may be cancelled if the emitter withdraws the application, the emitter does not provide the information requested by Ministry staff, or if the application is merged with or replaced by another application.
- Refers to first-time applications for an Environmental Compliance Approval for a specific activity.
- Refers to minor administrative changes to an existing Environmental Compliance Approval to reflect a change in, for example, ownership, company name or hours of operation.
- Refers to amendments to existing Environmental Compliance Approvals to reflect major changes in operations, such as landfill expansions or the use of new equipment and processes.
- An existing Environmental Compliance Approval may be revoked if the emitter discontinues the activity for which the approval was issued or if the Ministry finds that the emitter is not operating in accordance with the condition of the approval.
- The Ministry may refuse to approve the proposed activity if the information provided in the application does not demonstrate that the proposed activity can operate in compliance with the Ministry's requirements.

environmental clean-up costs, such as site remediation, in the event that the emitter is unable or unwilling to do so.

## 2.3 Post-approval Monitoring by the Ministry

All self-registrations and Environmental Compliance Approvals have legally binding conditions that set out rules of operation. The conditions may include required training and equipment maintenance, the maximum amount of contaminant that can be discharged by the emitter, and pollution control measures that the emitter must take. In many cases, such conditions may also include requirements that the emitters monitor and report their emission levels to the Ministry, usually on an annual basis.

Emitters are also required to inform the Ministry about changes in their operations, such as those that can affect emissions. The Ministry is responsible for monitoring emitters' compliance with these reporting requirements and other conditions of their environmental approvals through

desk reviews, field inspections and investigations.

**Figure 5** shows the number of desk reviews, inspections and investigations that have been completed by Ministry staff in the last five years.

### 2.3.1 Desk Reviews of Self-Registered Emitters

In 2013/14, the Ministry began conducting desk reviews as part of its monitoring strategy for self-registered emitters. As of March 31, 2015, the Ministry had conducted such reviews for a sample of emitters in two of the six activities that were eligible for self-registration at that time: automotive refinishing facilities and non-hazardous waste transportation systems.

During desk reviews, Ministry staff request documentation to demonstrate the emitter's compliance with conditions of the self-registration. If the emitter does not provide the information, it is usually referred for a field inspection. A field inspection might also be conducted if the Ministry identifies possible non-compliance based on the information submitted.

**Figure 5: Environmental Approval Compliance Monitoring Activities by the Ministry, 2010/11–2014/15**

Source of data: Ministry of the Environment and Climate Change

	2010/11	2011/12	2012/13	2013/14	2014/15	Total Over 5 Years
Desk reviews <sup>1</sup>				80	95	<b>175</b>
Inspections <sup>2</sup>						
Air/noise	1,166	1,113	881	898	818	<b>4,876</b>
Hazardous waste	864	881	807	789	806	<b>4,147</b>
Non-hazardous waste	782	684	683	578	579	<b>3,306</b>
Industrial sewage	264	314	256	232	247	<b>1,313</b>
Private and commercial sewage	282	211	212	246	277	<b>1,288</b>
Municipal sewage	162	156	148	98	116	<b>680</b>
Sector-based <sup>3</sup>	240	353	391	319	245	<b>1,548</b>
<b>Total Inspections</b>	<b>3,760</b>	<b>3,712</b>	<b>3,378</b>	<b>3,160</b>	<b>3,088</b>	<b>17,098</b>
Investigations	478	445	516	492	376	<b>2,307</b>

1. Desk reviews of self-registered emitters began in 2013/14.

2. Inspections are done primarily on Environmental Compliance Approvals, and are conducted by local Ministry staff across the province.

3. Sector-based inspections focus on specific business industries, such as large-scale manufacturing or large-scale waste facilities. Also includes inspections of self-registered emitters beginning in 2014/15.

### 2.3.2 Field Inspections

Field inspections are conducted to determine whether emitters are complying with the conditions of their environmental approvals.

Facilities to be inspected are selected from the Ministry's database of emitters with Environmental Compliance Approvals. Selection criteria are based on compliance history, suggestions from the Ministry's regional and local office staff, the Ministry's priorities and information reported by the emitter that indicates possible violations of the conditions of its approvals. Inspections can also be conducted based on public complaints.

Where inspections identify instances of non-compliance involving potentially serious environmental or health consequences, particularly by an emitter with a history of non-compliance, the emitter is usually referred for an investigation.

### 2.3.3 Investigations

Investigations are conducted on more significant suspected violations of the *Environmental Protection Act* and the *Ontario Water Resources Act*. The purpose of an investigation is to gather evidence to be used in a court of law to prosecute individuals or corporations suspected of non-compliance with environmental laws. Investigations can result in charges being laid, which can lead to fines or incarceration.

## 2.4 Ministry's Response to Non-compliance

Ministry policy states that its response to any identified instances of non-compliance must be proportionate to the risk presented. The risk includes consideration of the potential impact on the environment and on health, the emitter's compliance history, and the emitter's responses to the Ministry's direction to take corrective action. The Ministry generally uses the following tools on an escalating basis:

- **Abatement tools** include formal warnings, emitter-developed voluntary abatement plans, suspension or revocation of the environmental approval until the non-compliance is appropriately addressed, monetary penalties issued by the Ministry and control orders (mandatory requirement for the emitter to limit or stop its emissions).
- **Enforcement tools** include tickets and prosecution, which can result in court-imposed fines or incarceration. The legislated maximum fine is \$6 million per day (of the violation) for individuals and \$10 million per day (of the violation) for corporations. The maximum jail term is five years less one day.

**Figure 6** shows the number of times each of the above abatement and enforcement tools has been used in the last five years. The top 10 fines imposed to date by the courts by dollar amount are listed in **Appendix 2**.

## 2.5 Public Reporting

The Ministry releases on its public website annual Environmental Compliance Reports, which list emitters that the Ministry has identified as having discharged contaminants into the air and water in excess of allowable limits. As of August 31, 2016, the most recent reports on the website are from 2014.

## 2.6 Provincial and Federal Jurisdiction over Emissions

In Canada, provinces have jurisdiction to regulate emissions from most types of industries, including mining and manufacturing. Provinces are also primarily responsible for managing water resources within their borders, which includes regulating sewage discharges by industries.

The federal government regulates air emissions by industries such as aviation and interprovincial/national transportation. In addition, the *Canadian Environmental Protection Act* requires Environment

**Figure 6: Abatement and Enforcement Measures Used by the Ministry, 2010/11–2014/15**

Sources of data: Ministry of the Environment and Climate Change and the Ontario Court of Justice

	2010/11	2011/12	2012/13	2013/14	2014/15	Total Over 5 Years
Voluntary abatement <sup>1</sup>	4,545	8,558	6,449	6,542	6,487	<b>32,581</b>
Control orders <sup>2</sup>	442	454	372	504	742	<b>2,514</b>
Stop orders <sup>3</sup>	–	–	–	–	–	–
Revocation and voluntary surrender of environmental approval <sup>4</sup>	165	113	104	166	93	<b>641</b>
Tickets <sup>5</sup>						
# of instances	734	514	408	384	616	<b>2,656</b>
Levied by the Ministry (\$)	275,855	189,105	153,655	142,265	224,690	<b>985,570</b>
Collected by municipalities (\$) <sup>6</sup>	290,515	206,900	150,235	141,435	209,055	<b>998,140</b>
Environmental penalties <sup>7</sup>						
# of violations	45	42	12	34	21	<b>154</b>
Levied by the Ministry (\$)	298,034	279,488	94,134	178,488	117,676	<b>967,819</b>
Collected by the Ministry (\$)	355,414	226,773	96,508	203,979	140,901	<b>1,023,575</b>
Prosecution						
# of cases with charges laid	164	167	143	112	74	<b>660</b>
# of cases with convictions	156	151	123	73	20	<b>523</b>
Fines imposed by the courts (\$)	2,132,123	3,646,776	2,296,314	1,377,984	2,453,440	<b>11,906,637</b>
Fines collected by municipalities (\$) <sup>6</sup>	1,125,042	1,194,936	1,701,596	1,280,086	2,062,585	<b>7,364,245</b>
# of cases resulting in incarceration	2	5	4	1	1	<b>13</b>

1. Number of voluntary abatements is the number of instances of abatements, not the number of emitters involved (a single emitter may receive multiple abatements).
2. Control orders are issued to require the company to limit or stop its emissions.
3. Stop orders are issued if the source of a contaminant discharging into the natural environment poses an immediate danger to human life and the health of any persons. The Ministry has not issued any stop orders in the last five fiscal years.
4. Revocations include those where the emitter voluntarily discontinues the activity for which the approval was issued and where the Ministry revokes the approval because the emitter was not operating in accordance with the conditions of the approval. The Ministry does not track which approvals are revoked voluntarily versus which the Ministry revokes.
5. Tickets are issued for minor violations and are issued at the time of the offence. Regulations under the *Provincial Offences Act* set fines for each type of offence. The maximum fine is \$1,000.
6. Under the *Provincial Offences Act*, fines imposed by the courts are collected by the municipalities. The Ministry does not track fines collected. We obtained the amounts collected from the Ontario Court of Justice. Amounts exclude late payment fees, court cost, victim surcharge and collection agency cost.
7. Environmental penalties are administrative monetary penalties that can be imposed by the Ministry when certain industrial facilities (as specified in regulations) spill or have unlawful discharges to water or land. Penalty amounts range from \$1,000 per day for less serious administrative violations (e.g., failure to submit a quarterly report) to \$100,000 per day for the most serious violations (e.g., spill with significant impact).

and Climate Change Canada to maintain a National Pollution Release Inventory that provides emitter-specific information for larger facilities regarding the quantity of their emissions for over 300 contaminants. Emitters that use and/or emit these contaminants must report their emissions annually. Environment and Climate Change Canada also has a separate program that monitors outdoor air quality in over 200 communities across Canada

through its National Air Pollution Surveillance program. The results of this monitoring are summarized to provide information on the state of pollution within each of five large Canadian regions. Southern Ontario is one such region, with another encompassing Northern Ontario and the Prairies; information on Northern Ontario is not reported separately.

With regard to water resources, the federal government regulates activities related to fisheries, shipping and navigation. This includes regulating emissions from ships and boats, such as sewage, oil and ballast water discharges. The federal government is also responsible for regulating bulk water-taking activities in “boundary waters” (bodies of water that connect Canada and the United States), such as the Great Lakes. Environment and Climate Change Canada monitors the quality of fresh water in areas considered to be of national and international interest such as the Great Lakes-St. Lawrence River Basin, as well as in select rivers throughout Canada. The results of this monitoring are summarized by province.

### 3.0 Audit Objective and Scope

The objective of our audit was to assess whether the Ministry of the Environment and Climate Change has effective systems and processes in place to:

- ensure that projects that can have a negative impact on the environment and human health are appropriately approved and carried out in compliance with relevant legislation, regulations and Ministry policies, such that negative impacts are prevented or minimized; and
- assess and report on the effectiveness of its environmental approvals program in identifying and mitigating negative environmental effects of projects.

Prior to commencing our work, we identified the audit criteria we would use to address our audit objective. Senior management at the Ministry reviewed and agreed with our objective and related criteria.

Our audit work was conducted primarily at the Ministry’s head office in Toronto between November 2015 and May 2016. We also visited three of the Ministry’s five regional offices (Central, Northern and Southwest). In conducting our audit work,

we reviewed applicable legislation, regulations, Ministry policies and relevant files, and interviewed staff at the Ministry’s head, regional and district offices. We also surveyed 190 field inspectors for their views on the environmental approvals program, and received a 42% response rate.

We used data provided by a leading North American business directory that collects the names and locations of businesses in various industry sectors and classifies them by the North American Industry Classification System (NAICS) codes to identify potential emitters that may be operating without an environmental approval. We chose five such sectors—manufacturing, mining and quarrying, waste management, commercial printing, and automotive refinishing—and compared the directory data with the Ministry’s records of emitters with environmental approvals. We selected these five sectors because the Ministry had indicated that it had issued approvals to emitters in these sectors.

We met with representatives from the Office of the Environmental Commissioner of Ontario and the Environmental Review Tribunal to obtain their perspectives on the environmental approval process in Ontario.

We interviewed non-government environmental groups such as the Wildlife Conservation Society of Canada, Nature Canada and the Canadian Environmental Law Association, to obtain their perspectives on the environmental approval process in Ontario. We also conducted research on environmental approval processes in other Canadian jurisdictions to identify best practices.

## 4.0 Detailed Audit Observations

### 4.1 Emitters Operating with Outdated or No Environmental Approvals

#### 4.1.1 Ministry Issues Approvals with No Expiry or Renewal Dates

Although the *Environmental Protection Act* authorizes the Ministry to impose renewal requirements on environmental approvals, the Ministry has chosen to issue environmental approvals that neither expire nor are required to be renewed periodically. Approvals issued for waste-related activities prior to the late 1970s had expiration dates. However, the Ministry eliminated the expiration dates after concluding that there was no benefit to periodically requiring emitters to reapply to ensure their approvals were consistent with their current operations and with current standards, since emitters are legally required to inform the Ministry when their operations change.

The Ministry does not regularly review existing approvals to ensure they are consistent with current environmental standards. Instead, it relies on emitters to inform it when their approvals need to be updated, such as when they change their operations. However, emitters do not always do so. For example, in the last five years, the Ministry's air-related inspections found that 423 emitters had changed their operations without informing the Ministry. As a result, the Ministry does not know the extent to which emitters are not meeting current environmental standards.

In four Canadian jurisdictions—British Columbia, Alberta, New Brunswick and the Yukon—environmental approvals have expiration dates that range from 15 months to ten years from the date they are issued, which can help to ensure that these approvals reflect current environmental standards.

#### Over 200,000 Approvals Issued More Than 15 Years Ago Are Outdated

The Ministry did not enter any information about approvals issued prior to 2000 when it implemented its current information system in late 1999. All relevant documentation regarding these approvals is currently stored in boxed paper files in the Ministry's off-site storage facility. Consequently, the Ministry does not know how many emitters are still operating with these old approvals.

According to the Ministry, the data was not entered into the information system due to insufficient staff. Instead, the Ministry has entered certain basic information about the emitter and the related approval only if the emitter makes a significant change in its operations and applies to have its approval amended to reflect the change. However, this process relies on the emitter recognizing that it needs to inform the Ministry about the change, and deciding to voluntarily submit an application to amend an existing approval.

Our 2000 audit of the Ministry's Operations Division noted that the Ministry had issued over 220,000 approvals since 1957. However, as of May 31, 2016, only 12,000 of these approvals have been amended. Many of the emitters that were operating prior to 2000 might have since ceased to operate. However, our review of a sample of these approvals indicates the Ministry should further review these pre-2000 approvals because the Ministry determined, at our request, that over half of the emitters we looked at were still in operation.

Our review indicated these emitters were not operating under many, and in some cases any, of the operational requirements that the Ministry has more recently established to ensure the environment is protected. For example, older approvals did not include any requirements for training of staff, maintaining equipment or obtaining liability insurance. In general, approvals issued prior to 1983 included few, if any, conditions.

The Ministry informed us that it will not take any action to identify and update outdated approvals issued prior to 2000, and will continue to revise

these approvals only if the emitter indicates it has changed its operations or, in some cases, when the Ministry receives complaints about the emitter. The Ministry further acknowledged that while these emitters do not have to operate according to conditions that are standard in current approvals, in its view, it is only important that the emitters comply with their existing approvals.

### RECOMMENDATION 1

To ensure that all emitters that have Environmental Compliance Approvals are operating with conditions that are consistent with current environmental standards and their current operations, the Ministry of the Environment and Climate Change should:

- establish guidelines and targets for the timely review and update of existing Environmental Compliance Approvals;
- evaluate the benefits and costs of setting expiry dates on Environmental Compliance Approvals, especially for high-risk activities; and
- ensure its emitter database contains the information needed to support monitoring activities for all emitters, including those approved prior to 2000.

### MINISTRY RESPONSE

The Ministry agrees with the Auditor General that environmental approvals should be current and effective at managing risks to the environment from emitters. To this end, the Ministry is committed to the following:

- Evaluating the benefits and costs of setting expiry dates on Environmental Compliance Approvals for high-risk emitters to determine whether this will contribute to better environmental outcomes.
- Initiating an assessment of the risk associated with approvals issued prior to 2000 to determine the need to review all existing Environmental Compliance Approvals.

This will include quantifying the number of historic approvals that apply to higher-risk activities.

- Examining whether to include these older approvals in the database.

### 4.1.2 A Significant Number of Emitters in the Province May Not Have Proper Approvals

Although the Ministry acknowledged to us that it is aware that some emitters operate in Ontario without registering with the Ministry or without the required environmental approval, it has not attempted to determine how many such emitters are currently operating or what risks they pose to the environment. These emitters are not subject to any Ministry monitoring or rules of operation to ensure that their emissions are within allowable limits, and therefore might be causing significant harm to the environment and human health.

In the last five years, the Ministry's field inspections identified over 900 emitters that were operating without environmental approvals. However, our analysis of the data we obtained from a leading business directory that collects the names of businesses for each business sector indicates that there potentially may be about 12,000 emitters in the province that are not in the Ministry's emitter database—over and above the 38,000 that the Ministry currently tracks.

While there may be various reasons why these emitters are not in the Ministry's emitter database—for example, some of these emitters may have an approval that was issued prior to 2000—the Ministry has not performed a similar comparison to identify emitters that may be operating without a proper environmental approval. **Figure 7** summarizes the results of our comparison of the information in the business directory to the list of emitters that have approvals in the Ministry's database or have self-registered.

As described in **Section 2.2**, Ontario currently uses two types of approvals: online self-registration,

Figure 7: Comparison of Emitters Listed in Business Directory with Emitters in Ministry's Database

Prepared by the Office of the Auditor General of Ontario

	Emitters Per Business Directory	Emitters in Business Directory with Approval*	Emitters in Business Directory without Approval	
			#	%
<b>Activities for Which an Environmental Compliance Approval Is Required</b>				
Manufacturing				
Established before 2000	10,879	2,137	8,742	80
Established in or after 2000	1,774	159	1,615	91
Establishment date unavailable	994	104	890	90
<b>Total manufacturing</b>	<b>13,647</b>	<b>2,400</b>	<b>11,247</b>	<b>82</b>
Mining and quarrying				
Established before 2000	75	24	51	68
Established in or after 2000	8	1	7	88
Establishment date unavailable	16	2	14	88
<b>Total mining and quarrying</b>	<b>99</b>	<b>27</b>	<b>72</b>	<b>73</b>
Waste management and remediation				
Established before 2000	118	47	71	60
Established in or after 2000	58	25	33	57
Establishment date unavailable	54	25	29	54
<b>Total waste management and remediation</b>	<b>230</b>	<b>97</b>	<b>133</b>	<b>58</b>
<b>Subtotal</b>	<b>13,976</b>	<b>2,524</b>	<b>11,452</b>	<b>82</b>
<b>Activities That Are Eligible for Self-Registration</b>				
Commercial printing				
Established before 2000	1,016	47	969	95
Established in or after 2000	161	3	158	98
Establishment date unavailable	92	4	88	96
<b>Total commercial printing</b>	<b>1,269</b>	<b>54</b>	<b>1,215</b>	<b>96</b>
Automotive refinishing				
Established before 2000	241	59	182	76
Established in or after 2000	23	4	19	83
Establishment date unavailable	41	10	31	76
<b>Total automotive refinishing</b>	<b>305</b>	<b>73</b>	<b>232</b>	<b>76</b>
<b>Subtotal</b>	<b>1,574</b>	<b>127</b>	<b>1,447</b>	<b>92</b>
<b>Total</b>	<b>15,550</b>	<b>2,651</b>	<b>12,889</b>	<b>83</b>

\* Includes only those emitters that were listed in the business directory that were also found to have approvals (either through self-registration or Environmental Compliance Approvals). Numbers do not represent all emitters listed in the Ministry's database, because some emitters with approvals may not be listed in the business directory.

available since 2011 (involving approximately 4,600 lower-risk emitters); and more rigorous Environmental Compliance Approvals, administered under an information system implemented in December 1999 (involving approximately 28,500 higher-risk emitters).

### 4.1.3 No Mechanisms to Ensure Emitters Obtain Required Approvals

The Ministry's current practices do not ensure that all emitters have obtained the required approvals. Outreach initiatives—such as presentations at industry tradeshows, education and outreach sessions with stakeholders and the general public—rely on emitters realizing they need to obtain the required approvals, or on the public (through complaints) bringing such emitters to the Ministry's attention. As shown in **Appendix 3**, our survey of field inspectors, which asked for their opinion on the key changes that would improve the environmental approvals program, confirmed that the Ministry needs more effective outreach activities to ensure that emitters that require an environmental approval are aware of and fulfil their responsibility to obtain one.

We found, for example, that one waste removal company that was required to obtain an approval to transfer and store hazardous waste knowingly disregarded the requirement for an approval. The Ministry conducted an inspection in 2014 and found that it had transported an estimated 600 bags of asbestos waste and stored them at its site without an environmental approval. The inspector observed that some bags had been left open with asbestos waste visible, and some asbestos waste was found on the surface of nearby soil. Exposure to asbestos occurs through inhalation of fibres in the air, and can cause lung cancer and mesothelioma (a condition characterized by cancer of the thorax, abdomen or the heart). The Ministry immediately required that the asbestos waste be transported and packaged according to its guidelines. The owner

told the Ministry that he was aware of the requirement to obtain an approval, but had decided not to obtain one. The owner subsequently decided not to engage in transporting and storing hazardous waste.

In addition, the Ministry largely relies on public complaints to identify emitters that are operating without approvals, which is a reactive, rather than proactive, approach. Specifically, under information-sharing agreements the Ministry has with other ministries and agencies, the Ministry receives information about public complaints received by the other parties. For example, the Ministry of Natural Resources and Forestry forwards complaints it receives about quarry operations, and Environment Canada forwards complaints it receives about contaminant spills. However, public complaints are received only after the emitter is already operating.

The Ministry's inspection planning guidelines state that inspections of waste-management and certain sewage-related activities should include procedures to identify unapproved facilities. Such procedures incorporate the knowledge of staff at local offices. However, no such planning considerations are required for air/noise and industrial sewage emitters.

Furthermore, the Ministry is missing opportunities to more proactively identify emitters without approvals soon after they begin operating. For example, the information-sharing agreements could also require that other ministries forward information about newly registered emitters for the Ministry to follow up with. The Ministry of Natural Resources and Forestry, for example, could inform the Ministry of newly registered quarry operators that the Ministry could check for approvals. We also noted that the Ministry does not have an information-sharing agreement with the Ministry of Government and Consumer Services, which also has information on new businesses, some of which may be required to obtain an environmental approval.

**Figure 8: Average Review Time for New Application for Environmental Compliance Approvals**

Source of data: Ministry of the Environment and Climate Change

Type of Approval	2011/12		2012/13		2013/14		2014/15		2015/16	
	# of Approvals	Avg. Review Time (Days)	# of Approvals	Avg. Review Time (Days)	# of Approvals	Avg. Review Time (Days)	# of Approvals	Avg. Review Time (Days)	# of Approvals	Avg. Review Time (Days)
Air/noise	706	295	391	455	331	530	426	646	557	662
Industrial sewage	144	154	144	172	134	144	84	237	149	283
Municipal sewage	987	65	1,111	77	1,004	74	897	95	1,014	98
Waste disposal sites	38	336	33	204	18	281	24	456	27	375
Waste management systems	170	61	142	59	42	126	35	197	40	156
<b>Total</b>	<b>2,045</b>		<b>1,821</b>		<b>1,529</b>		<b>1,466</b>		<b>1,787</b>	
<b>Overall Averages</b>		<b>155</b>		<b>167</b>		<b>183</b>		<b>272</b>		<b>295</b>

**RECOMMENDATION 2**

To ensure that all emitters have the required environmental approvals, the Ministry of the Environment and Climate Change should improve its strategy to more proactively identify emitters that are operating without environmental approvals soon after they begin operations.

**MINISTRY RESPONSE**

The Ministry agrees that it is vitally important to ensure that facilities have the required environmental approvals and agrees with the recommendation. The Ministry will consider other strategies to enhance its process to better identify emitters operating without environmental approvals.

#### 4.1.4 Long Wait for Approval Results in Emitters Operating without Their Emissions Being Monitored

There is no Ministry policy on how long it should take Ministry staff to review applications for Environmental Compliance Approvals. We found that emitters have to wait months or years before receiving an approval, and that approval times have increased over the past five years. Some of these emitters begin operation before approval is obtained. As a result, emissions can go unmonitored and unregulated during this time.

For example, for the 557 air/noise approvals issued by the Ministry in 2015/16, it took an average of 22 months between receiving the application and issuing the approval. The 2015/16 application process was 125% longer than in 2011/12 for these approvals. At that time, when 706 applications were approved, the Ministry's review took an average of less than 10 months. **Figure 8** shows the number of approvals issued in the last five years and the average review time for these approvals.

**Figure 9: Application Review Caseloads, 2011/12–2015/16**

Prepared by the Office of the Auditor General of Ontario

	2011/12	2012/13	2013/14	2014/15	2015/16
Total number of applications reviewed <sup>1</sup>	4,331	3,961	3,311	3,290	4,145
Number of staff <sup>2</sup>	92	95	93	93	93
Average number of applications reviewed per staff	47	42	36	35	45

1. Includes applications for new Environmental Compliance Approvals, applications to make administrative and major amendments to existing Environmental Compliance Approvals, and applications to revoke existing Environmental Compliance Approvals.

2. Excludes management and support staff.

The Ministry informed us that the primary reason for the lengthy review time is insufficient staff. However, as shown in **Figure 9**, the number of applications reviewed by staff have actually decreased slightly in the last five years. As of March 31, 2016, the Ministry was in the process of reviewing 1,200 approval applications, about 40% of which it received more than two years earlier. The Ministry had not yet begun reviewing approximately 1,600 applications, about 40% of which it received more than six months prior.

Our survey of inspectors (see **Appendix 3**) indicated that addressing the long wait to issue an approval was one of the areas where improvements are needed. For example, one respondent stated that “staff cannot tell a company to put off production until an [approval] has been issued. Especially, when [they] know it will take 1-2 years to review the application... Companies that have compliance issues, i.e., elevated noise, air discharges, effluent, etc. know this game well. As long as an application is submitted, they know the Ministry will be off of their backs. So there are many examples where companies will knowingly submit a poor application...” As shown in **Figure 4**, over 1,300 applications for Environmental Compliance Approvals have been returned in the last five years, some due to incomplete information.

### RECOMMENDATION 3

To ensure that all emitters that apply for Environmental Compliance Approvals obtain and are operating with the required approvals containing conditions that are consistent with

current environmental standards and their current operations, the Ministry of the Environment and Climate Change should:

- establish targets to ensure the timely review of environmental compliance approval applications; and
- monitor performance and staffing to ensure these targets are achieved.

### MINISTRY RESPONSE

The Ministry agrees that there should be timely reviews of environmental compliance approval applications.

The Ministry is implementing measures to reduce review times for air and noise approvals by 50% by fall 2017 as well as establishing targets for service standards to fulfill the commitment made in the Fall Economic Statement. These measures include hiring temporary resources to clear the backlog of environmental approval applications and making changes to the way the program is delivered. Since August 2015, the Ministry has reduced the number of applications waiting for an air and noise environmental approval by over 25%. In January 2017, the introduction of the proposed Air and Noise Emissions self-registration will result in 70% fewer air and noise Environmental Compliance Approvals, resulting in time and cost savings for businesses across Ontario. This will enable the Ministry to focus attention on complex and high-risk facilities and ensure more timely review of environmental compliance approval applications.

In addition, the Ministry has recently established an internal tracking system to continually monitor and update the program as required. As part of performance monitoring, the Ministry's database system is being upgraded to better track the time taken in different stages of the approvals process to monitor performance and ensure targets are being achieved.

## 4.2 Ministry's Environmental Monitoring and Enforcement Insufficient to Deter Violations

The Ministry's monitoring efforts are not sufficient to prevent and detect non-compliance. Furthermore, while the Ministry's enforcement efforts result in short-term compliance with approvals, its enforcement approach is not sufficiently punitive to ensure continued compliance. As a result, emitters violate environmental approval conditions repeatedly, with a negative impact on the environment and human health.

### 4.2.1 Ministry Does Not Analyze Risks Posed by Individual Emitters

Ministry policy does not prescribe the frequency with which emitters should be subject to desk reviews (which are only conducted on self-registered emitters) or inspections (conducted on all emitters). Staff at the Ministry's regional offices perform ongoing analysis of the results of past inspections in order to identify sectors that are at higher risk of non-compliance. This sector-based approach results in many emitters not being inspected for many years because they are not in higher-risk sectors.

The Ministry's emitter database has information about the emitters' location, inspections and public complaints. However, the Ministry does not compile such emitter-specific information to form risk profiles for individual emitters. Therefore, the Ministry does not have assurance that the lack of monitoring of these emitters is justified, because it does not

have information regarding the risks posed by individual emitters.

### Fewer than 10% of Self-Registered Emitters Reviewed or Inspected

For the most part, the Ministry relies on self-registered emitters to monitor their own compliance with the conditions of their registrations. Desk reviews of self-registered emitters began in 2013/14—two years after the implementation of the registration process; follow-up inspections began in 2014/15. As of March 31, 2015, only about 5% of the more than 3,500 self-registered emitters had been subject to a desk review or inspection.

The results of Ministry desk reviews and follow-up inspections indicate a need for closer Ministry oversight, especially in these first few years of the registration process.

- In 2014/15, the Ministry inspected 63 automotive refinishing facilities based on the results of desk reviews it conducted the previous year. In 86% of these inspections, the Ministry found that the emitters were either not eligible to self-register or did not comply with one or more operational requirements. For example, over one-fifth of the facilities were not eligible to self-register—and therefore, needed to apply for an Environmental Compliance Approval—because they did not meet the requirement for the minimum distance between the emitter and areas where people would be exposed to the noise and emissions from the facility. In other cases, facilities did not meet operational requirements, such as maintaining records of emission levels or equipment maintenance.
- In 2014/15, the Ministry completed desk reviews of 89 non-hazardous waste transportation systems and found—through its review of activity logs submitted by emitters—that 42% of the emitters did not comply with one or more operational requirements. For example, one review determined that an emitter that registered its operations in 2013

was not only transporting hazardous waste, but was also operating a waste disposal site, which requires an Environmental Compliance Approval. In addition, the emitter was storing the hazardous waste in a warehouse for over three months. These activities disqualify the emitter from the less rigorous self-registration process and indicate a need for Environmental Compliance Approvals. In 2015/16, the Ministry began follow-up inspections of some of these emitters to determine if they are eligible for self-registration or are non-compliant, but the results were not yet available at the time of our audit.

The *2010/11 Annual Report* of the Environmental Commissioner of Ontario similarly noted regarding the nature of the registration system that “the reliance on proponents to self-assess the [eligibility] of their activities and monitor their own compliance with regulatory requirements demands a higher level of ministry oversight.”

Our survey of Ministry inspectors indicated that many had concerns regarding the self-registration system. For example:

- One respondent stated that from their experience, “those who require registration in lieu of an Environmental Compliance Approval have met fewer of the conditions of operations that are required of them.... Moving more companies to the [registration process] could lead to less overall compliance within the regulated community.”
- Another respondent stated that “the new [registration process] is putting even more onus on companies to regulate themselves—which we know they don’t do.”

### Inspection Cycle Too Long Despite High Rate of Non-compliance by Emitters with Environmental Compliance Approvals

In each of the last five years (from 2010/11 to 2014/15), the Ministry has inspected about 10% of the emitters with Environmental Compliance Approvals, tracked by its information system. It

uses a broad risk-based approach informed by the results of past inspections, but one that does not identify risks posed by individual emitters. In 2014/15, 230 inspectors inspected approximately 3,000, or about 9%, out of approximately 33,400 emitters that were known to the Ministry at that time. Given this inspection rate, it will take the Ministry more than 11 years to inspect every emitter with an Environmental Compliance Approval.

While the Ministry’s risk-based approach provides some assurance that many higher-risk emitters will be inspected in a timely manner, an 11-year inspection cycle may result in lengthy, undetected non-compliance. We further noted that 80% of the 32,500 emitters that were issued an approval since 2000 have never been inspected. Although many of the approvals were issued more recently, our survey of Ministry inspectors indicated the need for earlier inspections. For example, one respondent stated that “most [emitters] usually have no clue what they are required to do as a result of the approval. By the time we inspect them, they are sometimes years behind on their record-keeping or reporting requirements. If we were able to go through the approval with them when they first get it, it would save a lot of trouble down the road for inspection purposes.”

Results of the Ministry’s annual inspections indicate high non-compliance rates, and therefore the need for more frequent inspections. For example, in the last five years, 20% of 4,147 hazardous-waste-related inspections, 35% of 4,876 air-related inspections and 47% of 1,228 sewage-related inspections identified non-compliances with possible environmental or health consequences. Specifically, Ministry inspections conducted in 2014/15 found that the top three air contaminants for which emitters were found to exceed the Ministry’s standards were all cancer-causing. They were Benzo(a) pyrene, Benzene and suspended particulate matter, and each has been classified by the International Agency for Research on Cancer as “Group 1 carcinogens,” meaning that there is “sufficient evidence to conclude that these substances can cause cancer in humans.”

## RECOMMENDATION 4

To ensure that all self-registered emitters and emitters with Environmental Compliance Approvals, particularly those that pose the highest risk to the environment, are appropriately monitored and non-compliance issues are identified and corrected on a timely basis, the Ministry of the Environment and Climate Change should:

- gather and record data in its information system to support the identification of all high-risk emitters; and
- revise its risk-based policy to include requirements on how frequently to review and inspect these emitters and ensure that the policy is followed.

## MINISTRY RESPONSE

The Ministry agrees with the Auditor General's recommendation and will modernize its compliance system to enable the more effective use of risk-based processes. This will assist in ranking facilities to ensure Ministry resources are allocated to address the highest-risk sites.

The Ministry is committed to enhancing its efforts and resources toward regularly inspecting emitters that pose the highest risk to the environment and ensuring that the policy is being followed by staff.

### 4.2.2 Ministry's Enforcement Measures Do Not Deter Repeat Offenders

Despite the high rate of non-compliance identified through inspections, the Ministry relies on emitters to voluntarily comply with the conditions of their environmental approvals, and often does not impose stringent enforcement measures, such as control orders or the laying of criminal charges. While some emitters do voluntarily comply with the conditions of their approval after an inspection, many subsequently re-offend. For example:

- Over 40% (287) of the 659 emitters that were found—either through Ministry inspections or self-reporting by the emitter—to have exceeded the contaminant or pollutant limits from 2010 to 2014, did so on more than three occasions during those years. Together, the 287 emitters accounted for 96% of the approximately 17,500 reported instances of emitters exceeding contaminant or pollutant limits. These contaminants were mostly suspended particulate matter, suspended solids and total ammonia nitrogen. Suspended particulate matter is a complex mixture of fine solid and liquid particles that can cause respiratory problems if inhaled. Suspended solids consist of floating organic and inorganic particulates, which, if untreated, affect water quality. Total ammonia nitrogen at high concentrations can be toxic to fish.
- In 2014/15, for over 300 air-related inspections in which the Ministry identified violations with possible environmental or health consequences, 44% (107) involved repeat offenders. For 74 of the 107 repeat offenders, the Ministry used voluntary abatement measures.

We also found that penalties levied by the Ministry often did not deter repeat offenders. Nineteen of the 55 emitters that were issued penalties from 2009 to 2016 were issued penalties for more than three violations. One of them was issued penalties for 24 violations in eight of the last nine years, totalling more than \$173,000. Another emitter was issued penalties for 13 violations in seven of the last nine years, totalling more than \$192,000.

The Ministry informed us that the purpose of a penalty is to encourage companies to comply with environmental regulations and take swift remedial action in the event of a spill, unlawful discharge or other environmental violation. The *Environmental Protection Act* requires the Ministry to review its penalty program every five years. The Ministry's 2012 review analyzed penalties that were issued from 2007 to 2011, focusing on the types

of violations and the sectors in which violations occurred. However, the review did not assess the effectiveness of penalties in deterring repeated violations by individual emitters.

In its *2013/14 Annual Report*, the Environmental Commissioner of Ontario criticized the Ministry's "soft approach" to enforcement, stating that "there must be a credible threat of stronger measures to ensure that the regulatory regime is respected. An over-reliance on a soft approach can create a perception that the Ministry does not take enforcement seriously, which can allow a culture of non-compliance to develop."

### RECOMMENDATION 5

To ensure that all emitters, particularly those that pose the highest risk to the environment, are appropriately monitored, and that its system of penalties is effective in correcting non-compliance issues on a timely basis, the Ministry of the Environment and Climate Change should:

- assess, as part of its ongoing reviews of its penalties program, how effective its penalties are in discouraging individual emitters from being non-compliant with environmental regulations;
- establish a clear progressive penalty policy and process for dealing with repeat offenders; and
- take swift remedial action in the event of a violation.

### MINISTRY RESPONSE

The Ministry agrees that penalties need to be an effective deterrent toward reducing environmental infractions.

The Ministry will assess its actions in relation to individual repeat offenders based on their compliance history and environmental and health consequences, and take appropriate action consistent with our policies.

For repeat offenders, the Ministry implements mandatory abatement measures to

ensure the appropriate environmental enforcement activities are in place. The Ministry agrees with the Auditor General's recommendation and will consider assessing whether these tools are effective in discouraging individual companies from being non-compliant with environmental regulations.

## 4.3 Cost to Support Environmental Approvals and to Clean Up Contamination Not Fully Recovered from Emitters

### 4.3.1 Financial Security Not Required for Many High-Risk Activities

Regulations under the *Environmental Protection Act* require financial security only for large privately owned landfills that accept municipal waste, and for mobile PCB destruction facilities. Financial security is determined based on a technical review by the Ministry's engineering and financial staff, which considers the likelihood of an emitter's activities resulting in future contamination, and the timing and associated costs of clean-up. This assessment assumes that the emitter will not violate the conditions of its approval, for example, that a landfill operator will not exceed the maximum set amount of allowed waste.

Ministry policy further states that financial security should normally be required for other private-sector waste management operations, such as recycling operations, tire storage and disposal facilities, waste-burning facilities, and certain types of private sewage systems. However, neither the regulations under the Act nor Ministry policy require financial security for several other high-risk activities such as hazardous waste transporters, industrial sewage systems and activities that can result in contaminant spills. The Ministry can use its discretion to require financial security for such activities; however, it does not always so.

**Figure 10** presents a case study of groundwater contamination in the Bishop Street community in

## Figure 10: The Importance of Financial Security for Future Clean-Up

Prepared by the Office of the Auditor General of Ontario

### Case Study: Groundwater Contamination in the Bishop Street Community

#### 679/695 Bishop Street North, Cambridge

679/695 Bishop Street North in Cambridge is the former site of a facility that manufactured helicopter and aircraft parts. Northstar Aerospace (Canada) Inc. (Northstar) and its predecessors operated at the site since about 1981. The Ministry did not require any financial security from Northstar when it issued environmental approvals. Northstar stopped operating at the site in 2012.

#### Groundwater Contamination and Remediation Efforts

In 2004, Northstar decided it wanted to sell the property and so was required to perform environmental site assessments. These assessments indicated the presence of two substances that can lead to cancer (trichloroethylene (TCE) and hexavalent chromium) in the soil and groundwater at concentrations well above Ministry standards at the time, and that the contamination was possibly flowing off-site. The contaminants were a by-product of Northstar's manufacturing operations. TCE is commonly used as a metal degreaser, and can migrate through soil and water and into air indoors.

In 2005, groundwater samples from wells located in a residential area southwest of the facility—now referred to as the Bishop Street Community—contained up to 4,000 parts per billion of TCE, or 80 times the Ministry's standard of 50 parts per billion at the time. The off-site contamination led to the air in homes being contaminated at levels that require monitoring due to possible adverse health effects.

From 2004 to 2012, Northstar carried out groundwater and indoor air quality monitoring and mitigation efforts at the facility and in the Bishop Street Community. This was the largest known program of its kind in Canada. The Ministry received annual reports on the results of this monitoring.

#### Northstar Bankruptcy

In February 2012, Northstar announced that it had begun foreclosure agreements with its lenders, signalling financial difficulties. On May 31, 2012, the Ministry issued an order requiring Northstar to provide financial security of approximately \$10.4 million by June 6, 2012. Northstar never complied with the order.

Northstar did not have the funds to satisfy the Ministry's order. On June 14, 2012, it obtained protection under the *Companies' Creditors Arrangement Act*. On August 24, 2012, the company went bankrupt, and all its remediation activities at the facility were discontinued.

On October 23, 2013, a group of former Northstar directors and officers reached a settlement with the Ministry, wherein they would provide \$4.75 million of the estimated \$15 million in clean-up costs.

After the settlement was reached, the Ministry stepped in to continue to operate, monitor and maintain the groundwater and residential indoor air quality mitigation systems established by Northstar. To date, the Ministry has spent over \$2 million to monitor and mitigate the contamination, and estimates that over \$35 million more will be needed in the next 30 years. The Ministry expects that monitoring and mitigation work will be required beyond the next 30 years.

Cambridge, Ontario, that demonstrates the importance of requiring financial security for all high-risk activities.

In 2012, the Ministry began reviewing its financial security policies to address deficiencies with the objective of strengthening the polluter-pays principle and reducing the government's liability with respect to clean-up of contaminated sites. While the Ministry has still not completed its review four years after starting the review, it is considering expanding the financial security requirements to activities that pose potentially significant risks, such as industrial sectors, underground petroleum storage tanks, and operations involving high-risk substances and new technologies. The Ministry's review also highlighted the need to have similar financial security requirements for all types of hazardous waste management systems similar to what are currently in place for PCB and biomedical waste transporters.

In this regard, we noted that all hazardous-waste-processing facilities in Quebec are not only required to provide financial security but must also have environmental liability insurance. Currently, in Ontario, environmental liability insurance is only required for waste transporters, which is similar to the situation in Alberta, British Columbia, Saskatchewan and Newfoundland. Contamination caused by emitters' activities can cause significant and long-lasting damage to the environment and pose serious health risk to the public. The Ministry may ultimately be responsible for cleaning up such contamination if the emitter fails to do so. In fact, as we noted in our 2015 audit of the Province's management of contaminated sites, the Province is currently responsible for cleaning up over 100 contaminated sites at an estimated cost of approximately \$1.5 billion. Contamination at these sites was the result of commercial/industrial, landfilling and waste management, and mining activities, many of which require environmental approvals.

## RECOMMENDATION 6

The Ministry of the Environment and Climate Change should complete the review of its financial security policies, and ensure that financial security and/or environmental liability insurance is required for all activities that pose significant risks to the environment.

## MINISTRY RESPONSE

The Ministry agrees that financial security needs to be representative of the environmental risk posed by the facility.

Ontario has one of the most broadly based financial security approaches in Canada. Based on the Ministry's review of the financial security program, the Ministry will look at practical improvements that can be implemented, including the expanded use of financial security.

### 4.3.2 Financial Security Either Insufficient and/or Uncollected

The Ministry's emitter database is intended to track the emitters from whom financial security is required, the amount the Ministry has required from the emitter, and the amount held by the Ministry. As of March 31, 2016, the Ministry's emitter database indicated that \$442 million in financial security has been required from about 1,000 emitters, and that only \$6 million had not been collected by the Ministry.

Our audit found that, in some cases, the amount that the Ministry has required from the emitters—as recorded in the Ministry's emitter database—is not sufficient for future clean-up.

The Ministry's own review of its financial security policies confirmed that financial security is “never sufficient to pay for clean-up.” This conclusion is based on the Ministry's experiences, such as with emitters handling more waste than their financial security was intended to cover. For example:

- The Ministry collected \$25,000 in financial security for a waste removal operation, but the actual cost of clean-up was \$17 million (or 680 times the amount collected).
- The Ministry collected \$38,000 in financial security for another waste removal operation, but the actual cost of clean-up was \$1.2 million (or over 31 times the amount collected).

In other cases, the Ministry indicated that additional clean-up costs resulting from unusual events, such as fires or explosions (since, for example, the emitters work with chemicals that can be flammable) were not accounted for in the calculation of financial security.

### Security Amounts Collected from Some Emitters Less Than Estimated Future Clean-Up Costs

Our review of a sample of emitters indicated that the Ministry has collected approximately \$10 million less than what the Ministry estimated would be required for future clean-up. This is over and above the \$6 million that Ministry records indicate as outstanding. In some instances the Ministry reduced the amount of security required from the emitter due to reservations about the emitter's ability to pay the estimated clean-up cost. For example:

- In 1990, the Ministry issued an approval for a waste disposal site, and required the emitter to provide less than two cents in financial security for every litre of waste it received at the site. The Ministry had received \$67,600 by 2004. The emitter appealed the financial security requirement, stating that providing the amount would “tie up capital that it would otherwise be using to run its business.” As a result, the Ministry agreed that the emitter could set up a “special bank account” where the emitter could deposit the required security in instalments. This arrangement is still in place. However, the Ministry does not have access to the account.

In 2012, a Ministry inspection found that the emitter was not funding the bank account

as required. In 2013, the security requirement was re-evaluated, and the actual amount required for future clean-up was increased to approximately \$5.1 million, which the Ministry has not requested. Similar to its 1990 approach to the situation, the Ministry noted that “should [the emitter] contend that providing the security amount will bankrupt or severely inhibit its ability to operate, the Ministry is willing to work with the company on an acceptable payment schedule.”

The Ministry had periodically approached the emitter—in 1998, 2001 and 2010—to secure the required financial security through means that comply with current Ministry policy, but the emitter stated that it would appeal any decision eliminating the special bank account.

In 2014, the Ministry found—through a review of the emitter's own reporting—that the site was contaminated with a toxic substance in the soil and groundwater exceeding standards by up to 1,000 times. Two years later, at the time of our audit, the emitter was still conducting additional studies to confirm the exact nature and extent of the contamination. At the time of our audit, the Ministry indicated it planned to update the financial security agreement by revising terms and conditions of the Environmental Compliance Approval. As of April 2016, there was only \$133,000 in the special bank account.

- In 2014, the Ministry estimated future clean-up costs for a steel manufacturing operation at \$977,000. Concerns about the financial health of the company led the Ministry to require only \$743,000, or 75% of the estimated clean-up costs. The Ministry's emitter database reflects the reduced financial security, and not the full estimated future remediation cost. The Ministry informed us that it issued the Environmental Compliance Approval at the lesser amount because it wanted to issue

the approval as quickly as possible while the company was still viable.

Due to limitations in the Ministry's financial security database, it could not determine the number of cases where it has sought a lesser amount of financial security because of concerns regarding the emitter's ability to provide sufficient financial security to cover estimated clean-up costs.

### Financial Security Amounts Not Periodically Re-evaluated

Because financial security is often collected many years before it needs to be spent on remediating contaminated sites, the Ministry needs to periodically re-evaluate the amounts to ensure they are sufficient. Ministry policies do not state how frequently such reviews should be conducted. The fixed financial security amounts for about one-fifth of the approximately 1,000 emitters with financial security requirements—such as mobile PCB destruction facilities, as well as PCB and biomedical waste transporters—were established in the 1980s and have not been updated. Our review of the results of re-evaluations (for a sample of emitters with financial security requirements)—conducted by the Ministry between 2005 and 2016—confirmed their importance. In two-thirds of cases where the security amounts had been re-evaluated, the amount at least doubled from the previous estimate. In fact, in one-fifth of cases, the amount increased by at least 10 times the initial estimate. For example:

- A paper mill's estimated remediation costs increased from \$10,000 in 2004 to \$487,000 in 2016 (almost 50 times the previous estimate).
- A landfill site's estimated remediation costs increased from \$247,000 in 2002 to \$4.3 million in 2009 (more than 17 times the previous estimate).

## RECOMMENDATION 7

To ensure that it does not bear the future financial costs of cleaning up contamination caused by emitters whose activities it has approved, the Ministry of the Environment and Climate Change should:

- revise its financial security policies so that all financial security amounts are regularly re-evaluated to ensure they accurately reflect future remediation costs;
- update its emitter database so that it:
  - includes all current estimated remediation costs;
  - reconciles the financial security collected with the estimated costs; and
  - indicates the last date the security was re-evaluated; and
- collect the financial security deemed necessary for clean-up from all emitters required to provide it.

## MINISTRY RESPONSE

The Ministry appreciates the Auditor General's recommendation and, in response:

- The Ministry will consider re-evaluating fixed financial security amounts.
- The Ministry agrees that it needs to improve its financial security database and is currently updating this database to better track and report on financial security.
- The Ministry will seek to collect from all emitters that are required to have financial security the amount that is estimated to be necessary for future clean-up. Financial security estimates do not include clean-up costs resulting from unexpected events, such as fires or explosions. Also, at times, the Environmental Review Tribunal may approve financial security amounts that the Ministry is bound by, and it is therefore unable to collect amounts over those awarded.

### 4.3.3 Fees Recover Only 20% of \$23 Million in Costs to Administer the Approvals Program

In 2012/13, the Ministry established a goal for the approvals program to achieve full-cost recovery by spring 2014 from fees collected. However, the Ministry currently recovers only 20% of its costs of administering the environmental approvals program. For example, in 2014/15, the Ministry spent over \$23 million to deliver the environmental approvals program, but collected only \$4.8 million in related registration and application fees.

We noted that application fees have not been updated since 1998. In addition, the \$23 million spent on program administration does not include enforcement costs such as inspector salaries and other costs incurred to ensure emitters' compliance with their approvals. In 2014/15, the Ministry spent approximately \$100 million for compliance activities for all its programs, a significant portion of which was for the environmental approvals program. When enforcement and compliance expenditures are included, the Ministry's overall rate of recovering its administration costs through fees is significantly less than 20%.

The 2012 Commission on the Reform of Ontario's Public Services (known as the Drummond Report) also noted that existing fees have not kept pace with the rising costs of program delivery. The Commission recommended that the cost burden of providing environmental programs should be on the emitters rather than the public. In line with this recommendation, emitters in British Columbia are also charged low application fees but must also pay a further ongoing fee that is based on how much they emit.

#### RECOMMENDATION 8

To ensure that the Ministry of the Environment and Climate Change (Ministry) recovers the costs of administering the environmental approvals program, the Ministry should:

- determine its cost of administering the environmental approvals program, including costs incurred to monitor and enforce compliance; and
- establish appropriate registration and application fees based on the total cost of administering the program.

#### MINISTRY RESPONSE

The Ministry agrees with the Auditor General's recommendation to establish fees based on the total cost of administering the program.

The Ministry has undertaken a review of the self-registered emitters' fee and is introducing a new fee structure in December 2016. Based on updated revenue forecasts, it is expected that the new fees may result in revenue reaching approximately 79.6% of total program costs by March 2021.

The Ministry is committed to reviewing the environmental compliance approval fees, and will undertake this review once it has modernized the program and introduced electronic service delivery and service standards. The Ministry wants to ensure that it has improved its service delivery before it increases fees to the regulated community.

## 4.4 Public Not Well Informed about Activities That Cause Pollution

### 4.4.1 Public Has No Opportunity to Comment on Self-Registered Emitters

In most cases, the Ministry must post the details of individual applications for Environmental Compliance Approvals on the Environmental Registry to inform and give the public an opportunity to comment on proposed polluting activities in their neighbourhood. However, such public consultation is not required if the proposed activity is eligible for self-registration. Public consultation is only conducted on the regulation that sets out activities

eligible for self-registration. At this stage, the public does not have the information regarding the potential location and operational details of these individual emitters. As a result, the public does not have an opportunity to comment on many potentially environmentally harmful activities before emitters begin to operate.

There are currently over 4,600 self-registered emitters. The number is expected to increase as the Ministry adds more sectors to the list of those eligible for self-registration, and reduces those required to obtain Environmental Compliance Approvals. The Ministry is currently evaluating 10 more sectors as potential candidates for the registration stream, including agri-business operations, commercial/institutional facilities, manufacturing operations and land development. Therefore, an increasingly large portion of emitters will be operating without being subject to any prior public consultation.

### RECOMMENDATION 9

To ensure that the emitting activities eligible for self-registration are a low risk to Ontarians and the environment, and to justify the lack of opportunity for the public to have input regarding the acceptability of such activities before emitters begin operations, the Ministry of the Environment and Climate Change should regularly review whether the risk posed by such activities is indeed low. Such a review should include an evaluation of complaints from the public to better understand the risks of these activities.

### MINISTRY RESPONSE

The Ministry appreciates the Auditor General's recommendation and will consider evaluating complaints to ensure the risks posed by the Environmental Activity and Sector Registry activities are indeed low.

The Ministry reviews the risks posed by new sectors made eligible by the Ministry for self-

registration. This analysis includes a risk assessment of the compliance history for the sector as well as operational risks. The Ministry reserves the right of deregistering a facility or a sector if it is determined to be higher-risk, in non-compliance, or has a poor compliance history.

### 4.4.2 Publicly Available Emitter Database Is Incomplete and Not Functioning as Originally Intended

The 2010 amendments to the *Environmental Protection Act* required the Ministry to publish information about Environmental Compliance Approvals issued after October 31, 2011. In 2011, the Ministry implemented Access Environment, an online database that contains the name and location of emitters that have been issued environmental approvals. Access Environment displays a copy of either the registration for self-registered emitters or the Environmental Compliance Approval, the issuance date and whether the environmental approval is active or has been suspended or revoked.

Access Environment is intended to enable members of the public to access emitter information in their local area. However, this database is not user-friendly and will not perform searches for most basic information that the public is concerned about, such as searching for emitters by name or by postal code.

The information in the database is also incomplete:

- The database contains information only about emitters that have been issued environmental approvals since December 1999 (the last 16 years). Therefore, the public does not have access to any information about the thousands of other emitters that were granted approvals prior to December 1999. As noted in **Section 4.1.1**, our audit confirmed that some of these emitters continue to operate, but the Ministry does not have information on how many.

- The public cannot access the emitters' history of compliance with conditions of their self-registration or Environmental Compliance Approval. Although the intent of database is to provide emissions information, the public cannot access such information about particular emitters.

## RECOMMENDATION 10

To enable the public to access relevant information about all emitters, the Ministry of the Environment and Climate Change should:

- ensure all emitters that have self-registered are included in the Access Environment database;
- ensure that all emitters with Environmental Compliance Approvals, including those that were issued Environmental Compliance Approvals prior to 2000 and are still operating at sites, are also included in the Access Environment database; and
- make necessary changes to the Access Environment database to enable members of the public to readily obtain complete and relevant information about all emitters, including the emitter's history of compliance with conditions of their self-registration or Environmental Compliance Approval.

## MINISTRY RESPONSE

The Ministry agrees with the Auditor General's recommendation and will be addressing performance and accessibility issues with Access Environment by implementing the required fixes by the end of November 2016.

Through Access Environment, members of the public will have access to relevant information on all self-registered activities as well as Environmental Compliance Approvals issued or amended after 2000.

The Ministry does not plan on inputting approvals issued prior to 2000 on Access Environment for the following reasons:

- some approvals have obtained an amendment after 2000 that will appear on Access Environment; and
- access to all Ministry-issued environmental approvals can be obtained by members of the public by contacting their local Ministry district office.

The Ministry does not believe there is a need for changes to Access Environment, as the Ministry currently produces and posts Court Bulletins for all emitters with Part 3 *Provincial Offences Act* convictions under environmental legislation (that is, fines) on the Ontario Newsroom website. In addition, all information regarding emitters' compliance history is available in Ministry district offices.

## AUDITOR GENERAL RESPONSE

To ensure that the public is provided with complete and readily accessible information on emitters, we continue to recommend the Ministry include information on emitters' history of compliance with conditions of self-registrations and/or Environmental Compliance Approvals in the Access Environment database.

## 4.5 Public Complaints Not Well Managed

In the last five fiscal years, the Ministry received approximately 78,000 reports of contaminant spills and public complaints about emitters that were potentially violating environmental laws and causing harm to the environment and human health. The Ministry has a dedicated unit of approximately 20 staff who receive and co-ordinate responses to public complaints. After a preliminary assessment, complaints are forwarded to the appropriate local Ministry office for follow-up. We found that the Ministry does not consistently track the timeliness of its response to complaints. The Ministry also does not track and analyze public complaint information to identify systemic issues about emitting

activities. We reviewed the Ministry's complaints data and found:

- While most complaints were followed up on in a reasonably timely manner, over 1,800 complaints—including 265 from 2010/11—had not yet been assigned to a Ministry field inspector for follow-up. For example, the Ministry received a complaint in September 2011 about a local scrap yard releasing refrigerant into the air. Refrigerants contribute to the depletion of the ozone layer. The Ministry's complaint log indicated that the Ministry was aware of the emitter's history, including an earlier complaint about the facility burning tires. At the time of our audit, the complaint had not been assigned for follow-up. The Ministry indicated that such complaints were sometimes not followed up on in a timely manner due to a lack of staffing.
- About 900 complaints, which the Ministry had preliminarily assessed and so were determined to warrant a field inspection, had not yet been followed up on. In many cases, the Ministry had documented that a site visit was warranted, but these had not been conducted. For example, the Ministry received a complaint in March 2012 from a caller—who was an employee of the emitter—reporting petroleum odours during excavation work. The caller, who requested a follow-up call to discuss the concerns, indicated that the soil may be contaminated based on the odour, and voiced concerns about whether it was appropriate to take excavated (and potentially contaminated) soil to a landfill. The Ministry determined that a field visit was needed, but no updates have been logged since. In another instance, in January 2011, a caller from a school reported a strong tar smell from a nearby building, which caused the school to move its staff and students to another building. The call was redirected to a field inspector when the complaint was received, but no updates have been logged since.

Complaints are one of the few ways the Ministry obtains information on violations of environmental laws and regulations. Complaints can also provide valuable information regarding concerns associated with self-registered activities. Analyzing this information is particularly important since the public does not otherwise have an opportunity to provide comments about these emitters.

## RECOMMENDATION 11

To ensure public concerns on the environmental approvals program are adequately addressed, the Ministry of the Environment and Climate Change should:

- follow up on all public complaints on a timely basis;
- categorize complaints by their underlying issue; and
- take corrective action to address any systemic issues identified.

## MINISTRY RESPONSE

The Ministry agrees that timely follow-up on complaints received by members of the public is critical.

The Ministry is developing a new risk-based approach to public complaints that will set out target response times and a tiered approach to incidents and complaints received by the Ministry. This will ensure that the Ministry's resources target significant risks and environmental concerns, and may include alternative forms of response for lower-risk complaints.

The Ministry will continue to use data analytics to assess incidents and complaints, and to identify underlying systemic issues to ensure timely completion of incident documentation. This includes enhanced analysis of pollution incident and spill reports to ensure that timely and effective responses have been provided for all of these reports to the Ministry.

## 4.6 Ministry Does Not Know If Environmental Approvals Effectively Regulate Pollution or Cumulative Impact of Emissions on Human Health

The Ministry does not have sufficient environmental and health data to determine the cumulative impact of the emissions it approves on the environment and human health. The Ministry has other programs that regularly monitor the state of the province's water and air quality, but it does not assess the results of these monitoring programs in conjunction with environmental approval activities to determine the effectiveness of environmental approvals in controlling pollution. While the Ministry tracks known contaminated sites throughout the Province, it does not have any programs that regularly monitor the impact of polluting activities on the land, such as from chemical spills.

The most recently available air quality data from Environment and Climate Change Canada indicates that, in 2013, Southern Ontario had one of the lowest levels of volatile organic compounds compared to the other four regions in Canada, but it ranked highest in sulphur dioxide emissions, and second highest in fine particulate matter emissions. (Volatile organic compounds are gases emitted from thousands of different products, including paints, varnishes and certain cleaning products. They have harmful health effects that include damage to the liver, kidney and nervous system, and they cause nausea, headaches and eye, nose and throat irritation.) In addition, from 2010 to 2012, about 22% of the freshwater quality monitoring sites in Ontario rivers were rated as marginal or poor quality, which is worse than the national average of 14%.

### 4.6.1 Ministry Does Not Know the Extent of Harm Resulting from Emitter Violations That It Has Identified

The Ministry's inspection database does not track the extent of damage caused by violations related to

risks to the natural environment and human health. While the emitter inspection database includes different risk categories for major and minor risks, it does not quantify local impacts.

For example, Ministry analysis of information regarding emissions in excess of legal limits indicated that 61 industrial emitters exceeded their sewage emission limits a combined 791 times in 2014. One-third of these emitters accounted for 571 of the violations, and some emitters exceeded the limit for two or more types of contaminants. E.coli (an indicator of the presence of disease-causing organisms) was one of the contaminants identified as having the highest number of emission violations. The Ministry did not assess the impact of such violations on the communities surrounding the emitters.

### 4.6.2 Self-Registered Emitters Not Required to Report Level of Pollutants

There are currently over 4,600 known self-registered emitters, none of which are required to report the amount of their emissions to the Ministry. Consequently, the Ministry does not know to what extent these emitters are complying with the allowable emission limits, or how these emitters are impacting the environment and human health.

The Ministry could not estimate the amount of various pollutants that have been emitted by self-registered emitters. For example, automotive refinish coatings release hexavalent chromium, cadmium and lead, which are toxic air contaminants that can seriously damage the liver and kidneys, and can cause birth defects. The Ministry does not know how much of these contaminants is being emitted by automotive refinishing facilities.

### 4.6.3 Ministry Does Not Fully Assess the Impact of Emissions under the Environmental Approvals Program

Although many emitters with Environmental Compliance Approvals are required to submit

information about their levels of emissions to the Ministry (such as the amount of pollutants that have been emitted over a given period), the Ministry only checks that emitters are complying with the limits and conditions of their approvals. It does not assess the cumulative environmental and health impacts of emissions in various regions throughout the province.

Also, if data from the Ministry's other monitoring programs indicate that air or water quality has worsened, the Ministry does not assess to what extent the approvals program is responsible for this and what corrective action needs to be taken. An August 2016 report by CancerCare Ontario and Public Health Ontario stated that exposure to fine particulate matter is a significant public health concern in Ontario. They calculated an estimated 560 additional lung cancer cases per year that they have attributed to exposure to fine particulate matter levels consistent with those in 2010. Fine particulate matter is a mixture of solid and liquid particles—such as sulphate, nitrates, ammonia, sodium chloride, black carbon and mineral dust—that can penetrate and settle deep in the lungs. Studies indicate that chronic exposure to particles contributes to the risk of developing cardiovascular and respiratory diseases, as well as lung cancer. The Ministry has not identified a threshold to define safe levels of exposure to these particles because small particulate pollution has health impacts even at very low concentrations. The Ministry's *Air Quality in Ontario 2014* report stated that major sources of fine particulate matter include smelters, power plants and industrial facilities, accounting for 21% of emissions in the province. All of these activities require environmental approvals.

**Appendix 4** lists the 10 emitters in Ontario with environmental approvals that had the highest emissions of contaminants causing air-quality-related issues in 2014.

In comparison, in 2008, Public Health Toronto established a data collection system called ChemTRAC to better understand where 25 priority chemicals come from. ChemTRAC is an inventory of

the amount and sources of air pollution within the Toronto region that collects information from businesses and institutions. Data collected can be used to better understand contaminant trends over time and highlight key sources. The Ministry does not have a similar means in its environmental approvals program of determining contaminant trends in Ontario.

## RECOMMENDATION 12

To effectively regulate polluters and address potential public health concerns, the Ministry of the Environment and Climate Change (Ministry) should implement processes to:

- require self-registered emitters to routinely report emissions data;
- analyze data from self-registered emitters and emitters with Environmental Compliance Approvals to determine the cumulative pollutant levels of current activities in regional areas;
- assess the environmental emissions impact of approving new emitting activities in regional areas prior to issuing approvals; and
- ensure that when data from other ministries' environmental monitoring programs indicate that air or water quality has worsened in particular regions across the province or in the province as a whole, the Ministry should assess to what extent the approvals program is responsible and take necessary corrective actions.

## MINISTRY RESPONSE

The Ministry concurs with the Auditor General's recommendation relating to assessing and analyzing emissions data. Assessing cumulative effects is important for Ontarians' health and the province's environmental quality.

The Ministry is implementing the Air Quality Management System as part of a federal initiative in Ontario that identifies air zones to consider when making environmental approval

decisions and developing technical and site-specific standards. The Ministry will continue to take steps to improve air quality by reducing smog-causing pollutants in Ontario.

With the implementation of the proposed Air and Noise Emissions Environmental Activity and Sector Registry, the Ministry will have additional emissions data and will have better tools for public reporting and to analyze data.

The Ministry is also developing a process for assessing cumulative effects that will allow Ministry reviewers to account for multiple sources of pollutants when making their decisions. Information from existing air monitoring networks, emissions inventory data and multi-source modelling will be part of the decision-making process. When implemented, this process will enable the Ministry to make decisions on Environmental Compliance Approval applications for new or expanded facilities with a more comprehensive understanding of the current air quality in different parts of the province.

## Appendix 1: Application Fee<sup>1</sup> Schedule for Select Systems, Sites and Facilities

Prepared by the Office of the Auditor General of Ontario

Administrative Processing Fees	Fee Amount
Hauled sewage or bio-solids waste management system—no technical review required	\$50
All other systems and sites not requiring technical review	\$100
All other systems and sites requiring technical review	\$200
Technical Review Fees <sup>2</sup>	
Hazardous waste or liquid industrial waste processing site	\$1,500 if capacity is 100 tonnes or less per day \$6,000 if capacity is more than 100 tonnes per day
Hazardous waste or liquid industrial waste incineration site	\$42,000
Non-hazardous waste processing site	\$1,200 if capacity is 100 tonnes or less per day \$4,800 if capacity is more than 100 tonnes per day
Non-hazardous waste transfer site	\$900 if capacity is 100 tonnes or less per day \$3,600 if capacity is more than 100 tonnes per day
Non-hazardous waste incineration site	\$18,000 if capacity is 100 tonnes or less per day \$42,000 if capacity is more than 100 tonnes per day
Mobile PCB destruction facility that uses thermal treatment	\$12,000
Mobile PCB destruction facility that uses chemicals	\$200
Municipal or private sewage system	\$5,000 if maximum capacity is not more than 4,550 cubic metres per day \$10,000 if maximum capacity is more than 4,550 cubic metres per day
Industrial sewage system	\$6,000
Storm and sanitary sewer	\$900
Storm and sanitary pump station	\$1,800

1. The application fee is the sum of the administrative processing fee and applicable technical review fees.

2. Technical review fees are for reviews of reports, such as those related to emissions, noise assessments and hydrogeological assessments.

## Appendix 2: The 10 Largest Fines for Violations of Environmental Laws, January 2004–June 2016

Prepared by the Office of the Auditor General of Ontario

Emitter(s)	Location	Type of Operation	Year of Conviction	Amount of Fine (Including Any Victim Surcharge)	Description of Violation
Sunrise Propane Energy Group Inc	Toronto	Propane filling plant	2016	\$6,625,000	In August 2008, several explosions occurred at the plant, killing one worker. The explosions discharged contaminants from fuel tanks and resulted in an evacuation of approximately 12,000 residents and businesses within 1.6 km. Area residents suffered injuries and burns from the explosions, and local shops were forced to close.  Following the explosion, the Ministry ordered Sunrise to clean up the affected area, but Sunrise did not fully comply. Instead, the City of Toronto oversaw the clean-up. The company and two of its directors were fined a total of \$6.625 million for discharging a contaminant that caused adverse effects (as defined in the <i>Environmental Protection Act</i> ) and failing to comply with a Ministry order.
310 Waste Limited; Rail Cycle Incorporated; 2020780 Ontario Inc; 20207000 Ontario Inc.	Vaughan	Waste disposal site for solid non-hazardous industrial and commercial waste	2011, 2008 (appealed)	\$1,433,750	On October 12, 2004, a fire began at a waste disposal facility operated by the four companies and continued to burn for several days, affecting neighbouring residences and schools. Charges were laid against the four companies and three of their directors after an investigation by the Ministry.  The companies and the individuals were fined a total of \$1.147 million plus a victim surcharge of \$287,750 for causing the emission of a contaminant into the natural environment that caused an adverse effect. All three individuals were also each sentenced to 11 days in jail.
BP Canada Energy Company	Sarnia	Natural gas refinery	2009	\$1,000,000	In March 2009, during functionality testing of the refinery's valves, a vapour plume travelled offsite in a northerly direction. The plume lasted approximately 10 minutes. Some Sarnia residents reported experiencing temporary physical symptoms as a result of the odour. These included headaches, sore throats and nausea. The discharge also caused disruptions to schools and businesses.  Following an investigation by the Ministry, BP pleaded guilty to discharging, causing or permitting the discharge of a contaminant. It was fined \$800,000 plus a victim surcharge of \$200,000.

Emitter(s)	Location	Type of Operation	Year of Conviction	Amount of Fine (Including Any Victim Surcharge)	Description of Violation
Chinook Global Limited	Sarnia	Chemical manufacturing facility	2007	\$950,000	In July 2005, following unusually heavy rainfall, Chinook discharged treated sewage directly into the St. Clair River for eight days, which violated its approval terms. On the eighth day, Chinook's laboratory found indications of a high concentration of ammonia in the sewage that exceeded allowable limits. Following an investigation by the Ministry, Chinook was charged for permitting a discharge of ammonia into the river that impaired water quality, and for failing to report the exceedances to the Ministry as soon as reasonably possible. Chinook pleaded guilty and was fined \$760,000 plus a victim surcharge of \$190,000.
310 Waste Limited; 2020700 Ontario Inc.	Vaughan	Waste transfer and processing facility	2006	\$887,500	In June 2003, a Ministry inspection revealed that the facility was exceeding its waste storage limit by several thousand tonnes. The Ministry ordered the companies to remove all excess waste from the site, but a later inspection revealed that the companies had not complied with the order. Following a Ministry investigation, the companies were charged with violating the <i>Environmental Protection Act</i> . The companies pleaded guilty and were fined a total of \$710,000 plus a victim surcharge of \$177,500.
Maple Leaf Foods Inc. (operating as Rothsay)	Hamilton	Food processing plant	2005	\$853,125	On numerous dates in 2001, 2003 and 2004, odours emanating from the plant led to complaints of nausea and outdoor social events having to be cancelled. In addition, on three occasions, Rothsay failed to provide to the Ministry shipping manifests for the transportation of wastes generated at its plant. It also failed to comply with Ministry orders to submit storm water studies, decommission two of its sewage lagoons, take samples of sewage and analyze them, and maintain sewage quality. After Ministry investigations, charges were laid against Rothsay. Rothsay pleaded guilty and was fined a total of \$682,500 plus over \$170,625 in victim surcharges.
Shell Canada Limited	Sarnia	Oil refinery	2015	\$825,000	In January 2013, liquid containing mercaptan (a pungent-smelling gas) leaked into an on-site ditch that emptied into the refinery's storm sewer system. The system brings storm water and surface runoff to the refinery's sewage treatment plant for processing. Following the incident, Shell recommended to the City of Sarnia that a shelter-in-place advisory (advising people to stay inside with doors and windows shut and heating systems shut down) be issued for the refinery area, including the area where the Aamjiwnaang First Nation community lives. Following a Ministry investigation, Shell was charged with permitting the discharge of a contaminant into the natural environment that caused an adverse effect. Shell pleaded guilty and was fined a total of \$825,000.

Emitter(s)	Location	Type of Operation	Year of Conviction	Amount of Fine (Including Any Victim Surcharge)	Description of Violation
Thermosets Limited; Demolition and Recycling Inc.	Belleville	Construction waste disposal site	2008	\$823,750	Thermosets Limited and Demolition and Recycling Inc. are located in Belleville on the site of a former manufacturing plant that produced resins and formaldehyde. The plant ceased manufacturing in 1992.  Following Ministry investigations, the companies were convicted of violations related to excavations and discharges from the site. These included the discharge of PCB-contaminated sediments, and failure to comply with orders to remediate the site and clean up the discharged sediment. Because the site is near marshlands, some of the sediment travelled into Bay of Quinte wetlands.  The two companies and their shared president were fined a total of \$659,000 plus a victim surcharge of \$164,750. The president was also sentenced to four months in jail.
NOVA Chemicals (Canada) Ltd.	Samia	Chemical manufacturing facility	2007	\$687,500	In September 2005, a hydrocarbon leak occurred at the NOVA facility, and elevated benzene levels were recorded in the surrounding air. NOVA attempted to stop the leak but was not able to repair the equipment until the next morning. The leak had an adverse effect on neighbouring industries, and the Aamjiwnaang First Nation evacuated its homes and other buildings when benzene was detected in them.  NOVA was charged with discharging a contaminant into the environment contrary to the <i>Environmental Protection Act</i> . NOVA pleaded guilty and was fined a total of \$550,000 plus a victim surcharge of \$137,500.
Suncor Energy Products Inc.	Samia	Oil refinery	2009	\$625,000	Between June 2007 and August 2008, Suncor reported a number of sulphur dioxide exceedances into the outside air. Suncor also informed the Ministry that its equipment that discharges gases into the air had not been constructed to the approved height. It further reported that it failed to comply with its Certificate of Approval by not having an emergency contingency plan in place.  Following a Ministry investigation, Suncor was charged with discharging a contaminant into the air that exceeded the regulated limit and failing to comply with its Certificate of Approval. Suncor was found guilty and fined a total of \$500,000 plus victim surcharges of \$125,000.

## Appendix 3: The Top Five Changes Needed in the Environmental Approvals Program\*

Prepared by the Office of the Auditor General of Ontario

Rank	Change
1	<p><b>Training:</b> The Ministry should provide inspectors with regular training (for example, on new environmental standards, requirements and emerging issues).</p>
2	<p><b>Tools:</b> The Ministry should provide inspectors with better tools (for example, modern equipment for data entry and taking samples) to make the inspection process more efficient.</p>
3	<p><b>Information systems:</b> The Ministry's information systems should be improved to enable inspectors to easily access all relevant data about a particular facility prior to conducting an inspection.</p>
4	<p><b>Outreach activities:</b> The Ministry should strengthen its outreach activities to ensure that operators who require an environmental approval are aware of their responsibility to obtain one.</p>
5	<p><b>Timely review of applications:</b> The Ministry should conduct more timely reviews of applications for Environmental Compliance Approvals.</p>

\* Based on the results of our survey of Ministry inspectors.

## Appendix 4: The 10 Largest Emitters in Ontario

Source of data: Environment and Climate Change Canada

Emitter	City	Type of Operations	Total Emissions in 2014 (Tonnes) *
Vale Canada Limited	Copper Cliff (near Sudbury)	Metal production and processing	143,598
Glencore Canada Corporation	Falconbridge (near Sudbury)	Metal production and processing	36,707
ArcelorMittal Dofasco Inc.	Hamilton	Iron and steel manufacturing	20,261
Imperial Oil	Nanticoke (near Brantford)	Petroleum manufacturing	14,537
Imperial Oil	Sarnia	Petroleum manufacturing	13,615
Essar Steel Algoma Inc.	Sault Ste. Marie	Iron and steel manufacturing	9,000
U.S. Steel Canada Inc.	Haldimand County (near Hamilton)	Iron and steel manufacturing	8,928
Cabot Canada Limited	Sarnia	Chemical manufacturing	7,789
Columbian Chemicals Canada Ltd.	Hamilton	Chemical manufacturing	7,496
St. Mary's Cement Inc.	Bowmanville	Cement and concrete product manufacturing	7,135

\* Represents the combined emissions for a group of contaminants (known as "criteria air contaminants") that cause air-quality-related issues such as smog and acid rain. These contaminants include sulphur oxides, nitrogen oxides, particulate matter, volatile organic compounds, carbon monoxide and ammonia. 2014 is the most recent year for which emissions data is available.