

Technical Standards and Safety Authority

1.0 Summary

In 1997, the Government of Ontario established the Technical Standards and Safety Authority (TSSA) with a mandate to promote and enforce public safety in four specific sectors on its behalf. The TSSA is responsible for ensuring that devices such as elevators, amusement rides, boilers, power plants, and companies that store, transport and sell fuels such as gasoline, natural gas and propane operate safely. It is responsible as well for ensuring that upholstered and stuffed articles sold in Ontario, such as toys, mattresses and furniture, are made with new and clean filling materials, and that their labels correctly describe their contents. The TSSA is to promote and enforce public safety through its four safety programs:

1. Fuels Storage and Handling (Fuels);
2. Boilers and Pressure Vessels and Operating Engineers (Boilers and Pressure Vessels);
3. Upholstered and Stuffed Articles; and
4. Elevating Devices, Amusement Devices and Ski Lifts.

The TSSA is responsible for registering, licensing and inspecting the manufacturing, installation, maintenance and operation of the devices and companies it regulates. The TSSA also certifies technicians who work in the industries it regulates. It can shut down unsafe devices and prosecute companies

that do not comply with safety laws. The TSSA is self-funded through the fees that it charges to the organizations it regulates—it does not receive any government funding.

According to the memorandum of understanding between the Ministry of Government and Consumer Services (Ministry) and the TSSA, the Ministry is responsible for overseeing the TSSA. We found, however, that the Ministry has not ensured that the TSSA is actually accomplishing its mandate. For example, we found cases where the TSSA has focused on areas where it can recover its costs even though its activities have little effect on public safety, and we found other areas in which the TSSA does not generate revenue from licensing fees and where it has done little to enforce public safety, even though risks to public safety exist.

We also found that the TSSA's own current oversight processes are not fully effective in ensuring public safety. For example, the TSSA has not developed a clear, evidence-based decision-making framework for deciding when to implement periodic inspection programs, and could not explain why it does not periodically inspect some areas in the fuel sector, such as pipelines, compressed natural gas stations and propane distributors. The TSSA's computer system is outdated and contains inconsistent and incomplete information about the safety status of devices and businesses that it regulates. For example, the TSSA's licensing system does not communicate with the system that captures

inspection information; as a result, in 2018, the TSSA renewed the operating licences of over 300 elevators that at the same time were still shut down by the TSSA for being unsafe to operate.

The TSSA also does not have consistent inspection standards that all inspectors are required to follow. Its inspectors do not have checklists to help them complete and document their inspections. Also, some of the information that the TSSA reports to the public and the provincial government is inaccurate.

As a result of these operational issues, the TSSA has not fulfilled all of its responsibilities under the *Technical Standards and Safety Act, 2000* (Act).

Among our significant findings:

Fuels Sector

- **Despite risk of soil and water contamination and two oil pipeline leaks that occurred in 2013, the TSSA does not inspect pipelines.** The TSSA does not perform inspections of oil and natural gas pipelines, but instead relies on the pipeline operators to conduct their own inspections. Once every five years, it audits the pipeline operators' inspection records. Although two pipeline leaks in 2013 were caused by external corrosion that the pipeline operators failed to identify, the TSSA has not updated its practices for reviewing pipeline operators and still does not inspect pipelines. In comparison, we noted that the Alberta Energy Regulator conducts periodic inspections of Alberta's pipeline sites using a risk-based approach based on factors that include a pipeline operator's performance and compliance history, and sensitivity of the location (for example, proximity to bodies of water).
 - **The TSSA does not inspect private fuel storage sites that pose a threat to source water intakes.** Since 2015, over 120 fuel spills on private fuel storage sites have been reported to the TSSA. But the TSSA has not started to inspect private fuel storage sites that pose a threat to source water intakes
- even though it committed to doing so in 2014, following our audit of the Source Water Protection Program. Source water is the water supply that municipalities, individuals and industries draw from to provide water for drinking and other essential purposes.
- **TSSA inspection practices for companies that install and maintain fuel-burning equipment leave many of their technicians' jobs uninspected.** Faulty installation and maintenance of fuel-burning equipment, such as furnaces and water heaters, are responsible for many reported carbon monoxide releases. Over the last eight years, about 2,500 carbon monoxide releases have been reported to the TSSA, causing 14 deaths and almost 350 injuries. Our review of TSSA data found that about 950, or 40%, were caused by improper installation and maintenance of fuel-burning equipment. However, the TSSA never inspects jobs completed by many technicians because the jobs it inspects are pre-selected by the companies that employ the technicians. We have also found that many inspections are not properly documented.
 - **The TSSA is aware that some oil distributors are delivering oil into leaking tanks and tanks that pose a high risk of carbon monoxide releases but has done nothing to deal with this safety hazard.** Since October 2010, as part of a pilot inspection program and investigations of reported oil spills, the TSSA has inspected 18 of Ontario's 158 fuel oil distributors and found that four of them were delivering oil into 16 tanks that were leaking oil; some posed a high risk of carbon monoxide release due to improper ventilation. Another three distributors were delivering oil into 29 tanks that the TSSA found to be unsafe, but were not yet leaking oil. However, despite knowing for the past several years that fuel oil tanks present a serious safety hazard, the TSSA had done nothing to address this issue. According to the Ministry

of the Environment, Conservation and Parks, in the last five years there have been about 640 reported oil tank leaks resulting in an estimated release of 153,000 litres of fuel oil into nearby land and water.

- **The TSSA is not ensuring that abandoned fuel sites are cleaned up, increasing the risk of environmental contamination.** The TSSA is responsible for ensuring that owners of fuel storage sites remove the fuel handling equipment and storage tanks after they cease operations, but we found that, in cases where the owner has abandoned the site and cannot be located, it is not ensuring that these sites are cleaned up, because there is no one to recover the costs of the cleanup from. As a result, whatever fuel contamination there is at the site remains. Nothing will be done until contamination spreads outside the boundary of the private property. Once this happens, the Ministry of the Environment, Conservation and Parks becomes responsible for cleaning up the contamination. At the time of our audit, the TSSA had identified about 300 abandoned fuel storage sites with a total of 740 fuel tanks; most were old abandoned gas stations.

Boilers and Pressure Vessels Sector

- **For almost 20 years the TSSA has done little to enforce and promote the safety of approximately 65,000 operating boilers and pressure vessels.** Although the TSSA reviews the manufacturing designs of new boilers and pressure vessels before their production, and then inspects and certifies them before they are sold, for almost 20 years the TSSA has done little to enforce and promote the safety of approximately 65,000 installed and operating boilers and pressure vessels. The TSSA told us that these devices are being inspected by insurers, but it does not know how many devices operate in Ontario, where they are located, if insurers are actually inspecting them and their safety status.

Upholstered and Stuffed Articles Sector

- **The Upholstered and Stuffed Articles safety program has not been effective at enforcing public safety.** While TSSA inspectors inspect product labels that are required to provide an appropriate description of the product's contents, they seldom inspect the product's contents to ensure they match the label. In addition, when the TSSA finds a mislabelled article that it deems to be a risk to the public, it orders the inspected retailer to remove the article from sale—however, we found that the TSSA does not check whether the same mislabelled article is sold in other stores in Ontario or online. During our audit, we were able to purchase from other stores the same mislabelled articles that the TSSA ordered to be removed from sale at locations it inspected. Also, less than two years after the TSSA ordered inspected stores to immediately stop selling certain mislabelled articles, we were able to purchase one out of every two of these mislabelled articles from the same inspected stores. Due to errors in the TSSA's inspection scheduling system, it has never inspected about half of the registered businesses located in Ontario.

Elevating Devices

- **The TSSA has not been provided with strong enough enforcement powers to deal with large elevator maintenance companies.** A small number of these companies dominate Ontario's market and for years have been failing to maintain most of Ontario's operating elevators in accordance with safety laws. In 2018, just over 80% of elevators failed their TSSA inspection, mostly because maintenance and safety work required by law was not done on time. The TSSA has tried with little result to have these large elevator maintenance companies perform required maintenance and safety tests. It has repeatedly prosecuted the same large maintenance

company, resulting in guilty verdicts and fines over \$1 million, but in 2018, 93% of the inspected elevators maintained by this company in regions related to the prosecutions failed to pass their latest TSSA inspection. Five of these elevators are located in a Toronto hospital. Neglected maintenance over time can result in the elevators not levelling properly with the floor or can cause sudden upward or downward acceleration.

Agricultural Sector

- **Despite posing a safety risk to the public, some devices in the agricultural sector are exempt from the TSSA's oversight.** Ontario is the only province in Canada where boilers and pressure vessels used in agricultural operations such as greenhouses, mushroom farms, maple syrup farms and wineries are exempt from safety laws. Agricultural operations are also exempt from safety laws pertaining to elevating devices. In April 2018, the TSSA provided the Ministry with a report that recommended that the Ministry examine removing the agricultural exemption for boilers and pressure vessels, as it was concerned that the exemption “poses a safety risk to the public greater than the risk of other pressure equipment installations in Ontario.” Information provided to the TSSA by one large insurer revealed that from 2015 to mid-2017, six boilers exploded at agricultural sites exempt from safety laws.

Cross-Subsidization of Safety Programs

- **The TSSA continues to collect fees that exceed the cost of operating two of its four safety programs.** According to the memorandum of understanding between the Ministry and the TSSA, the fees that the TSSA collects should not exceed the cost of operating each safety program. Our analysis of the TSSA's financial information found that over the past five years, the Elevating Devices and the Upholstered and Stuffed Articles Safety Pro-

grams' fees were in surplus of almost \$30 million; we further found that the surplus was being used to cover the costs of the Fuels and the Boilers and Pressure Vessels Safety Programs. This cross-subsidizing of programs is inconsistent with the intent of the memorandum of understanding, which sets out appropriate guidelines for a fee-for-service agency.

TSSA 20/20

- **Early efforts to improve the TSSA's oversight processes were not effective; a new CEO will be responsible for making improvements.** In 2014, the TSSA recognized that its oversight processes and digital record-keeping system were outdated and could no longer support its mandate to promote and enforce public safety. In November of that year, the TSSA began an initiative called TSSA 20/20 to standardize and improve its registration, licensing and inspection processes, and its digital record-keeping. When it saw that the 20/20 initiative was not progressing as planned, in 2017 the TSSA's Board replaced the TSSA CEO with a new person who was hired in March 2018.

This report contains 19 recommendations, with 42 action items, to address our audit findings.

Overall Conclusion

Our audit concluded that the TSSA does not have the required oversight processes in place to be effective in promoting and enforcing public safety in the sectors it is responsible for regulating. The TSSA is not proactive in meeting its mandate and seldom takes the initiative to protect public safety in areas of the regulated sectors that it does not currently license and/or inspect, but where its oversight activities would help promote public safety.

The Ministry has not fulfilled its oversight responsibilities to ensure that the TSSA is actually accomplishing its mandate.

OVERALL RESPONSE FROM TSSA

The Technical Standards and Safety Authority (TSSA) appreciates the work done by the Office of the Auditor General of Ontario and will use the Auditor General's observations to help inform the transformation strategy it is developing.

The TSSA takes its responsibility for administering Ontario's public safety mandate extremely seriously, and has embarked on a major transformation strategy. In April 2018, the Board of the TSSA appointed a new President and CEO who has expertise in developing and implementing modern regulatory standards and practices. The organization is currently developing a new outcomes-based regulatory approach for effectively identifying risk, increasing compliance and promoting safety. The new approach will be built on:

- enhanced data collection and data analytics;
- evidence-based decision-making; and
- an uncompromising focus on harm reduction.

The organization is also re-engineering its business systems through its TSSA 20/20 project to improve its IT infrastructure and processes; support it in leveraging and reporting data in a consistently reliable manner; and enable greater customer service and transparency. The TSSA is also committed to strengthening its outreach and relationships with stakeholders, including government, the public and the entities it regulates, in order to better inform its decisions and build greater confidence in its regulatory approaches.

OVERALL RESPONSE FROM MINISTRY

The Ministry of Government and Consumer Services (Ministry) would like to thank the Auditor General and her staff for their work on the audit and recommendations. The Ministry welcomes the feedback on how the Technical Standards

and Safety Authority (TSSA) is performing and recommendations to strengthen the TSSA's operations and the Ministry's oversight, so Ontario can continue to have a strong record of public safety.

The Ministry recognizes the importance of the TSSA fulfilling its responsibilities under the Act in a manner that protects, enhances and improves public safety.

The Ministry takes its oversight of the TSSA's responsibilities seriously and is committed to examining areas where it can enhance its oversight processes to provide greater assurances that the TSSA is meeting its public safety mandate in the interests of the people of Ontario.

The Ministry agrees with the recommendations directed to the Ministry and will also work closely with the TSSA and the Ministry of the Environment, Conservation and Parks to address each of the other recommendations where the Auditor General has recommended that the TSSA work with the ministries.

For those recommendations directed to the TSSA, the Ministry will request that the TSSA provide an implementation plan that outlines the specific steps the TSSA plans to take to implement each recommendation and to ensure they are addressed in a timely and responsive manner. The Ministry will closely monitor and track the TSSA's implementation of each recommendation.

2.0 Background

2.1 Overview of the Technical Standards and Safety Authority and Safety Laws

In 1997, the Government of Ontario created the Technical Standards and Safety Authority (TSSA) with a mandate to administer and enforce public safety in certain areas on its behalf. The TSSA's

authority and mandate were further defined under the *Technical Standards and Safety Act, 2000* (Act).

The TSSA acts as both a regulator and an advocate of safety standards in Ontario, in that it is responsible for enforcing the Act and its regulations and promoting activities to continuously improve public safety. The Act requires the TSSA to regulate the following four sectors:

1. Fuels Storage and Handling (Fuels);
2. Boilers and Pressure Vessels and Operating Engineers (Boilers and Pressure Vessels);
3. Upholstered and Stuffed Articles; and
4. Elevating Devices, Amusement Devices and Ski Lifts.

Figure 1 lists the devices and types of companies or facilities that are required to be regulated, and the estimated numbers of the devices and facilities as of April 1, 2018.

Seventeen regulations under the Act specify safety rules that must be followed in each of the four sectors. In addition, the regulated devices, companies or facilities in each of the four sectors must adhere to specific industry-developed safety codes and standards that the TSSA has adopted under the Act. These industry safety codes and standards provide a large number of specific technical details on how a regulated device or facility should be built, installed and operated, and how a regulated company should be run. In our report we refer to the Act, its 17 regulations and the many applicable industry-specific safety codes and standards together as “safety laws.”

The TSSA charges fees to the organizations it regulates and does not receive any government funding.

The TSSA employs over 400 people, whose main responsibility is to ensure compliance with the safety laws. To accomplish this task, the TSSA is responsible for registering, licensing and inspecting the manufacturing, installation, maintenance and operation of the devices and companies it regulates. It also is responsible for licensing and inspecting facilities that store and handle fuels such as gasoline, natural gas and propane. The

TSSA also inspects upholstered and stuffed articles sold in Ontario to check that they are labelled correctly and are made from new, clean materials, and that their manufacturers are registered with the TSSA. The TSSA can shut down unsafe devices and prosecute companies that do not comply with safety laws.

Additionally, the TSSA certifies technicians who work in the industries it regulates. In most cases, only TSSA-certified mechanics and licensed companies can install, maintain and fix devices and facilities listed in **Figure 1**.

The Ministry of Government and Consumer Services (Ministry) is responsible under its memorandum of understanding with the TSSA for monitoring whether the TSSA is fulfilling its mandate. It can also recommend legislative and or regulatory changes to the Ontario Government.

The TSSA is overseen by a 13-member board of directors, of which seven are elected and six appointed by the Ministry. In **Appendix 1** we present the TSSA’s organizational structure as of October 2018. In addition, the TSSA has established an Industry Advisory Council for each of nine regulated devices or facilities; **Appendix 2** lists these councils and their membership. Each Industry Council consists of industry representatives whose main responsibilities are to:

- identify safety issues in their respective industries;
- provide guidance to the TSSA for their resolution; and
- provide input and advice regarding the TSSA’s service delivery.

The TSSA has also established a Consumers Advisory Council, which provides guidance on any matter relating to the TSSA that has an impact on the public or on consumers of products and/or devices regulated by the TSSA.

2.2 Licensing and Inspection

The Ministry is responsible for introducing new safety laws, including licensing requirements for

Figure 1: Devices and Facilities Regulated by the TSSA

Source of data: Technical Standards and Safety Authority (TSSA)

Safety Program	Regulated Devices/Facilities	Inventory as of April 2018
Elevating Devices, Amusement Devices and Ski Lifts	Elevating devices	59,654
	Ski lifts	256
	Amusement rides	2,468
Fuels Storage and Handling	Propane facilities ¹	6,825
	Propane distributors	Unknown ²
	Liquid and gaseous fuel facilities ^{3,4}	4,358
	Fuels installation and maintenance companies	9,100
	Fuel oil distributors ⁴	158
	Tanker trucks ⁴	4,000
	Private fuel storage sites ⁴	4,100
	Oil and natural gas pipelines (km)	111,300
Boilers, Pressure Vessels and Operating Engineers	Boilers and pressure vessels	Unknown ⁵
	Operating plants ⁶	3,280
Upholstered and Stuffed Articles	Registered companies ⁷	13,164

1. Includes propane filling plants, refill stations, and cylinder exchange locations.
2. The TSSA does not have an accurate listing of all propane distributors operating in Ontario (see Section 6.1.5).
3. Includes gas stations, bulk storage plants and compressed natural gas stations.
4. At the time of the audit, the TSSA did not have a formal inspection program in place to conduct periodic inspections of compressed natural gas stations, propane and fuel oil distributors, tanker trucks and private fuel storage sites.
5. Includes equipment that produces and distributes hot water, steam, compressed air and other compressed liquids. The TSSA does not have an accurate listing of all boilers and pressure vessels located in Ontario (see Section 9.0).
6. Includes refrigeration, steam, hot water, compressor and power plants.
7. Includes retailers, importers, distributors, suppliers and manufacturers.

devices and facilities. However, the Act provides the TSSA with broad inspection powers allowing it to inspect both licensed devices and facilities, and also those unlicensed devices and facilities that are subject to the Act. After a device or facility starts to operate, the TSSA is supposed to conduct periodic inspections to make sure that it is being properly maintained and is operating in compliance with applicable safety laws.

The frequency of the TSSA’s periodic inspections varies among different devices and facilities. For instance, elevator inspections are risk-based. Elevators are inspected from once every six months to once every five years; this frequency is based primarily on the results of the past three inspections. In contrast, some devices and facilities such as liquid fuel facilities are inspected on a fixed

cycle, once every three years. **Figure 2** lists the type of devices and companies/facilities that the TSSA inspects and their inspection frequency targets; **Figure 3** lists the number of actual periodic inspections that the TSSA has conducted over the past five years in each of the regulated sectors. A single inspection can identify a number of safety issues (non-compliances) and yield multiple inspection orders requiring compliance with applicable safety laws. Each order describes the safety problem and sets a deadline for achieving compliance. We discuss this further in **Section 2.4**.

2.3 Enforcement

Figure 4 lists the current enforcement actions that The TSSA can undertake for non-compliance with

Figure 2: Inspection Frequency Target by Safety Program Area

Source of data: Technical Standards and Safety Authority (TSSA)

	Safety Program Area	Inspection Frequency Target
Elevating Devices, Amusement Devices and Ski Lifts	Elevators and escalators	6 months to 5 years
	Amusement rides	Annually
	Ski lifts	6 months to 2 years
Fuels Storage and Handling	Propane facilities	6 months to 3 years
	Liquid fuels	Once every 3 years
	Fuels installation and maintenance companies ¹	Once every 3 years
	Pipeline operators ²	Once every 5 years
Boilers, Pressure Vessels and Operating Engineers	Boilers and pressure vessels	1 to 3 years
	Operating plants	6 months to 2 years
Upholstered and Stuffed Articles	Registered companies ³	1 to 3 years

1. The TSSA conducts inspections of companies that employ technicians who perform installation and maintenance work on fuel-burning appliances such as furnaces and water heaters (see Section 6.4.1).
2. The TSSA does not conduct inspections of pipelines; however, pipeline operators' records of inspections, pipeline's incident history, operation manuals and employee training records are reviewed once every five years by TSSA (see Section 6.3.1).
3. Includes retailers, importers, distributors, suppliers and manufacturers.

Figure 3: Actual Inspections Conducted by the TSSA

Source of data: Technical Standards and Safety Authority (TSSA)

Sector	2013/14	2014/15	2015/16	2016/17	2017/18
Elevators and Escalators	16,919	20,272	11,498 ¹	11,482	14,607
Amusement Devices and Ski Lifts	1,670	1,952	2,046	1,958	2,100
Fuels Storage and Handling	4,884	5,173	4,084	3,865	4,207
Boilers and Pressure Vessels	431	567	514	506	480
Operating Engineers	2,720	2,753	2,701	2,238	2,433
Upholstered and Stuffed Articles	2,083	2,527	3,062	2,201 ²	1,808

1. The decrease in the number of inspections from prior year is a result of the TSSA's adoption in 2015 of a risk-based inspections approach for elevators and escalators, which reduced the inspection frequency for low- and medium-risk devices.
2. The TSSA did not fill two vacant inspector positions that year, because the Ministry of Government and Consumer Services was in the process of reviewing the Upholstered and Stuffed Articles safety laws with the possibility of repealing some or all of the laws. As a result, the number of inspections conducted decreased the 2015/16 fiscal year.

safety laws, in their order of severity. The TSSA identifies the majority of non-compliance issues during inspections, although an investigation of a reported incident can also prompt an enforcement action. The owner of a device or company/facility regulated by the TSSA must report to the TSSA all safety incidents involving the device or company/facility that result (or could result) in adverse consequences to a person or property. Depending on the severity of the incident, the TSSA will

investigate to determine if the cause of the incident was non-compliance with applicable safety laws.

Figures 5 and 6 show the number of orders the TSSA issued to address non-compliance and the periodic inspection compliance rates by sector over the past five years.

On May 9, 2018, the Government approved changes to the *Technical Standards and Safety Act, 2000* that allow the TSSA to issue fines for non-compliance with safety laws. At the time of

Figure 4: Enforcement Actions the TSSA Is Authorized to Take

Source: Technical Standards and Safety Authority (TSSA)

Enforcement Action	
Issuance of safety orders	The TSSA issues inspection orders when non-compliance with safety laws is identified during an inspection. An inspection order is a directive that requires the owner/operator of the device or company/facility to complete specified work within a set number of days to become compliant with safety laws.
Shutdown	The TSSA can immediately shut down a device or facility if there is an immediate risk to public safety.
Licence suspension	The TSSA has the authority to revoke the licence of a device, facility, company or mechanic when it identifies non-compliance with safety requirements.
Prosecution	The TSSA has the ability to prosecute offences under the <i>Technical Standards and Safety Act, 2000</i> .

Figure 5: Issued Orders to Address Non-compliance

Source of data: Technical Standards and Safety Authority (TSSA)

Safety Program	2013/14	2014/15	2015/16	2016/17	2017/18
Elevators and Escalators	52,277	74,855	61,716	63,829	87,414
Amusement Devices and Ski Lifts	1,722	2,155	1,968	2,418	2,750
Fuels Storage and Handling	35,781	35,702	40,259	36,721	47,038
Boilers and Pressure Vessels ¹	20	11	7	7	7
Operating Engineers	3,964	4,600	3,322	2,702	3,269
Upholstered and Stuffed Articles	21,973	21,973	21,312	12,332 ²	13,740

1. The TSSA has not been fulfilling its legislative mandate since 2001. Most devices are not inspected by the TSSA. (See Section 9.0 for further discussion.)
2. The TSSA did not fill two vacant inspector positions because the Ministry of Government and Consumer Services was in the process of reviewing the regulation with the possibility of repealing it. As a result, the number of inspections conducted after fiscal year 2015/16 decreased.

our audit, the Ministry had not yet revised the regulations to allow the TSSA to implement this enforcement action.

2.4 Deadlines to Address Non-compliance with Safety Laws

The TSSA’s orders set deadlines for achieving compliance with safety laws according to the severity of the identified safety issue, or non-compliance. The TSSA classifies the risks associated with non-compliance as high, medium or low, based on the impact on public safety. For instance, safety problems pertaining to critical mechanical parts of an elevator would be classified as high risk, and must be addressed within seven days. However, if there is an immediate risk to public safety, the TSSA would immediately shut down the elevator until it is fixed.

Figure 7 lists the compliance deadlines in accordance with the severity of the risk that could result from non-compliance. The TSSA conducts follow-up inspection(s) until all the non-compliances noted during its inspection are corrected.

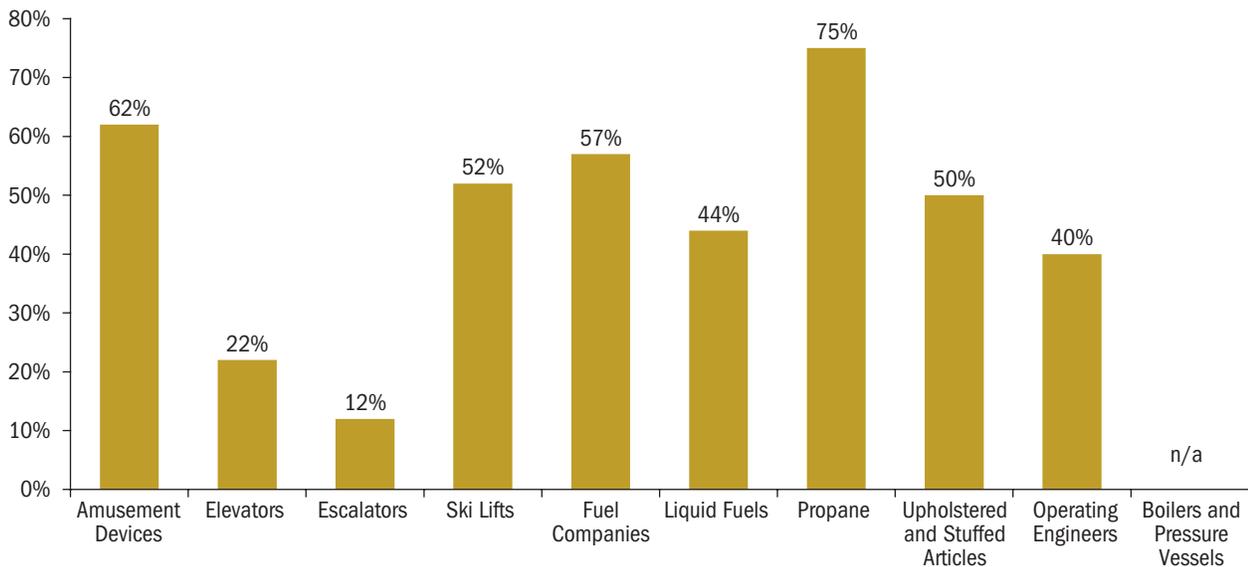
3.0 Audit Objective and Scope

The objective of our audit was to assess whether the Technical Standards and Safety Authority (TSSA) has effective processes and systems in place to:

- carry out its mandated safety activities, including registration, licensing, inspection, certification and investigation in accordance with the *Technical Standards and Safety Act, 2000* (Act), its 17 regulations and applicable

Figure 6: Inspection Compliance Rate (Average) by Regulated Sector, 2014–2018

Source of data: Technical Standards and Safety Authority (TSSA)



Note: The compliance rate is the number of inspections that did not identify any instance of non-compliance with safety laws divided by the total number of inspections; the compliance rate for the Boilers and Pressure Vessels sector is not available because the TSSA does not collect this information (see Section 9.0).

Figure 7: Maximum Number of Days Allowed to Comply with Safety Laws (Days)

Source of data: Source: Technical Standards and Safety Authority (TSSA)

Sector	High Risk	Medium Risk	Low Risk
Elevators and Escalators	7	30	90
Amusement Rides	Immediately	7	30
Ski Lifts	Immediately	15	30
Fuel Facilities	10	60	90
Boilers, Pressure Vessels and Operating Engineers	5	20	30
Upholstered and Stuffed Articles	Immediately remove from sale	30 Follow-up inspection	30 No follow-up inspection

industry-specific safety codes and standards established to protect the safety of Ontarians and the environment;

- ensure that its resources are sufficient, and deployed efficiently and effectively to carry out its mandated activities; and
- measure and publicly report on the effectiveness of the activities it provides to protect the safety of Ontarians.

In addition, we assessed whether the Ministry has oversight processes in place to ensure that the

TSSA effectively delivers on its mandated responsibilities to protect the safety of Ontarians.

Before starting our work, we identified the audit criteria we would use to address our audit objective. These criteria were established based on a review of applicable legislation, policies and procedures. Senior management at the TSSA and the Ministry of Government and Consumer Services reviewed and agreed with our objective and associated criteria as listed in **Appendix 3**.

Our audit examined the TSSA's four key safety programs: Fuels Storage and Handling (Fuels); Boilers and Pressure Vessels and Operating Engineers (Boilers and Pressure Vessels); Upholstered and Stuffed Articles; and Elevating Devices, Amusement Devices and Ski Lifts. We conducted our audit from January 2018 to August 2018, and obtained written representation from the TSSA and the Ministry of Government and Consumer Services that, effective November 8, 2018, they have provided us with all the information they were aware of that could significantly affect the findings or the conclusion of this report.

In conducting our work, we reviewed documents and interviewed staff at the TSSA, including senior management, supervisors and inspectors. We also conducted interviews with the Chief Safety Risk Officer, and all 10 of the TSSA's advisory councils. In addition, we engaged in discussions with key Ministry personnel who regularly interact with the TSSA. Lastly, to observe how the TSSA conducts its inspections, we accompanied its inspectors on a number of inspections in each of the safety program areas. In July and August 2018, with the TSSA's assistance, we conducted a number of unannounced inspections of amusement parks and street festivals. In June 2018, we visited a number of retail stores and attempted to purchase upholstered and stuffed products that the TSSA had ordered these stores to immediately pull from sale before that date.

As part of our review of the TSSA's Fuels program, we met with the Ministry of the Environment, Conservation and Parks to discuss that ministry's role in overseeing the fuels storage and handling sector. We also contacted the Ontario Energy Board to gain an understanding of its oversight of provincial pipelines. As part of our review of the Boilers and Pressure Vessels Safety Program, we consulted with major insurance companies in Ontario that are responsible for insuring these devices. During our work on the Elevating Devices Program, we spoke with representatives of four

large elevator maintenance firms operating in Ontario to gather their perspectives on the sector.

The documents we reviewed included current safety laws in place that guide the TSSA's safety programs, internal policies and procedures, minutes from advisory council meetings, briefing documents to the Ministry and inspection reports. We also collected and analyzed data from the TSSA's information system on past inspection results, and its inventory of licensed devices and facilities.

We conducted a jurisdictional scan to identify best practices in other provinces as well as in Canada federally.

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

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

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

4.0 Detailed Audit Observations: Ministry Oversight

4.1 Ministry Does Not Regularly Review the TSSA's Inspection and Licensing Activities

We found that the Ministry of Government and Consumer Services (Ministry) has not been effectively overseeing the TSSA's performance and assessing whether the TSSA is accomplishing its mandate. For example, the Ministry does not regularly collect sufficient operational information to review the TSSA's licensing and inspection activities, so it does not fully know what the TSSA inspects, how many inspections the TSSA performs each year, and the quality of these inspections. So, for example, the Ministry was not aware that the TSSA was not periodically inspecting propane cylinder exchange locations until we brought this to its attention, as we discuss in **Section 6.1.6**.

The Ministry informed us that it reviews annual reports, including the Safety Report published each year by the TSSA, to assess the TSSA's performance; the Ministry also tables the TSSA's annual report in the Legislative Assembly. However, as we discuss in **Section 5.3**, we found that information contained in these reports is incomplete and some information is presented inaccurately. The Ministry does not verify that information published by the TSSA in its reports is accurate and complete. For example, the Ministry was not aware that the TSSA was not reporting a majority of the fuel incidents in its annual Safety Reports.

4.2 TSSA Performance Indicators and Targets Are Not Aimed at Driving Improvements in Public Safety

Periodic inspection pass rates are a key safety performance indicator that the TSSA uses to evaluate itself on its mandate to improve public safety. The TSSA's target for its periodic inspection pass rate is to be "equal to or better than the previous fiscal year." Being "equal to" the previous fiscal year provides no motivation for the TSSA to improve the periodic inspection pass rates in the sectors that it regulates. For example, in 2017 the TSSA reported that its Elevating Devices Safety Program had met its performance target because the inspection pass rate of 24% was equal to that of the previous fiscal year—despite the fact that the reported pass rate is very low and since 2013 has worsened by 8%.

4.3 Inadequate Ministry Oversight Highlights Weaknesses in the TSSA's Operating Model

Lack of meaningful policy direction beyond the Act and memorandum of understanding from the Ministry has left the TSSA to define much of its own mandate. In practice, the TSSA has defined its mandate by the fee-for-service model under which it operates. The fee-for-service model ideally should lead to an efficient agency that takes no government money and whose income is commensurate with the level of its activities in the public interest. That is, the fees the TSSA charges for its registration, licensing and inspection activities are meant to provide it with both the funding and the incentive to take a proactive approach to its public safety mandate. Instead, we have found cases where the TSSA focuses on areas where it can recover its costs even though its activities have little effect on public safety, and other areas in which the TSSA does not generate revenue from licensing fees and where it has done little to promote and enforce public safety, even though risks to public safety exist.

For example, as we discuss in **Section 5.6**, the Ministry allowed the TSSA to continue to collect surplus fee revenues from the Upholstered and Stuffed Articles Safety Program even though the way it enforces this program has little or no effect on public safety. Meanwhile, as we discuss in **Section 6.2**, the TSSA has not taken a proactive approach to its mandate with regard to fuel storage sites and the risks they pose. Without clear direction from the Ministry and effective oversight, the TSSA has avoided dealing with some of the more costly safety issues it is responsible for.

The Ministry also has not given the TSSA sufficient powers to enforce all of its safety orders. As a result, the TSSA has been unable to deal with the problem of worsening elevator safety, which we discuss in **Section 7.1**. The TSSA's repeated prosecutions of one delinquent elevator maintenance company have resulted in \$1 million in fines that have had little or no effect: in 2018, 93% of the inspected elevators maintained by this company in regions related to the prosecutions failed to pass their latest TSSA inspection. The recent amendments that the Ministry made to the *Technical Safety and Standards Act, 2000* are supposed to give the TSSA additional powers to issue fines, but details on the size of the fines have not yet been announced at the time of our audit.

RECOMMENDATION 1

To ensure that the TSSA is meeting its mandate to promote and enforce public safety in all regulated sectors under the *Technical Standards and Safety Act, 2000*, and its regulations and associated codes and standards, we recommend that the Ministry of Government and Consumer Services:

- establish performance indicators and targets for the TSSA that drive improvement in each of the regulated sectors;
- on a regular basis assess the TSSA's performance against these targets; and
- take corrective actions where necessary.

MINISTRY RESPONSE

The Ministry recognizes that effective oversight processes and measures are important tools to assess whether the TSSA is meeting its mandate under the Act and that there is an opportunity to improve its existing processes. The Ministry will work closely with the TSSA to review the memorandum with the goal of specifically responding to the findings by:

- establishing enhanced processes regarding the fees that the TSSA collects;
- establishing performance measurements and targets that drive improvements in each of the sectors that the TSSA regulates; and
- on a regular basis assessing the TSSA's performance against these targets.

5.0 Detailed Audit Observations: the TSSA's Performance of Its Mandate

5.1 Information Technology Deficiencies Impede the TSSA's Operations

5.1.1 The TSSA's Information Technology Is Outdated and Inefficient

We found that the TSSA's current computer system is outdated and that some of the information it contains is inaccurate. For instance, the system does not allow the TSSA to sort and analyze its inspection data to identify trends in non-compliance or the most frequent type of non-compliance in each regulated sector. The TSSA also cannot tell how long it takes to resolve non-compliance identified by its inspections. Inspection scheduling is done manually. The TSSA has not established data entry controls, so incorrect data is sometimes entered or data is entered into the wrong data fields; examples are incorrect or missing locations of

regulated devices and facilities, or type of incident (for example, “oil spill” entered as a facility name). Another problem is data duplication, as many of the same devices and facilities are input into the system multiple times.

In 2014, the TSSA recognized that its oversight processes and digital record-keeping system were outdated and could no longer support its mandate to promote and enforce public safety. In November of that year, the TSSA began an initiative called TSSA 20/20 to standardize and improve its registration, licensing and inspection processes, and its digital record-keeping. In 2017, when it saw that the 20/20 initiative was not progressing as planned, the TSSA’s board replaced the TSSA CEO with a new person, who was hired in March 2018.

5.1.2 The TSSA Unconditionally Renews Licences

We found that, with the exception of the propane sector, operating licence renewals for devices and companies that the TSSA regulates are not conditional on meeting any safety requirements. The TSSA automatically issues these licences when it receives payment for them. For example, the TSSA automatically issues the elevator operating licence that can usually be found posted inside the elevator cabin for a fee of \$120, 60 days before the old licence expires. It renews these licences even if the elevator is so unsafe that the TSSA has shut it down and it is still shut down at the time of renewal.

Our reconciliation of TSSA inspection and licensing records found that in 2018, the TSSA renewed the operating licences for just over 300 elevators that were still shut down by the TSSA as being unsafe to operate. The TSSA granted these renewals because the computer system it uses to process licence renewals is separate from the system it uses for inspections, and no one reconciles the information found in the two systems.

RECOMMENDATION 2

To further reduce the potential risks to public safety, we recommend that the TSSA:

- review and update its information technology systems;
- conduct a review of its renewal process for operating licences in the regulated sectors to determine if any licensed devices and companies should be required to meet specific conditions before their operating licences are renewed; and
- review all renewals of operating licences to ensure that licences of unsafe devices or companies or those that do not meet licensing conditions are not automatically renewed.

TSSA RESPONSE

The TSSA agrees with this recommendation. As a part of our 20/20 program, we are in the process of updating our information technology systems and processes; this includes reviewing and updating appropriate preconditions for issuing and renewing operating licences. The TSSA also will implement a review process to ensure that licences of unsafe devices, and of devices and companies that do not meet licensing conditions, are not automatically renewed.

5.2 The TSSA’s Chief Safety and Risk Officer’s Key Responsibilities Are Unclear

In an effort to increase the accountability of TSSA to government and enhance the transparency of the TSSA’s activities to the public, in 2010 the Ontario Government created a Chief Safety and Risk Officer (Safety Officer) position. The Safety Officer is to provide an independent review of the TSSA’s public safety activities and performance. The Safety Officer reports directly to the TSSA Board.

In February 2011, the TSSA hired its first Safety Officer. He left a year later and was replaced in July 2012 by the current Safety Officer.

We found that the Safety Officer contract limits the Safety Officer’s work to a maximum of 60 days per year at a daily rate of \$1,800. In addition, the contract gives only a vague description of the Safety Officer’s key responsibilities. The main responsibilities are outlined below, with our findings on how those responsibilities are being fulfilled:

- Review the adequacy and effectiveness of the TSSA’s public safety risk management system, policies and procedures: There was no documentation to indicate that any review had been undertaken.
- Review, analyze and report on the TSSA’s Annual Safety Performance Report: The Safety Officer’s review did not verify the accuracy of information presented in the report. The Safety Officer was not aware that the report was missing information (about 26,000, or 78%, of all fuel incidents that occurred between 2008 and 2017 were not reported).
- Review any safety matters that the Ministry or the TSSA’s Board may request: Since 2012, no requests have been made by the Ministry or the TSSA’s Board.
- Appraise the TSSA and report on the adequacy and effectiveness of the organization’s safety management framework to ensure compliance with safety laws: Not performed. Since 2001, the TSSA has not been fulfilling most of its responsibilities under the *Technical Standards and Safety Act, 2000* in regard to the safety of boilers and pressure vessels.

RECOMMENDATION 3

To help its Chief Safety and Risk Officer (Safety Officer) review and report on the TSSA’s public safety activities and performance more effectively, we recommend that the TSSA, together

with the Ministry of Government and Consumer Services, more clearly and precisely define the Safety Officer’s responsibilities and regularly evaluate the Safety Officer’s performance against established performance criteria.

TSSA RESPONSE

In collaboration with the Ministry of Government and Consumer Services, the Board of the TSSA will clarify and define the Safety Officer’s responsibilities. The TSSA will then regularly evaluate the Safety Officer’s performance against established performance criteria.

5.3 The TSSA’s Public Reporting on Safety Issues Is Incomplete and Inaccurate

Each year, the TSSA publishes its Safety Report containing key safety-related information on the sectors it regulates and its evaluation of its own performance. The Ministry and the Chief Safety and Risk Officer are supposed to use the Safety Report to monitor the state of safety of each regulated sector and to evaluate the TSSA’s performance. Key information contained in the report includes:

- the number of safety incidents reported to the TSSA in each regulated sector;
- the TSSA’s risk rating (low, medium or high) of regulated devices and facilities; and
- compliance rates on periodic inspections.

We reviewed the information contained in the latest (2017) Safety Report and found that it presents an inaccurate picture of the safety risks present in the sectors the TSSA regulates.

5.3.1 Fuel Incidents Are Underreported

The 2017 Safety Report says that between 2008 and 2017 there were 7,371 fuel-related safety incidents resulting in 47 fatalities and 627 injuries. However, when we reviewed the TSSA’s safety incident database, we found about 26,000 additional fuel safety

incidents for this period and seven related injuries that were not included in the report. Approximately 22,000 of the 26,000 incidents were related to damage to underground natural gas pipelines from excavation work; natural gas pipeline incidents accounted for more than 60% of all reported fuel-related incidents. The report was also missing approximately 3,600 reported fuel leaks and liquid petroleum spills that contaminated the environment. The TSSA informed us that, going forward, it will include this information in the Safety Report.

5.3.2 The TSSA's Risk Rating of Regulated Devices and Facilities Is Based on Incomplete Information

The TSSA determines the risk (low, medium and high) of its regulated devices and facilities primarily based on results of its past three periodic inspections. The Safety Report says that about 90% of devices and facilities regulated by the TSSA are low risk. However, we found that devices and facilities that have had fewer than three periodic inspections are not included in this result—meaning that the reported information does not include the potential risk posed by about 13,700 (or 25% of all) elevators, 605 (or 27% of all) escalators, 126 (or 34% of all) ski lifts, 901 (or 21% of all) liquid fuel facilities and 75 (or 7% of all) propane facilities.

5.3.3 Inspection Pass Rates for Each Safety Program Are Either Inaccurate or Not Reported

The inspection pass rates presented in the Safety Report for each of the four safety programs are either inaccurate or not reported. For example, the TSSA reports that the inspection pass rate for boilers and pressure vessels is 98%, but does not mention that this pass rate relates to less than 2% of all boilers and pressure vessels estimated to be operating in Ontario. As we discuss in **Section 9.1**, the inspection pass rate for the remaining 98% of the boilers and pressure vessels is unknown,

because the TSSA has not been collecting this information from insurers. The inspection pass rate in 2017/18 for liquid fuels was 43% and for propane was 74%, but for performance-measuring purposes, the TSSA combines these rates and reports 54%, calling the combined rate “Licensed Sites.” The inspection pass rate from the Upholstered and Stuffed Articles Safety Program, which has been about 50% over the past five years, is not reported at all by the TSSA.

RECOMMENDATION 4

To help ensure the effectiveness and transparency of its operations, we recommend that, on a regular basis, the TSSA publicly report the following information, after reviewing it for completeness and accuracy:

- the number and type of inspections performed in each safety program area;
- the inspection compliance rate in each safety program area, including the inspection compliance rate for each elevator maintenance company that operates in Ontario;
- the most common non-compliance issues identified in each safety program area;
- safety incidents reported by each safety program area; and
- the number and result of re-inspections completed in each safety program area.

TSSA RESPONSE

The TSSA agrees with this recommendation and will begin to publicly report available information suggested by the Auditor General of Ontario. The TSSA also commits to continually review the relevance of the publicly reported information.

5.4 Inspectors Are Not Supervised Effectively and Do Not Use Inspection Checklists

The TSSA's oversight of its inspectors includes a process to check if they are carrying out their inspections properly. Every inspector is accompanied each year on at least two inspections by his or her supervisor, who observes how the inspector conducts the inspections and awards a performance score. In the presence of a supervisor, inspectors are motivated to do well—and in fact, when we reviewed the inspection performance scores awarded in 2017, we found that nearly all inspectors had passed with almost perfect scores. A more effective oversight process for inspectors would be an after-the-fact re-inspection of their work. This would require TSSA inspectors to follow formal inspection standards to guide their work, and to complete inspection checklists against which the procedures they followed and the quality of their inspections could be evaluated.

Inspection checklists offer a systematic way of collecting information about what was inspected for later reference and evaluation. They also reduce the risk of missing something significant during an inspection. At a minimum, they provide evidence that an inspection was performed.

As part of our audit, we accompanied TSSA inspectors on a number of inspections in each of the safety program areas. We found that the inspectors were not using a checklist or any other document for guidance. For example, the TSSA elevator inspector did not collect information to show that every main mechanical part had been inspected and to record each part's condition. The only key information documented in the inspection report related to non-compliance with safety laws that the inspector identified.

When we asked the TSSA why it has not adopted any form of inspection checklist, it told us that its inspectors are trained on how to conduct their inspections and that it has not considered that a checklist is necessary.

RECOMMENDATION 5

To improve public safety by ensuring that the TSSA's periodic inspections are conducted with greater thoroughness and consistency, we recommend that the TSSA:

- implement checklists in all of its safety programs where practical;
- formalize its inspection standards, including those with respect to:
 - the type and amount of inspections that should be performed;
 - the number of samples that inspectors should select and inspect or test;
 - inspection pass and fail criteria; and
 - minimum record-keeping requirements; and
- implement an inspector oversight process that includes an after-the-fact review and/or re-inspection of completed inspections.

TSSA RESPONSE

The TSSA will adopt checklists wherever appropriate, and inspectors will be provided with comprehensive training on all standards and reporting documentation. The TSSA will also implement an inspector oversight process that will include the review of completed inspections.

5.5 No Continuing Education Requirement for Most TSSA-Certified Technicians and Mechanics

The TSSA examines and certifies most technicians who work in the sectors that it regulates. It also licenses the companies that these technicians work for. **Figure 8** lists the number of certificate holders in each regulated area. Individuals who successfully complete their exams and meet applicable experience requirements can apply to register with the TSSA and obtain a certificate, which is valid for a maximum of two years.

Figure 8: Regulated Trades and Number of Certificate Holders

Source of data: Technical Standards and Safety Authority (TSSA)

Regulated Trade	# of Certificate Holders*
Elevating device mechanic	3,767
Amusement device mechanic	652
Ski-lift mechanic	343
Operating engineer	11,811
Fuel technician	73,652
Boilers and pressure vessels inspector	143

* One person can hold more than one certificate. Active certifications as of January 2018.

A coroner's inquiry into the death of an elevator mechanic in 2005 recommended that the TSSA implement a continuing education requirement for elevator mechanics as a condition of recertification. In 2011, the TSSA adopted this recommendation for elevator mechanics, but has not adopted it for all the other mechanics/technicians who it certifies. During our audit, the TSSA informed us that it was in the process of implementing a continuing education requirement for ski-lift mechanics.

RECOMMENDATION 6

To reduce the risk to public safety and help ensure that licensed mechanics and technicians remain qualified, we recommend that the TSSA implement, where needed, a continuing education requirement as a condition of recertification.

TSSA RESPONSE

The TSSA recognizes that continuing education is an important tool to ensure that certificate holders stay current with new requirements, and it will adopt a continuing education requirement where appropriate.

5.6 The TSSA Continues to Collect Fees That Exceed the Cost of Operating Two of Its Four Safety Programs

According to the memorandum of understanding between the Ministry and the TSSA, the fees that the TSSA collects should not exceed the cost of operating each safety program, and any cross-subsidization should be reduced over time. We found, however, that this is not the case. Our analysis of the TSSA's financial information found that over the past five years, the Elevating Devices and the Upholstered and Stuffed Articles Safety Programs' fees were in surplus; we further found that the surplus was being used to cover the costs of the Fuels and the Boilers and Pressure Vessels Safety Programs. This cross-subsidizing of programs is inconsistent with the intent of the memorandum of understanding that requires the TSSA to attempt to match the fees collected in each program with the costs of administering that program.

Figure 9 shows the TSSA's revenue over its expenses by program area between the fiscal years 2012/13 and 2016/17. The fees collected from the Elevating Devices Program exceeded operating expenses by about \$18.5 million; fees collected from the Upholstered and Stuffed Articles Safety Program exceeded that program's operating expenses by about \$10 million. Over this same period, the Boilers and Pressure Vessels and the Fuels Programs posted a deficit of over \$12.7 million.

RECOMMENDATION 7

To ensure that fees charged reasonably reflect the cost of operating each specific safety program and that some safety programs are not being used to cover the costs of running other programs, we recommend that the TSSA conduct a review of its fee structure and publicly report the fee revenues collected from and costs of enforcement in each safety program area.

Figure 9: Revenue over Expenses by Safety Program Area, 2012/13–2016/17 (\$ 000)

Source of data: Technical Standards and Safety Authority (TSSA)

Safety Program	2012/13	2013/14	2014/15	2015/16	2016/17	Total
Elevating and Amusement Devices	831	4,227	6,102	4,587	2,750	18,497
Fuels Storage and Handling	(146)	(528)	(1,252)	(1,110)	(1,850)	(4,886)
Boilers, Pressure Vessels and Operating Engineers	(1,874)	(2,916)	(2,182)	(359)	(471)	(7,802)
Upholstered and Stuffed Articles	1,773	1,654	1,893	2,263	2,390	9,973
Total Excess/(Deficiency) of Revenue over Expenses	584	2,437	4,561	5,381	2,819	15,782

TSSA RESPONSE

The TSSA, in consultation with the Ministry of Government and Consumer Services, will conduct a review of its fee model to ensure that fees charged reasonably reflect the cost of operating each specific safety program. The TSSA will also begin to publicly report the fee revenues collected from and costs of enforcement in each safety program area.

In Ontario, there are about 6,800 locations where propane is stored or filled. This includes 947 propane refill stations that store propane in large tanks, and 131 bulk propane storage and filling plants similar to Sunrise. About 5,700 of these locations are gas stations and large retail stores where propane barbecue cylinders can be exchanged.

6.1.2 Safety Panel Recommends Risk and Safety Management Plans for TSSA Inspections

After the Sunrise explosion, in late August 2008, the Government appointed a panel of experts to recommend how propane could be handled more safely. In late 2008, the Propane Expert Panel recommended mandatory training of workers who handle propane, and that as a condition of having their facilities operating license annually renewed, large bulk propane storage and filling plants and refill centres submit to the TSSA the following:

- a Risk and Safety Management Plan (Risk and Safety Plan) prepared by an independent engineer (or by the facility operator, if the site capacity is below a specified volume) and approved by the local fire department;
- confirmation from the applicable municipality that the operation does not contravene any municipal by-laws;
- proof of insurance; and
- records of training for all employees handling propane.

6.0 Detailed Audit Observations: Fuels Storage and Handling Safety Program

6.1 Potential Safety Risks Poorly Managed in Propane and Liquid Fuels Sector

6.1.1 Sunrise Propane Plant Explosion

On August 10, 2008, a propane explosion occurred at a Sunrise Propane facility in Toronto. Propane is a flammable gas, stored pressurized in liquid form. Propane transfer poses a high risk of explosion if done incorrectly. The explosion was caused by a rupture in a hose used to perform a truck-to-truck transfer of propane, which is an illegal operation. Two people were killed as a result and about 12,000 had to be evacuated from the surrounding area.

The Risk and Safety Plan contains an analysis of hazards in the area surrounding the propane location, such as a dense population or the presence of schools or hospitals. It also contains a simulation of the potential damage to the area surrounding the propane location from a worst-case explosion, and estimates the number of people within this “hazard distance” as well as those within the maximum evacuation distance.

The panel indicated that the TSSA should incorporate information collected from the Risk and Safety Plan in its database to identify high-risk facilities and inspect them more frequently.

The panel also recommended that the TSSA develop a risk-based inspection approach for all locations that store propane, using information collected from the Risk and Safety Plans.

As part of our audit, we reviewed the TSSA’s response to the Propane Expert Panel’s recommendations.

6.1.3 TSSA Inspections Not Using Critical Information Reported to the TSSA

Since 2009, propane companies have been required to submit their Risk and Safety Plans to the TSSA as part of their annual licence renewal. The cost to prepare these plans for a larger facility by an independent professional engineer can range from an estimated \$15,000 to \$35,000 or more, depending on the size of the facility. The frequency of TSSA risk-based inspections of bulk propane storage and filling plants and refill centres ranges from six months to 36 months, depending on the risk score of the propane location. When we reviewed how the TSSA determines these risk scores, we found that the TSSA is not factoring in any of the information collected in the Risk and Safety Plans, contrary to the Propane Expert Panel’s recommendation. The Risk and Safety Plans contain information about the specific safety hazards associated with each propane location and the danger to surrounding communities.

We also found that not all of this critical information is even entered into the TSSA’s database. In 2015, seven years after the panel made its recommendation, the TSSA had gathered historical inspection data to implement a different risk-based inspection program where the risk of each propane location is established based on the results of the past three inspections. In our review of Risk and Safety Plans, we found that 162 propane locations rated by the TSSA as low risk all have propane tanks that are located less than 1 kilometre from high-risk institutions such as schools, day cares, hospitals, and nursing and retirement homes.

We asked the TSSA why since 2009 it has not been using information found in the Risk and Safety Plans to determine where the highest-risk propane facilities are located in Ontario and to inspect them more frequently. The TSSA told us that it had planned to use this information, but instead adopted the same inspection approach it uses for elevators.

RECOMMENDATION 8

To reduce the risk of potential incidents in the propane sector, we recommend that the TSSA adopt as soon as possible the Propane Expert Panel’s recommendation for its risk-based inspection program and use all relevant information found in the Risk and Safety Management Plans to establish a risk score used to determine propane facility inspection selection methodology.

TSSA RESPONSE

The TSSA agrees with this recommendation and will start to utilize in its risk-based periodic inspection program the information it collects in the Risk and Safety Management Plans.

Figure 10: Fuels Sector Regulated by TSSA

Source: Technical Standards and Safety Authority (TSSA)

Area ¹	Description	Licensed by TSSA	Periodically Inspected
Propane			
Bulk storage, filling plants	Storage locations where propane is stored in large storage tanks for transportation and distribution by tanker trucks	✓	✓
Refill stations	Locations where customers' propane cylinders or vehicle tanks are filled with propane	✓	✓
Cylinder exchange locations	Locations where propane cylinders are exchanged/sold; filled cylinders are often stored in cages for resale to the public at gas stations or other retailers	✓	No
Distributors	Transporters of propane from bulk storage or filling plants to customers (homeowners who use it for heating) or refill stations	No	No
Off-site storage locations	Sites outside of their licensed sites where large propane bulk storage and filling plants sometime store propane	No	No
Liquid and Gaseous Fuels			
Bulk storage plants	Storage locations where gasoline, or any petroleum product, is stored in large storage tanks for transportation and distribution	✓	✓
Gas stations	Locations where gasoline is sold and distributed to the fuel tanks of motor vehicles or portable containers	✓	✓
Fuel oil distributors	Transporters of fuel oil in tanker trucks from bulk storage plants to customers (homeowners who use it for heating) or gas stations	✓	No
Tanker trucks	Motor vehicles that carry liquid fuels such as gasoline or diesel	✓	No
Compressed natural gas stations	Locations that sell natural gas in a compressed form; commonly used by fleet vehicles	✓	No
Oil and natural gas pipelines ²	Pipelines used for the transmission and distribution of oil and gas throughout the province	✓	No
Private fuel storage sites ³	Private locations that store liquid fuels and are not open to the public; e.g., police stations, couriers, farms, car rental companies	No	No

1. All licensed locations/equipment are inspected by the TSSA when first put into service, as part of initial licensing.

2. Oil and natural gas pipelines are discussed in Section 6.3.1.

3. Private fuel storage sites are discussed in Section 6.2.1.

6.1.4 Decisions to Implement Licensing and/or Inspection Programs Are Not Always Based on Evidence or in the Public Interest

The *Technical Standards and Safety Act, 2000* (Act) provides the TSSA with broad inspection powers to inspect any fuel facilities and equipment that it deems necessary. The TSSA therefore has the ability to establish periodic inspection programs to ensure that the fuels sector in Ontario follows safety laws. Similarly, the TSSA can request the Ministry to introduce new licensing requirements.

Figure 10 shows facilities and equipment that are currently licensed and periodically inspected by the TSSA in the fuels sector.

When deciding what type of safety oversight to introduce and enforce, it is important to balance public safety with the costs of regulatory compliance, as the TSSA collects fees from those it licenses and inspects. Therefore, decisions to license and inspect need to be based on accurate information on potential safety risks and their potential impact on the public. The TSSA, as the day-to-day enforcer of safety laws, is in the best position to gather

information about potential safety risks present in the sectors that it regulates and then to use this information to support evidence-based decisions on how best to deal with the potential hazards.

When we reviewed the TSSA's licensing and inspection programs in the fuels sector, we found that the TSSA's requests to the Ministry for licensing and its decisions to implement inspection programs are not always based on accurate information about potential safety risks present.

We found that the TSSA has not developed a clear, evidence-based decision-making framework for deciding when to implement a periodic inspection program for the businesses that it licenses. In the same way, we found that the TSSA has not inspected any of the unlicensed businesses that must comply with safety laws to discover if they present a safety hazard to the public that would justify requiring them to be licensed and/or periodically inspected. The TSSA informed us that, in making its decisions, it considers past inspection results, incident history and inherent risks to assess the need for licensing and periodic inspection programs. However, as we explain in the sections that follow, we found that this has not always been the case.

6.1.5 The TSSA Not Monitoring Offsite Propane Storage Locations or Propane Distributors

Propane facilities are required to disclose to the TSSA in their Risk and Safety Plans if they are storing propane outside of their licensed sites. At the time of our audit, there were at least 11 active offsite propane storage sites in Ontario. The TSSA is required to ensure that these sites are storing propane safely and in compliance with safety laws. We found that the TSSA does not monitor the offsite storage locations, so compliance with applicable safety laws at these sites is not known.

We also found that the TSSA is not monitoring propane distributors to see if they present a safety hazard that would merit licensing and/or

an inspection program, even though in 2013, the TSSA asked the Ministry to introduce licensing for propane distributors. The TSSA could monitor and inspect propane distributors on its own authority, potentially contributing to public safety. The Ministry told us that the TSSA has not provided evidence that distributors present a potential safety risk that would merit licensing.

6.1.6 The TSSA Does Not Periodically Inspect Tanker Trucks, Compressed Natural Gas Stations and Propane Cylinder Exchange Locations

The TSSA could not provide us with any evidence or analysis to demonstrate and support its rationale for not regularly conducting inspections of certain other fuel facilities and equipment. We observed the following:

- The TSSA currently does not periodically inspect tanker trucks used to transport propane, gasoline, diesel and other liquid fuels. Tanker trucks are inspected only once at their initial licensing before they are put on the road. According to TSSA records, the fleet of tanker trucks licensed in Ontario is aging; at the time of our audit, 2,750, or about 70%, of about 4,000 licensed trucks had been put into service more than five years earlier. However, the TSSA has not gathered any information to determine if the older tanker trucks present a safety hazard that may merit additional licensing conditions for older trucks or a periodic inspection program.
- All compressed natural gas stations in Ontario are required to be licensed by the TSSA. At the time of our audit, the TSSA had licensed 240 active stations. However, we found that the TSSA has not inspected 163, or about 70%, of these operating stations in the last five years.
- The TSSA's inspection records indicate that it has not inspected 4,774, or about 85%, of locations where propane cylinders are

exchanged in the last five years. The Ministry told us that it believed that the TSSA is periodically inspecting these locations.

RECOMMENDATION 9

To help ensure that the TSSA's rationales for regulatory oversight are clearly based on evidence and its decisions balance public safety with the costs of regulatory compliance, we recommend that the TSSA establish a clear decision-making framework for when it is justifiable to:

- request the Ministry of Government and Consumer Services to license businesses operating in a specific sector;
- implement an ongoing risk-based periodic inspection program;
- reduce the frequency of inspections or eliminate inspections; and
- use other oversight methods, such as licensing conditions or voluntary registration.

TSSA RESPONSE

The TSSA will work toward developing a clear decision-making framework, which will utilize enhanced data collection and analytics to inform clear and consistent regulatory decisions. This new framework will include guidance on:

- making requests to the Ministry of Government and Consumer Services to license businesses operating in a specific sector;
- implementing an ongoing risk-based periodic inspection program;
- reducing the frequency of, and/or eliminating, inspections; and
- using oversight methods, such as licensing conditions or voluntary registration.

This new approach will also enable the TSSA to focus its efforts on the areas that need it the most.

6.1.7 The TSSA Is Aware That Some Oil Distributors Are Delivering Oil into Leaking Tanks but Has Done Nothing to Reduce This Safety Hazard

Fuel oil is used to heat homes as an alternative to natural gas. Spills or leaks from a fuel oil storage tank can result in fire or environmental contamination to land and nearby groundwater supply, posing serious health risks. To prevent these safety incidents, fuel oil distributors are not permitted to deliver fuel oil into tanks that are in poor condition and unsafe. In addition, fuel oil distributors are required to inspect the tanks to which they deliver fuel oil once every 10 years, and must retain their inspection records. As part of the inspection, among other things, the fuel oil distributors:

- check the oil tank for visible signs of rust or corrosion and for leaks or spills around the pipes that carry the oil from the tank into the home; and
- check if the tank is vented properly, to ensure there is no risk of carbon monoxide releases.

The TSSA is required to inspect fuel oil distributors to ensure they are inspecting fuel oil tanks and delivering fuel oil only into safe tanks. However, we found that the TSSA does not conduct periodic inspections of fuel oil distributors and does not collect any information from them to ensure they are inspecting the fuel tanks. At the time of our audit, 158 licensed fuel oil distributors were operating in Ontario. According to data obtained from the Ministry of the Environment, Conservation and Parks on reported leaks from fuel oil tanks in the last five years, about 640 leaks have resulted in an estimated release of 153,000 litres of fuel oil into nearby land and water.

In October 2010, the TSSA initiated a pilot inspection program to check if fuel oil distributors are inspecting the fuel tanks. As part of this pilot, by the end of 2011, the TSSA completed six inspections. Since then, the TSSA has also inspected 12 fuel oil distributors as part of investigating reported oil spills. We requested the TSSA to provide us with

all 18 inspection reports. The TSSA was not able to locate four of the reports and provided us with 14. Our review of the 14 inspection reports found that:

- Four oil distributors were delivering oil into 16 tanks that the TSSA found were very unsafe and required immediate attention. The tanks were leaking oil and some posed a high risk of carbon monoxide releases due to improper ventilation. Another three distributors were delivering oil into 29 tanks that the TSSA found to be unsafe, but were not yet leaking oil.
- Two distributors could not provide the TSSA with any inspection records. The inspection records of another five distributors were incomplete or illegible.

We asked the TSSA why, despite knowing for the past several years that fuel oil tanks present a serious safety hazard, it had done nothing to deal with this hazard. For instance, the TSSA could have started to collect inspection records from the oil distributors or could have inspected additional distributors. The TSSA told us it was planning to deal with this safety hazard but that other priorities had taken precedence.

RECOMMENDATION 10

To reduce the risk of fuel oil contamination from fuel oil tanks and hazardous carbon monoxide releases from fuel-burning equipment, we recommend that the TSSA as soon as possible:

- require fuel oil distributors to submit inspection reports of oil tanks they service to the TSSA as part of their annual licensing conditions; and
- together with the Ministry of Government and Consumer Services (Ministry), develop an action plan outlining the specific steps the Ministry and the TSSA plan to take with oil distributors and tank owners to improve the safety of oil tanks.

TSSA RESPONSE

The TSSA will review its existing oversight processes for fuel oil tanks, and based on the outcome of this review, will determine appropriate annual licensing condition requirements for fuel oil distributors. The TSSA will also develop and advance the specifics of an action plan with the Ministry of Government and Consumer Services to improve the safety of oil tanks.

6.2 Contamination from Fuel Facilities Allowed to Continue

6.2.1 The TSSA Was Asked to Inspect Private Fuel Storage Sites as Part of Source Water Protection Plans

In our 2014 audit of the Source Water Protection Program at the Ministry of the Environment, Conservation and Parks, we reported that fuel spills can cause significant contamination of source water, and that the cost of dealing with contaminated source water is on average 30 to 40 times more than preventing contamination in the first place. At the time of our 2014 audit, source water protection plans had identified over 4,700 threats to water intakes in various regions relating to the storage and handling of fuel.

In response to these threats, some source water protection plans proposed that the TSSA increase inspections of fuel storage tanks owned by businesses for their private use and located in areas close to water intakes. Businesses that operate vehicle fleets, such as trucking companies and car rental agencies, as well as operators of heavy machinery such as farmers, sometimes store large quantities of fuel in tanks on their private property for their own use.

6.2.2 The TSSA Never Started to Inspect Private Fuel Storage Sites Despite over 120 Reported Fuel Spills Since 2015

Before 2001, owners of underground fuel tanks were required to declare their tanks with the Ministry; however, in June 2001 the Government ended this requirement. TSSA records indicate that in 2001, there were about 4,100 private fuel storage sites with underground fuel tanks. Since the removal of the declaration requirement, the location of existing and newly installed tanks is no longer available.

In our 2014 audit, we reported that initially the TSSA did not agree to increase its inspections of fuel storage locations and asked that its name be removed from source water protection plans. It has the authority to do these inspections.

The Ministry of the Environment and the TSSA spent a significant amount of time in mediation and discussions on this issue. In November 2014, about the same time our 2014 audit of the Source Water Protection Program was to become public, the TSSA agreed to inspect private fuel storage locations that were identified as threats to the drinking water supply as part of the source water protection plan.

As part of our current audit, we investigated whether the TSSA had started to inspect private fuel storage sites, as it agreed to in November 2014. We found that in early 2015, the TSSA had a plan to start inspecting these sites, but it never actually conducted any inspections as planned. The TSSA said that it is difficult to locate these sites, as they are not required to be licensed.

Even though the TSSA does not periodically inspect private fuel storage sites, it investigates reported fuel incidents involving private fuel storage and can issue orders for any non-compliance with safety laws. In our review of the TSSA's incident data, we found that since 2015 there have been 123 reported fuel incidents involving private fuel storage sites. In 2017, the TSSA did an analysis of information gathered from its investigations of fuel spills during its inspections of fuel storage on

private properties and found that about 85% of the investigated sites were not in full compliance with applicable fuel storage safety laws.

RECOMMENDATION 11

To reduce the risk of contamination of source water, we recommend that the TSSA:

- work together with pertinent implementing bodies for source water protection plans and the Ministry of the Environment, Conservation and Parks on developing a plan to identify the location of private fuel storage sites that pose a significant threat to source water; and
- where further action is needed, establish a risk-based periodic inspection program for private fuel storage sites that pose a significant threat to source water.

TSSA RESPONSE

The TSSA agrees with this recommendation. The TSSA will work with the Ministry of the Environment, Conservation and Parks and pertinent source water implementing bodies to develop a plan to identify private fuel storage sites that pose a significant threat to source water intakes and will establish a risk-based periodic inspection program for private fuel storage sites that pose a significant threat to source water.

6.2.3 The TSSA Is Not Ensuring That Abandoned Fuel Sites Are Cleaned Up, Increasing the Risk of Environmental Contamination

Safety laws require owners of fuel storage sites to remove the fuel handling equipment, including the storage tanks, and clean up any fuel remaining on the site after they cease operations. Sites that are not restored properly can pose a risk of contamination to the surrounding area. Sometimes the owner of a fuel storage site has closed down

and abandoned the business without removing the tank or cleaning up the site. In these situations, when the TSSA cannot locate the owner, it has no recourse. The TSSA operates on a cost recovery basis, so it has no extra funds available to cover the cost of the cleanup or to safely remove tanks with any remaining fuel.

We met with the Ministry of the Environment, Conservation and Parks (Ministry of the Environment), which informed us that it becomes involved only when the contamination from a site spreads outside the boundaries of the site. Until then, the abandoned site is the TSSA's responsibility. However, we found that the TSSA attempts to locate the owner of an abandoned site for approximately 18 to 24 months. If it cannot, nothing will be done until the contamination spreads beyond the site and the Ministry of the Environment takes notice. At the time of our audit, the TSSA's records showed that there were about 300 abandoned fuel storage sites with a total of 740 fuel tanks, primarily old abandoned gas stations.

The Ministry of the Environment informed us that there has been an attempt to update the current memorandum of understanding, signed in 1997, with the TSSA to clarify and strengthen the wording describing its and the TSSA's responsibilities for abandoned fuel sites. We noted that negotiations between the TSSA and the Ministry of the Environment have been going on for over six years, with some progress made; however, no changes have yet been made to the memorandum and the problem of abandoned fuel sites remains unresolved.

RECOMMENDATION 12

To reduce the risk of contamination spreading on and beyond abandoned fuel sites, we recommend that the TSSA:

- update its memorandum of understanding with the Ministry of the Environment, Conservation and Parks and work together to develop and implement a centralized data-

base inventory of all abandoned fuel sites and a risk prioritization model to identify high-risk sites; and

- work together with the Ministry of Government and Consumer Services and the Ministry of the Environment, Conservation and Parks to develop a long-term funding strategy to remediate abandoned fuel sites.

TSSA RESPONSE

The TSSA is working to complete its updated and finalized memorandum of understanding with the Ministry of the Environment, Conservation and Parks. The TSSA is fully committed to providing on an annual basis to the Ministry of the Environment, Conservation and Parks a list of all fuel sites classified as abandoned for the previous year. The TSSA will work with the Ministry of Government and Consumer Services and the Ministry of the Environment, Conservation and Parks to further assess the issue of abandoned fuel sites and to explore funding options to address their remediation.

6.3 No Inspection of Oil and Natural Gas Pipelines

Pipelines are used to transport natural gas, gasoline, diesel, fuel oil and other fuels underground over long distances in both remote and populated areas. Companies that operate pipelines that start and end in Ontario are required to be licensed by the TSSA. Pipelines that are shorter than 20 kilometres and carry fuel other than gas are exempt from TSSA licensing requirements. However, these pipeline operators must still adhere to applicable codes and standards. At the time of our audit, 21 licensed pipeline operators were operating approximately 111,300 kilometres of pipelines under the TSSA's jurisdiction. **Appendix 4** lists these licensed pipeline operators.

6.3.1 The TSSA Audits Pipeline Operators but Does Not Inspect Their Pipelines

Safety laws require the TSSA to license pipeline operators, but do not prescribe how, and at what frequency, the TSSA should inspect their pipelines. The TSSA itself does not perform inspections of pipelines but instead relies on the pipeline operators to conduct their own inspections. Once every five years, the TSSA audits the pipeline operators' records of inspections and records of their pipelines' incident history, operation manuals and employee training requirements. A TSSA audit of a pipeline operator will include a review of these documents to ensure that they comply with the national standards published by the Canadian Standards Association that all pipeline operators in Canada must adhere to.

There have been two major pipeline leaks in Ontario since the TSSA's inception in 1997. In September 2013, a rupture occurred in Sarnia, releasing about 60,000 litres of diesel fuel into the environment. Some of the spilled fuel reached the St. Clair River. The rupture was caused by excessive external corrosion that the pipeline operator failed to identify. Earlier that year, in June 2013, another pipeline incident took place in Sarnia. This spill involved an unlicensed pipeline that was 1 kilometre long and was used to transfer crude oil between a refinery and a storage terminal. The pipeline failure was due to earlier damage caused to the external coating, which eventually resulted in corrosion from exposure to wet soil.

Despite the two pipeline leaks, the TSSA has not updated or changed its practices for inspecting pipeline operators or expanded its inspection program to include unregulated pipeline operators (those that operate pipelines that carry fuel other than gas and are less than 20 kilometres in length). The TSSA does not use a risk-based approach to determine how frequently a licensed pipeline operator should be audited and has not done any analysis to determine if it should inspect some pipelines. We found that despite major differences such

as the size, location, type and age of their pipelines, all pipeline operators are audited by the TSSA on the same frequency, once every five years. The TSSA was not able to provide us with any rationale for using a five-year audit interval. In comparison, the Alberta Energy Regulator conducts periodic inspections of that province's pipeline sites using a risk-based approach. The inspection frequency takes into account a number of factors, including the pipeline operator's performance and compliance history, sensitivity of the area where operations take place (for example, proximity to bodies of water), frequency of environmental incidents in the area, complexity of the operation, and risk if an incident happens.

RECOMMENDATION 13

To reduce the risk of pipeline safety incidents, we recommend that the TSSA:

- review its current oversight practice for pipeline operators against best practices from other jurisdictions; and
- move toward a risk-based oversight approach based on each pipeline operator's specific safety risks.

TSSA RESPONSE

The TSSA agrees with this recommendation. The TSSA will review its current oversight practices for pipeline operators and look to adopt a best-practice methodology for pipelines as well as moving toward a risk-based oversight approach.

6.4 Fuel-Burning Appliances: Improper Installation and Maintenance

6.4.1 Inspection of Companies That Install Fuel-Burning Equipment Inadequate Despite Risk of Carbon Monoxide Releases

Over the last eight years, about 2,500 carbon monoxide (CO) releases have been reported to the TSSA. These incidents have led to 14 people losing their lives and almost 350 sustaining injuries because of CO poisoning. From our review of TSSA investigations of reported CO incidents, about 950, or 40%, were caused by improper installation and maintenance of fuel-burning equipment such as furnaces, water heaters and stoves.

Only TSSA-licensed companies and certified technicians are allowed to install and maintain most types of fuel-burning equipment, including furnaces. Once every three years, the TSSA inspects these companies to determine if the work performed by their technicians complies with applicable safety laws. The TSSA's records indicate that over the past five years, on average, 43% of installation and maintenance jobs failed the inspection. However, due to poor inspection practices and record keeping, it is possible that this inspection failure rate could be higher.

We selected a sample of 100 TSSA inspections. Fourteen of the companies that the TSSA wanted to inspect declared that they had not performed any work in the last three years and asked the TSSA

inspector to cancel their registration; as a result, these inspections were not done. Seventeen of the inspections were marked in the TSSA's database as "passed," but the TSSA could not provide us with any evidence that an inspection had been conducted. (Figure 11 summarizes the results we compiled on these 100 inspections.) In our remaining sample of 69 inspections, we found that:

- The TSSA never inspects jobs completed by many of the certified technicians because the jobs it inspects are pre-selected by the companies that employ the technicians. These companies provide the TSSA with a list of only a few pre-selected jobs done in the past three years, from which the TSSA then selects the jobs that it inspects. About 30 companies provided lists of fewer than 10 pre-selected jobs, including eight companies that provided lists with only three or four jobs.
- Twenty-nine companies did not provide a list of pre-selected jobs—we found evidence that an inspection had been completed, but no evidence of how the inspected job was selected. The TSSA inspector did not document the rationale for selecting these jobs for inspection.

RECOMMENDATION 14

To reduce the risks of carbon monoxide releases due to poor fuel-burning equipment installation and maintenance, we recommend that the TSSA:

Figure 11: Results of Our Office's Sample Testing of TSSA's Inspections of Companies that Install and Maintain Fuel-Burning Appliances

Prepared by Office of the Auditor General of Ontario

	Availability of TSSA Inspection Records (# of Companies)		Total
	Available	Not Available	
Inspection report	69	31*	100
Company's technician list	44	25	69
Company's job list	40	29	69

* Includes 14 companies that declared no work was performed in the last three years, and asked to cancel their registration with the TSSA when an inspector visited the company. These companies were not inspected by the TSSA. For the remaining 17 companies, the TSSA could not locate inspection documents (inspection reports, technician list, job list) that we requested.

- as part of its annual licensing conditions require fuel-burning installation and maintenance companies to submit to the TSSA a list of all employed technicians;
- develop and implement a robust centralized information system that tracks the number of technicians working for each company; and
- select a number of technicians from each company for inspection, ensuring that over time all technicians are inspected.

TSSA RESPONSE

The TSSA agrees with this recommendation and will consider appropriate preconditions for licensing and renewal. The TSSA is currently in the process of revising its approach to third-party contractor oversight. Included in this revision are improved record-keeping and a new approach to performing inspection reviews, which will ensure that over time all technicians are inspected.

7.0 Detailed Audit Observations: Elevating Devices Safety Program

In Ontario, there are over 59,500 elevating devices, and about 70% of those are passenger elevating devices. To ensure that elevating devices operate safely, the TSSA reviews the engineering design before a device is built and inspects the device before it is put into use. After that, the TSSA periodically inspects the device to ensure its compliance with safety laws.

Our review of the Elevating Devices program found that the TSSA has been conducting inspections of elevating devices to ensure that they are built and installed in accordance with safety laws. However, we found that the TSSA lacks strong enough enforcement powers to deal with the large

elevator maintenance companies that for years have not maintained most of Ontario's operating elevators in accordance with safety laws.

7.1 Most Ontario Elevators and Escalators Are Not in Compliance with Safety Laws: Situation Is Getting Worse

During an inspection, the TSSA checks if the condition and operation of major mechanical elements of an elevator or escalator are in compliance with all applicable safety laws. The TSSA also checks if all necessary maintenance work and safety tests have been completed on time.

As of April 1, 2014, safety laws require that every elevator and escalator in Ontario must have a formal Maintenance Schedule (Schedule). The Schedule lists when and what minimum maintenance work and safety tests of critical mechanical elements must be performed to ensure the device continues to operate safely.

A device will not pass its TSSA periodic inspection if it is not in compliance with all applicable safety laws. If an inspector finds that the device poses an immediate risk to public safety, the inspector can order an immediate shutdown of the device. As of August 31, 2018, 528 elevators and escalators were under TSSA shutdown orders for this reason.

Our review of TSSA inspection records from the past five years (May 2013 to April 2018) showed that the percentage of elevators and escalators failing their inspection has increased by 7%, from 75% to 82%. Over this same time, the average number of non-compliances with specific safety laws identified during an inspection has almost doubled, from four to seven per inspection. The main cause of the high inspection failure rate is outstanding maintenance work and safety tests mandated by the Schedule. This outstanding work does not pose an immediate risk to public safety (if there was such risk, the TSSA would immediately order the elevator shut down); however, neglected maintenance over time

can result in the device malfunctioning or breaking down more frequently. For example, an elevator may stop levelling properly with the building floor, as shown in **Figure 12**. The elevator's motor might malfunction, causing the elevator cabin to accelerate upwards or drop suddenly, or to stop between floors. The elevator's doors might jam, trapping the passengers or closing on a person entering the elevator or on a person's limb. Any of these events can cause injuries to passengers.

7.1.1 Injuries Caused by Unsafe Elevators Increasing

From May 2013 to April 2018, there were 487 reported safety incidents involving elevators that the TSSA determined had been caused by the elevator not operating in compliance with applicable safety laws. These incidents resulted in three deaths, and eight permanent and 137

Figure 12: Elevator Car Not Levelling with the Floor

Source: Technical Standards and Safety Authority (TSSA)



non-permanent injuries. Safety incidents caused by elevators not operating in compliance with applicable safety laws have more than tripled in five years, from 37 in 2013/14 to 137 in 2017/18. In 2017/18, 40 people were injured in such incidents.

The most frequent cause of these injuries is the elevator cabin not levelling properly with the floor. This is a significant safety issue, especially for the elderly and people using walkers and wheelchairs. For example, an elderly woman using a walker fell into an elevator in London, Ontario, that stopped about 20 centimetres below the floor level. The woman broke her nose and sustained other injuries that required medical attention. Two other people sustained serious injuries when they fell out of their wheelchairs while entering elevators that were not levelled properly. One of these incidents happened at a mall in Cobourg, and the other at a retirement home in Stayner.

Other injuries were caused by sudden upward acceleration or the sudden drop of the elevator cabin. For example, one person was injured when an elevator located in St. Catharines suddenly accelerated upward, crashing into the building's ceiling. Another five people were injured, with one requiring hospitalization, when the elevator they were riding located in Toronto suddenly dropped a few metres and then abruptly stopped between floors.

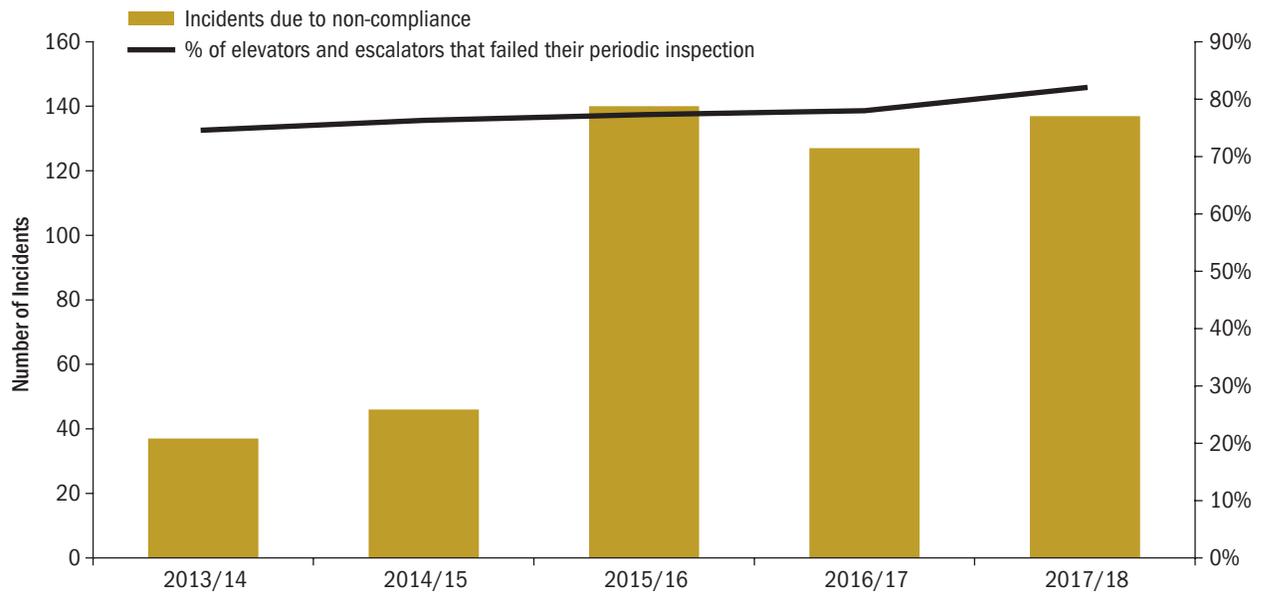
Figure 13 shows reported safety incidents caused by unsafe elevators that have occurred over the past five years and the percentage of elevators and escalators that failed their periodic inspections.

7.1.2 The TSSA Study Finds Maintenance Companies Primary Cause of Worsening Elevator Safety

Only TSSA-certified mechanics can perform elevator or escalator maintenance work and address safety problems identified by the TSSA. These mechanics are employed by elevator maintenance companies, which are responsible for following the elevator's legally mandated Maintenance Schedule.

Figure 13: Elevator and Escalator Safety Incidents

Source of data: Technical Standards and Safety Authority (TSSA)



In many cases, the maintenance company is the same company that installs the device.

In Ontario, four large companies (Kone, Otis, Schindler and ThyssenKrupp) are responsible for maintaining just over half of all the elevators and escalators. **Figure 14** lists the companies that operate in Ontario and the percentage of devices each company is responsible for maintaining.

To address problems identified during a periodic inspection, the TSSA issues orders to comply with safety laws directly to the owners, not to the maintenance companies. It is then up to the owner to make arrangements with the maintenance company to address the problems. The TSSA then conducts one or more follow-up inspections to verify if all safety problems have been addressed and the elevating device is fully compliant with all applicable safety laws.

In an attempt to compel owners to more promptly make their elevating devices comply with applicable safety laws, in May 2013, TSSA started to charge them extra fees for each subsequent follow-up inspection. However, recognizing that its strategy was not working, in April 2016, the TSSA stopped this practice and decided to study the issue.

Figure 14: List of Major Elevator Maintenance Companies

Source of data: Technical Standards and Safety Authority (TSSA)

Elevator Company	Approximate % of Elevators Maintained in Ontario*
ThyssenKrupp	25.0
Otis	11.0
Kone	11.0
Schindler	7.5
Delta	6.0
Other	39.5
Total	100.0

* Based on the TSSA's inspection records as of August 31, 2018. The TSSA updates its records at the time of inspection. As a majority of elevators are inspected every five years, information about the number of elevators maintained by each specific maintenance company may not be up to date.

Even though the TSSA had collected about \$13 million in extra inspection fees under this strategy from May 2013 to the end of April 2016, compliance with safety laws actually worsened over that time, dropping from 31% to 23%.

In May 2017, the TSSA conducted a study to find out why charging owners the extra follow-up

inspection fees did not improve compliance. The study found that the maintenance companies are the primary cause of poor compliance. To win market share, these companies offer services at reduced rates, which in turn creates incentives for them to minimize time and effort dedicated to maintaining or fixing elevators. The study also found that some owners find it cost-prohibitive to litigate large maintenance companies that do not perform required maintenance and safety tests on time, and that it is not easy to switch to a different maintenance company due to ironclad contracts, many of which require the use of proprietary technology.

We discussed this issue with representatives of the maintenance companies. They informed us that sometimes the owners are responsible for poor compliance. For instance, the Maintenance Schedule set by the TSSA in April 2014 substantially increased the maintenance work required, and it requires more rigorous safety tests to be performed on regular basis. However, elevating device owners are often not willing to pay for this additional work and sometimes they do not grant access to the technicians to complete the required work because of payment disputes. The maintenance companies also informed us that fully qualified elevator mechanics who possess the needed skills to perform the more complex safety tests are in short supply in Ontario.

7.1.3 The TSSA Has Limited Ability to Compel Maintenance Companies to Do Elevator Safety Work on Time

We asked the TSSA why it does not issue orders directly to the maintenance companies. The TSSA informed us that current legislation makes issuing orders directly to maintenance companies difficult, as it requires the TSSA to perform a full investigation for any identified safety problem and to determine if the owner or the maintenance company is responsible. Such investigations take time and require significant resources. Accordingly, the TSSA issues orders directly to the owners, who are ultim-

ately responsible and liable for the safe operation of the elevating devices.

The TSSA also informed us that it is not practical to revoke the operating licence of any large maintenance company, even if this company has a history of not doing required safety work on time. It explained that revoking the licence would prevent the company from doing any work on any of its other elevators. Shutting down elevators to enforce compliance is also not practical. Unless there is an immediate risk to public safety, it only affects the building's tenants and ends up benefiting the maintenance companies, as they often charge owners a higher rate for performing emergency repairs to bring the elevators back into service.

7.1.4 The TSSA Prosecuted a Large Maintenance Company Four Times for Repeatedly Not Doing Required Elevator Safety Work on Time

Serious or repeated non-compliance with safety laws may cause the TSSA to undertake an investigation that may lead to prosecution of an owner or a maintenance company. Over the past 10 years, the TSSA has prosecuted four owners and four maintenance companies for violating safety laws. Most of the prosecutions stem from investigations of specific incidents involving serious injury.

In our review of past prosecutions, we noted that on four occasions, the TSSA has investigated and prosecuted the same large maintenance company for repeatedly failing to maintain elevators in safe operating condition. The maintenance company was found guilty and fined over \$1 million for various non-compliances, including failing to complete required maintenance work and safety tests.

In one case in 2009, at an Etobicoke condominium, a passenger was seriously injured when an elevator dropped with its doors open as a result of badly worn mechanical components and poor maintenance.

In another case in 2015 in Scarborough, a passenger sustained an injury jumping from an

elevator that continued to move with its doors open. The maintenance company put the unsafe elevator back into service before the cause of the problem was identified or fixed.

This maintenance company was also prosecuted for repeatedly failing to do required safety tests on time. These prosecutions stemmed from its failures to conduct timely tests at one property in Mississauga in 2015, and on two elevators at a building in Etobicoke between November 2012 and December 2015. Some of the required tests were overdue by as long as 20 months.

We reviewed the TSSA's inspection records for May 2017 to April 2018 and found that its prosecutions have not deterred the large maintenance company from not performing required maintenance work and safety tests on time. In the Toronto region, almost 91% of elevators that this company maintains failed their TSSA inspection, mostly due to outstanding maintenance work and safety tests. Compliance in the Mississauga region is even worse, as almost 95% of elevators serviced by this company failed their latest inspection, mostly for the same reasons. This is about 10–15% higher than the provincial average failure rate of about 80%.

7.1.5 Elevators with Highest Number of Safety Problems Are Serviced by the Prosecuted Large Maintenance Company

In our review of the TSSA's inspection reports between 2016 and 2017, we found that of the 10 elevators that failed to comply with the highest number of safety laws, eight are serviced by this same company. TSSA inspections identified that each of these eight elevators failed to comply with 55 individual safety laws, on average, whereas the provincial average for all other elevators was seven.

Our review of TSSA inspection reports found that five of the eight elevators are located in one of Toronto's hospitals. Serious non-compliance issues found with these elevators include overdue maintenance work to prevent brake malfunction, and wear and tear on cables and other components that

protect against over-speed and uncontrolled movements. The inspections also found that some critical annual tests were not completed, such as checking the doors' closing force, the elevator cabin's stopping accuracy, emergency backup power and the elevator cabin's emergency phone.

We also found that, on average, it took about five TSSA follow-up inspections and over seven months before the maintenance company completed the required work. However, with two of these elevators, the TSSA had to do more than 12 follow-up inspections over a span of 25 months before the maintenance company finally had the elevators operating in full compliance with all applicable safety laws.

RECOMMENDATION 15

To improve compliance with safety laws in the Elevating Devices sector, we recommend that the TSSA, together with the Ministry of Government and Consumer Services (Ministry), develop an action plan outlining specific steps the Ministry and TSSA plan to take with elevator owners and maintenance companies to resolve current safety issues and bring the safety law compliance rate to an acceptable level.

TSSA RESPONSE

The TSSA will develop an action plan and work closely with the Ministry of Government and Consumer Services, in an attempt to resolve elevator safety issues and bring the safety law compliance rate to an acceptable level.

7.2 The TSSA Does Not Know if Uninspected Amusement Rides Are Being Used

Operators of amusement parks must register all of their amusement rides with the TSSA. However, only the rides that are going to be operated must be inspected by the TSSA before they are put into use. Each year, amusement park operators inform the

TSSA of the rides they plan to use so that the TSSA can inspect only those rides and issue an operating permit. As of August 31, 2018, there were 4,025 registered amusement rides in Ontario, and 2,142 of them had been inspected by the TSSA.

We found that the TSSA does not have a program in place to conduct random inspections of amusement parks to find out if any uninspected amusement devices are being operated. We found that in New Jersey, the agency responsible for inspecting amusement rides, the Carnival and Amusement Ride Safety Unit of the Department of Community Affairs, conducts random inspections to ensure that park operators operate only inspected devices.

As part of our audit, between July and August 2018, we co-ordinated with the TSSA to conduct random inspections of four amusement park locations to find if operators are using any devices without a TSSA operating permit. As part of these inspections, we also looked for any unsafe amusement devices that had a TSSA operating permit. At one of the largest street festivals in Ontario, we found two unsafe amusement rides with a TSSA operating permit in use. One of the rides had a damaged electrical plug. Another ride had a seat with a broken seat belt and a hole on the floor with a sharp edge. The TSSA inspector who was with us instructed the operator to immediately fix the damaged electric plug, and asked the operator to attach an out-of-order sign to the seat with the broken seat belt. We investigated why the TSSA had issued operating permits to these rides and found that the TSSA had previously inspected these two rides and identified the same safety problems that we found; however, the TSSA inspector who did the initial inspection never followed up, as required, to check if the safety problems had been fixed before issuing operating permits. During the four amusement park inspections, we did not find any devices operating without a TSSA operating permit.

RECOMMENDATION 16

To improve the safety of amusement park rides, we recommend that the TSSA:

- implement an oversight process to ensure that operating permits are issued only to rides that have been inspected and found to be safe after any safety issues are remedied; and
- establish an inspection process to ensure that only rides with valid operating permits are in use.

TSSA RESPONSE

The TSSA commits to reviewing its inspection processes for the safety of amusement park rides and to taking the appropriate steps to ensure that operating permits are issued only to rides that have been inspected, where critical safety issues have been addressed and where the ride itself is safe to operate. The TSSA will also implement a periodic inspection process for amusement devices while they are in operation. This will include permit validation processes.

8.0 Detailed Audit Observations: Upholstered and Stuffed Articles Safety Program

Our review of the TSSA's inspection and enforcement practices in the Upholstered and Stuffed Articles program made us question how effective this safety program is in protecting public safety.

All manufacturers, renovators and home hobbyists that produce upholstered and stuffed articles to be sold in Ontario must register with the TSSA to obtain a licence. At the time of our audit there were about 13,200 registrants. Upon registration, new registrants who are located in Ontario (over 90% of registrants are located outside Ontario) undergo

an initial inspection, after which the TSSA performs periodic inspections to check if the products available for sale comply with safety laws.

Ontario’s safety laws require that filling materials of upholstered and stuffed products listed in **Figure 15** must be new and clean. Labels on these products must also be of a specific size and printed in the proper font, and must correctly describe the filling material inside the product. Their manufacturers must be registered with the TSSA.

When the TSSA finds a product that is not in compliance with applicable safety laws, it orders the retailer to ask the manufacturer either to correct the problem (usually size, font and/or location of the label) within a specified time, or, if the article is unclean or mislabelled, to immediately remove it from sale. **Figure 16** describes the common types of non-compliances that the TSSA finds.

8.1 No Written Standards or Guidelines to Assist Inspectors

As part of our audit, we accompanied the TSSA on four inspections, including one of a major retail chain and one of a large online retailer. During these inspections, we observed that there are no written standards or internal policies on how many articles an inspector should open to examine the filling materials, or that explain the extent of further testing to perform. These decisions are left to the inspectors’ discretion. When we analyzed the TSSA’s inspection records, we found that from May 2014 to April 2018, the TSSA conducted almost 11,000 inspections, but during only 300 inspections was an article opened and its filling examined. The TSSA told us that the standard procedure is to touch and smell the article to determine if something might be wrong with the filling material—a method that can be relied on to find only grossly unclean or inappropriate filling material.

Figure 15: Categories of Upholstered and Stuffed Products Covered by Ontario’s Safety Laws

Source of data: Technical Standards and Safety Authority (TSSA)

Product Categories
Mattresses
Furniture
Bedding items
Toys
Luggage
Seasonal ornaments
Insulated outerwear
Handbags
Down-filled apparel
Pet items
Sporting goods
Home furnishing products

8.1.1 Inspectors Do Not Have Necessary Tools to Test Filling Material for Cleanliness

The TSSA has lab equipment to analyze the down filling used in winter jackets and bedding, although no one at the TSSA is trained in its use. The only person who knew how to use the lab equipment was a member of senior management who left the TSSA in February 2018. When we noted that some inspectors are not provided with UV lights that could help with the detection of any unclean filling inside inspected articles, the TSSA told us that all inspectors except for new hires are provided with UV lights; however, the UV lights that the more senior inspectors have are outdated and not very effective.

8.1.2 The TSSA Does Not Inspect More Than Half the Registrants Located in Ontario

From our analysis of the approximately 110,000 instances of non-compliance with specific safety laws that TSSA inspectors have identified over the past five years, we found that less than 2% (2,025) pertained to unclean filling material. The most frequently identified non-compliance (about 35%)

Figure 16: Common Non-compliance Issues Found in Upholstered and Stuffed Articles by the TSSA's Inspections of Upholstered and Stuffed Articles

Source of data: Technical Standards and Safety Authority (TSSA)

Common Non-compliance Issue	Safety Risk	TSSA Order
Label format incorrect	Low	Correct within 30 days
No/expired registration with the TSSA		No follow-up inspection
Wrong country of origin	Medium	Correct within 30 days
Label hidden/not securely affixed		Follow-up inspection
Unclean/contaminated filling material	High	Immediately remove from sale*
No label/mislabelled		Follow-up inspection

* Depending on the severity of the issue, after the product is immediately removed from sale, the inspector may order that either the label is to be corrected or else the product is to be destroyed immediately.

is lack of or expired registration with the TSSA, for which the TSSA charges manufacturers an annual fee of \$400.

Upon registration with the TSSA, each new registrant (at no additional fee) is supposed to undergo an initial inspection. We reviewed the TSSA's records to confirm that the TSSA has been conducting these inspections and found that it has not inspected about 50% of the registrants located in Ontario. The TSSA told us that the inspections had been missed due to problems with its computerized inspection scheduling system. We also found that the TSSA does not periodically inspect online retailers that have facilities in Ontario for compliance with safety laws as part of its inspection program, despite having the authority to do so.

8.2 The TSSA Is Not Effective in Stopping Retailers from Selling Mislabeled Products

With the exception of issuing orders to comply with safety laws, the TSSA has used no other method of enforcement against companies covered by this safety program. We found that the TSSA's orders are often ineffective: inspected retailers do not always comply with them. As part of our audit, we selected a sample of 10 articles that the TSSA ordered to be immediately removed from sale in the last two years. In June 2018, we attempted to

purchase these articles from the same inspected retailer that had been ordered to stop selling the mislabelled articles. We were able to purchase five of the 10 mislabelled articles in our sample. Photographs of the five articles that we were able to purchase and a description of how each article did not comply with the safety laws can be found in **Appendix 5**.

8.2.1 Mislabeled Products When Found Not Removed from All Stores in Ontario

When the TSSA finds a mislabelled article, it orders the inspected retailer to stop selling the article until the labelling problem is fixed. We observed that the TSSA's orders to immediately stop selling mislabelled articles apply to the inspected retailer alone. The TSSA makes no attempt to check whether the mislabelled articles are sold in any other stores in Ontario, meaning that it does not order other retailers that sell the same article to fix the problem or remove the article from sale. As part of our audit, we found that we could purchase from other stores and online the same mislabelled articles that the TSSA ordered to be removed from sale at locations it inspected.

RECOMMENDATION 17

To significantly improve the effectiveness of its upholstered and stuffed products safety program, we recommend that the TSSA:

- develop and implement an action plan to improve this program so that its inspection and enforcement resources are used effectively and most efficiently to protect public safety; and
- ensure that inspectors have the required training and equipment.

TSSA RESPONSE

The TSSA agrees with this recommendation. The TSSA is committed to developing and implementing an action plan to improve the effectiveness and efficiency of the Upholstered and Stuffed Articles program in order to better protect public safety. This action plan will include provisions on training and equipment for inspectors to improve inspection and enforcement activity.

9.0 Detailed Audit Observations: Boilers and Pressure Vessels Safety Program

All boilers and pressure vessels operated in Ontario, with the exception of low-pressure and low-heat boilers such as those typically used in homes, are to be inspected and certified by the TSSA before being put into use, and then inspected periodically after installation when in use.

Boilers and pressure vessels are used to distribute and store compressed gases and liquids. They vary in size and in the temperature and pressure at which they operate. Used for heating, refrigeration and power generation, they can be found in office buildings, hospitals, hockey arenas, industrial

plants, farms and other locations. Although rare, an explosion of a boiler or a pressure vessel can cause significant damage to the immediate area. For example, the estimated energy released from the explosion of a 110-litre hot-water tank would send a mid-sized car about 45 metres into the air.

According to safety laws, no person may legally operate or use a regulated boiler or pressure vessel in Ontario without a valid Certificate of Inspection issued by the TSSA. The certificate must be reissued each time the device is periodically inspected. The law allows insured boilers, which make up the vast majority of the boilers and pressure vessels, to be periodically inspected by insurance companies. Then the insurance company is required to report the inspection results to the TSSA within 21 days, so that the TSSA can review the results and issue the Certificate of Inspection.

9.1 The TSSA Does Not Know the State of Safety of Almost All Boilers and Pressure Vessels Located in Ontario

The TSSA is responsible for ensuring that boilers and pressure vessels manufactured in Ontario comply with safety laws. We found that the TSSA has been reviewing the design of new boilers and pressure vessels prior to their production, and once these devices have been manufactured, the TSSA has been inspecting and certifying them before their sale or installation.

However, we found that since 2001, the TSSA has not been fulfilling most of its responsibilities under the Act when it comes to the safe operation of boilers and pressure vessels. The TSSA does not know how many boilers and pressure vessels operate in Ontario, where they are located, and whether they are maintained and inspected. The TSSA has not been collecting required information from insurance companies and has not been issuing the Certificates of Inspection for insured operating devices, which means that the vast majority of boilers and pressure vessels in Ontario are operating

outside the law, and also means that the overall safety status of this sector is not known. According to the TSSA's estimate, 65,000 boilers and pressure vessels are operating in Ontario. However, in our review of TSSA records, we found that the TSSA has information and inspection records for only about 850 of these—less than 2% of the total. The lack of substantive information limits the TSSA's ability to accurately determine the state of safety of boilers and pressure vessels in Ontario and make risk-based safety decisions in this sector.

The Ministry informed us that the TSSA could not rely on insurer records to obtain owner contact information to issue the Certificates of Inspection. However, the TSSA could not explain to us why it did not use its broad inspection powers to act earlier to implement an inspection program, and why it took the Ministry so many years to recommend that the Government update the safety laws to clarify the insurers' responsibilities regarding inspections, record keeping and transfer of inspection records to the TSSA, which the Government did in July 2018.

RECOMMENDATION 18

To start fulfilling its responsibilities under the *Technical Standards and Safety Act, 2000* with regard to the safe operation of boilers and pressure vessels, we recommend that the TSSA:

- establish inspection standards for boilers and pressure vessels and ensure that insurance companies are following these standards when conducting their inspections;
- use the information collected from insurers to develop and implement a robust centralized system that tracks the number of boilers and pressure vessels that operate in Ontario, their location and their safety status; and
- start collecting required information from insurance companies, review this information, and issue Certificates of Inspection for insured boilers and pressure vessels.

TSSA RESPONSE

The TSSA agrees with this recommendation. Following the amendments made to the Boilers and Pressure Vessels regulation that came into effect on July 1, 2018, the TSSA began to collect and review required information from insurance companies, and is now issuing Certificates of Inspection for insured boilers and pressure vessels. The TSSA will also ensure that insurance companies are following inspection standards established by the North American certification body (National Board) when they are conducting inspections of boilers and pressure vessels.

9.2 Boilers and Pressure Vessels Used for Agricultural Purposes Exempt from Safety Laws: TSSA Is Concerned for Public Safety

Ontario is the only province in Canada where boilers and pressure vessels used in agricultural operations such as greenhouses, mushroom farms, maple syrup farms and wineries are exempt from safety laws. An estimated 600 to 700 agricultural operations are exempt from safety laws, even though their boilers are typically larger than home water heaters and can operate at much higher temperatures and pressures. Information provided to the TSSA by one large insurer revealed that from 2015 to mid-2017, six boilers exploded at agricultural sites exempt from safety laws.

In April 2005, the TSSA recommended removing the exemption for newly installed boilers and pressure vessels, and introducing a transition safety program for existing equipment. The Ministry did not adopt these recommendations, however.

In May 2015, growing safety concerns expressed by insurers prompted the TSSA, together with its advisory council, to again review the need for the exemption. After completing its review, in April 2018, the TSSA provided the Ministry with a report from its advisory council that recommended that

the Ministry examine removing the exemption, as it was concerned that the exemption “poses a safety risk to the public greater than the risk of other pressure equipment installations in Ontario.”

The public expects boilers and pressure vessels to be safe everywhere, whether they are located in a mall or a winery. The exemption increases the risk to public safety in places such as wineries that offer tours and greenhouses where people shop for plants. In addition, employees who work at these locations are also subject to the risk of a boiler explosion that could be reduced through safety oversight.

We found as well that agricultural operations are also exempt from safety laws pertaining to elevating devices. Thus, elevators that are installed in or adjacent to a barn, are exempt from safety laws.

The Ministry recently went through a process of updating the boilers and pressure vessels safety laws, which provided an opportunity to recommend that the Government remove the agricultural exemptions. When we asked the Ministry why it

did not make such a recommendation, it told us that this exemption has existed since 1951 and that it will assess the recent information about the six boiler explosions between 2015 and mid-2017 to inform its policy development.

RECOMMENDATION 19

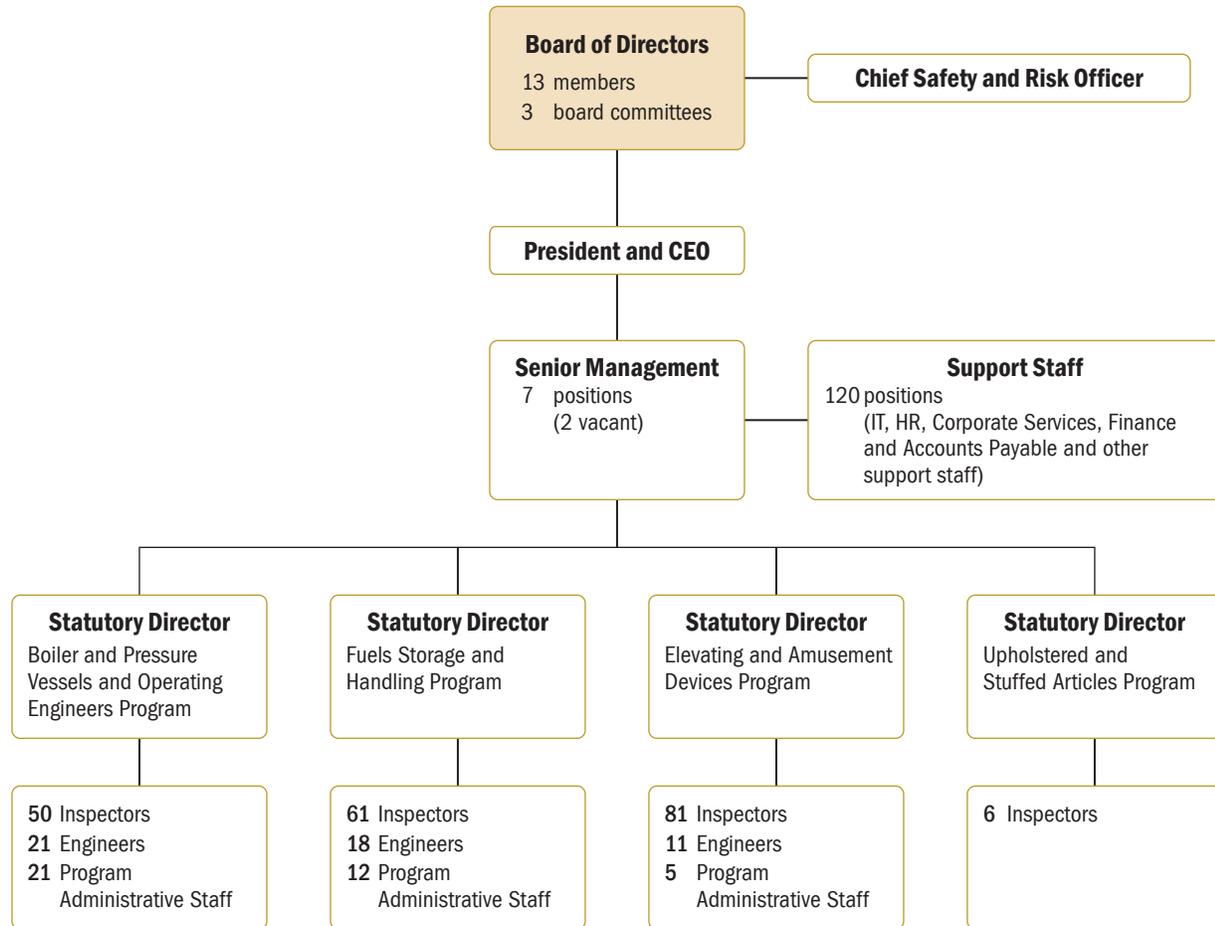
To reduce the risk to public safety in the agricultural sector, we recommend that the Ministry of Government and Consumer Services assess the current exemption of agricultural operations from safety laws pertaining to boilers and pressure vessels and elevating devices.

MINISTRY RESPONSE

The Ministry will work with the TSSA, relevant stakeholders and ministries to review the existing agricultural exemption under the boilers and pressure vessels and elevating devices regulations and will consider the revision to the existing policy.

Appendix 1: The TSSA's Organizational Structure as of October 2018

Prepared by the Office of the Auditor General of Ontario



Appendix 2: The TSSA's Advisory Councils as of October 2018

Source of data: Technical Standards and Safety Authority (TSSA)

Council	# of Members	Member Representatives*
Program Area: Boiler and Pressure Vessels and Operating Engineers Program		
Boilers and Pressure Vessels Advisory Council	12	<ul style="list-style-type: none"> Ontario Power Generation Canadian Boiler Society The Boiler Inspection and Insurance Company of Canada Ontario Petrochemical Inspectors Association Suncor Energy
Operating Engineers Advisory Council	7	<ul style="list-style-type: none"> International Union of Operating Engineers, Local 772 Ontario Power Generation Toronto District School Board J.D.Sweid Foods
Program Area: Fuels Storage and Handling Program		
Propane Advisory Council	9	<ul style="list-style-type: none"> Sleegers Engineering Canadian Propane Association Huronia/MED E-OX Ltd. Canadian Tire Petroleum Network Development Heartland Farm Mutual
Liquid Fuels Advisory Council	11	<ul style="list-style-type: none"> Canadian Tire Nature and Outdoor Tourism in Ontario Canadian Independent Petroleum Marketers Association Canadian Oil Heat Association Trimac Transportation
Natural Gas Advisory Council	12	<ul style="list-style-type: none"> Enbridge Gas Distribution Union Gas Limited A.O. Smith Enterprises Ltd. Heating, Refrigeration and Air Conditioning Institute of Canada
Program Area: Elevating and Amusement Devices Program		
Elevating Devices Advisory Council	14	<ul style="list-style-type: none"> ThyssenKrupp Schindler Kone Otis Canada International Union of Elevator Constructors Building Owners & Manufacturers Association Toronto Transit Commission
Amusement Devices Advisory Council	16	<ul style="list-style-type: none"> Ontario Association of Agricultural Societies Canada's Wonderland Camp Quality Canada Sypher & Associates Field Engineering Ltd.
Ski Lifts Advisory Council	9	<ul style="list-style-type: none"> Canadian Ski Patrol – Ontario Division Ontario Snow Resorts Association Blue Mountain Resort Inc.
Program Area: Upholstered and Stuffed Articles Program		
Upholstered and Stuffed Articles Advisory Council	5	<ul style="list-style-type: none"> Mattel Canada Feather Industries Canada Hartz Canada Inc.
All Program Areas		
Consumers Advisory Council	5	<ul style="list-style-type: none"> Representative from each of the following advisory councils: Elevating Devices, Amusement Devices, Liquid Fuels, Natural Gas, and Upholstered and Stuffed Articles.

* For presentation purposes, only large to mid-size companies/organizations have been shown to illustrate the industry representation on each council. A full listing of current members on each advisory council can be found on the TSSA's website.

Appendix 3: Audit Criteria

Prepared by the Office of the Auditor General of Ontario

Technical Standards and Safety Authority

1. Effective and efficient registration and licensing activities are in place to ensure that regulated devices, facilities and businesses comply with safety regulations and policy requirements.
2. Effective and timely inspection processes are in place for regulated devices, facilities and businesses to ensure that they comply with safety requirements.
3. Effective processes and systems are in place to ensure that incidents involving regulated devices and facilities are accurately recorded and investigated, and that corrective action is taken on a timely basis to prevent future incidents.
4. Effective certification processes are in place to ensure that individuals are qualified to carry out their work in their respective fields.
5. Human and financial resources are sufficient and used efficiently and effectively to fulfill mandated responsibilities.
6. Accurate, timely and complete information is regularly collected to allow management to assess the performance of safety activities and to make informed decisions.
7. Meaningful performance indicators and targets for protecting the safety of Ontarians are established, monitored and compared against actual results to ensure that intended safety outcomes are achieved. Results are publicly reported and corrective action is taken on a timely basis.

Ministry of Government and Consumer Services (Ministry)

The Ministry has effective processes in place to update regulations to address concerns that may arise, including safety concerns, and to monitor and assess the Technical Standards and Safety Authority's performance in fulfilling its mandated activities to protect the safety of Ontarians.

Appendix 4: Pipeline Operators Regulated by the TSSA

Source of data: Technical Standards and Safety Authority (TSSA)

Pipeline Operator	Pipeline Type	Product Transported	Pipeline Length (km)	Date of Last TSSA Audit ¹
Air Products Canada Ltd.	Transmission	Fuel gas, hydrogen	8.8	Sept. 2015
Bayview Explorations Ltd.	Distribution	Natural gas	15	No last audit date
Enbridge Gas Distribution	Distribution	Natural gas	38,000	Sept. 2017
Enbridge Gas Storage	Transmission	Natural gas	115	Oct. 2013
EPCOR (previously Natural Resource Gas Limited [NRG])	Distribution	Natural gas	n/a	May 2016
EPCOR (previously Natural Resource Gas Limited [NRG])	Transmission	Natural gas	28.5	May 2016
Fisherville Gas Ltd. (Chatham Resources)	Distribution	Natural gas	10	July 2014
Glensrd Ltd.	Distribution	Natural gas	10	July 2014
Glenfed Gas Wells Ltd.	Distribution	Natural gas	10	Nov. 2014
Greenfield South Power Corporation (GSPC)	Distribution	Natural gas	n/a	Licensed in Aug. 2016
Imperial Oil Ltd.–Sarnia Products Pipeline	Transmission	Diesel, jet fuel and fuel oil	580	Dec. 2010
Kingston Utilities	Distribution	Natural gas	250	Jun. 2014
Kitchener Utilities	Distribution	Natural gas	1,000	Nov. 2015
Northern Cross Energy Ltd.	Distribution	Natural gas	50	Aug. 2014
Six Nations Natural Gas Limited Partnership	Distribution	Natural gas	180	Aug. 2012
Sun-Canadian Pipe Line Co. Ltd. ²	Transmission	Gasoline, diesel, jet fuel and fuel oil	644	May 2011
Superior View Gas Inc.	Distribution	Natural gas	18	No last audit date ³
Union Gas Ltd.	Transmission	Natural gas	2,970	Nov. 2017
Union Gas Ltd.	Distribution	Natural gas	• 40,191 (distribution lines)	Nov. 2017
Market Hub Partners Canada L.P. (part of Union Gas)	Distribution	Natural gas	• 27,245 (service lines)	Audited as Part of Union Gas
Sarnia Airport Storage Pool Ltd. Partnership (part of Union Gas)	Distribution	Natural gas		Audited as Part of Union Gas

1. Once every five years, the TSSA audits pipeline operators' records of inspections and records of the pipeline's incident history, operation manuals and employee training requirements.

2. This pipeline operator was involved in a major pipeline incident in 2013, further discussed in Section 6.3.1.

3. This pipeline operator was audited at the time of granting its licence. The TSSA has not audited this operator in recent years because the number of customers is relatively low and the pipeline is in a rural area, which reduces risk. However, the TSSA plans to audit this operator later this year.

Appendix 5: Mislabeled Upholstered and Stuffed Articles That We Purchased During Our Audit

Prepared by the Office of the Auditor General of Ontario, photo credit: Mariana Green



1 Children's toy: Product contains polyethylene foam, which was not declared on the label.

2 and 4 Pet toys: Products contain a plastic film, which can pose a choking hazard. The plastic film was not declared on the label.

3 Baby bib: Product contains polyethylene foam, which was not declared on the label.

5 Baby toy: Product contains a plastic film, which can pose a choking hazard. The plastic film was not declared on the label.