

TSSA PUBLIC SAFETY REPORT **2020**





Technical Standards and Safety Authority (TSSA) delivers public safety services on behalf of the Government of Ontario in the following key sectors:

- 1) Boilers and Pressure Vessels and Operating Engineers;
- 2) Elevating Devices (Elevators, Escalators and Ski Lifts) and Amusement Devices; and
- 3) Fuels.

TSSA enforces the *Technical Standards and Safety Act, 2000* (the Act) and its associated regulations.

Refer to www.tssa.org for further information on TSSA.

Refer to www.ontario.ca/laws/statute/00t16 for the Act.

ACKNOWLEDGEMENTS

TSSA would like to express gratitude to its inspectors and engineers for collecting and documenting valuable pieces of information and data - through their inspections, investigations and engineering services - that has been instrumental in developing this report, as well as its Information Technology team for providing the tools and advice for extracting data. TSSA would like to especially acknowledge the Public Safety Risk Management team of the Strategic Analytics Department for developing this report.

TSSA would also like to acknowledge Safety and Risk Officer, Angela Byrne, CPA, CMA, for her ongoing advice and independent review of the report.

Finally, TSSA would like to thank its partners in industry, government, advisory councils and the public, who help keep Ontarians safe.



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Message from Viola Dessanti, Director, Strategic Analytics

As I complete my first year as Director of Strategic Analytics at the Technical Standards and Safety Authority (TSSA), I am pleased to present the 2020 edition of TSSA's Public Safety Report. This report covers the fiscal year 2020 (FY20), from May 2019 to April 2020, and aggregates data from TSSA's regulated industries to paint a picture of public safety in Ontario. It explores and interprets 10-year trends and patterns and the impact they have on people in Ontario. In doing that, TSSA strives to bring relevant and meaningful analysis to help its stakeholders make evidence-informed decisions.

Enhanced Risk Model

One of the major accomplishments for the Strategic Analytics team this year has been a peer engagement process in which we identified critical enhancements to our risk model that will enable TSSA to shift to an outcome-based regulator. Working with [peers](#) from other regulatory bodies and academic institutions, we received critical feedback that will inform how we continue to strengthen our data-driven models.

COVID-19 Impacts

The tail end of the past fiscal year saw Ontario deal with the unprecedented COVID-19 pandemic. While the province was shutting down to control the spread of the virus and mitigate the risk to public health, TSSA continued to work diligently to ensure that the safety of the technologies, devices and industries we regulate would not be compromised. Although it is too early to see the impact of the pandemic in FY20 results, we will report on those findings in next year's report.

Key Findings: State of Public Safety in Ontario

Overall, we have seen a gradual change in our key safety metrics.

- Tragically, we have recorded **three fatalities this year**: In-depth investigations and follow-ups to these incidents will provide TSSA with valuable information to help inform future preventative measures, if any. While we continue to try to reduce this number, note that the FY20 fatality rate was lower than the previous 10-year average of four fatalities.
- The share of the regulated inventory that is considered high risk **increased to 2.7%** compared to 1.9% previously.
- We have received reports of **5,732 incidents and near-misses** on the technologies, devices and sites we regulate. This is an 8.6% increase from the 10-year average of 5,278.

On the other hand, we have seen some improvements:

- The health impact of injuries to Ontarians, measured through the **Observed Injury Burden – 0.33 fatality equivalents per million people per year (FE/mpy)** – is lower than the historical average of 0.39 FE/mpy. While we are seeing an increasing number of incidents and near-misses, we believe this is an indication of a stronger reporting culture and greater collaboration between industry and TSSA. Incident data is a critical source of evidence that helps TSSA to understand sources of risk and proactively identify ways we can support industry to improve safety outcomes.
- Finally, the **Risk of Injury and Fatality (RIF)**, which predicts the potential for risk in the future, was **0.72 FE/mpy** in FY20. This is lower than the previous year's RIF (0.84 FE/mpy).

Report Refresh

The 2020 edition of TSSA's Public Safety Report looks a little different from previous editions. We have made some enhancements to the layout and presentation so that the data within can be found more readily by our stakeholders. The results from the fiscal year are presented in this core report, along with topline 10-year trends and patterns. This core report is intended for anyone in Ontario who is interested in understanding safety and sources of risks of our regulated sectors.

For more detailed tables with breakdowns of the data and additional metrics, please refer to our [Data Table Document](#). We hope making this data available will help others who are looking to make data-driven decisions, similar to TSSA's approach, as we transition to an outcome-based regulator. In addition, the [Technical Appendices Document](#) outlines our approaches, methodologies and definitions.

I encourage you to delve into the data and findings from this report. We have included a number of case studies to help bring the work we do to life. Let us know what you think and how you use the data in this report by joining the conversation on social media.



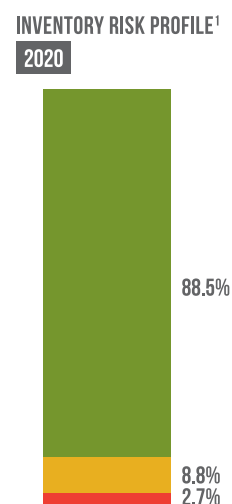
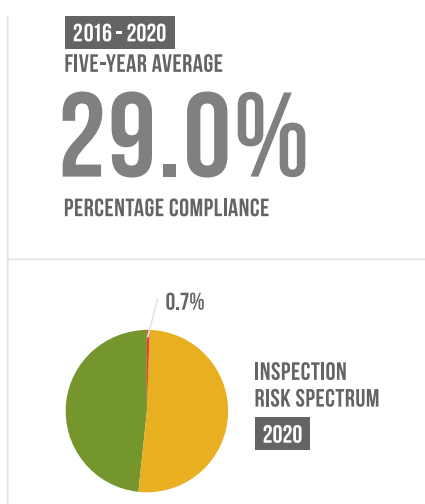
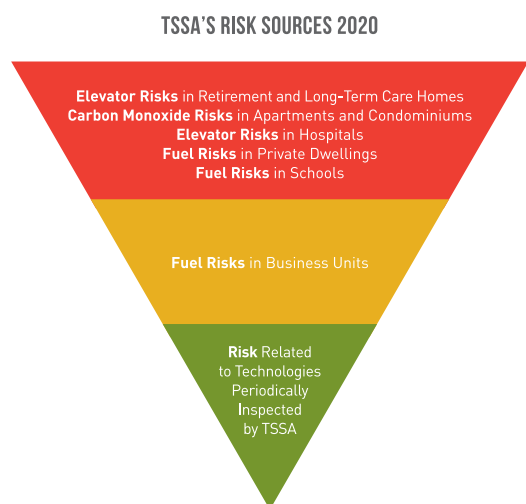
Viola Dessanti
Director, Strategic Analytics



State of Public Safety in Ontario

Figure 1: State of Public Safety for Fiscal Year 2020

AREAS OF CONCERN			
AREAS OF HIGH RISK		AREA OF MEDIUM RISK	
Elevator Risks in Retirement and Long-Term Care Homes	1.32 FE/mpy	Fuel Risks in Business Units	0.61 FE/mpy
Carbon Monoxide (CO) Risks in Apartments and Condominiums	3.54 FE/mpy		
Elevator Risks in Hospitals	3.53 FE/mpy		
Fuel Risks in Private Dwellings	2.65 FE/mpy		
Fuel Risks in Schools	0.38 FE/mpy		



Green indicates safety issues that are low risk and require periodic inspection.



Yellow indicates minor safety issues that are medium risk and require enhanced monitoring.



Red indicates major safety issues that are high risk and require an actionable response.

HEALTH IMPACT		
OBSERVED		POTENTIAL
0.39 FE/mpy (2011 – 2020) Injury Burden	0.33 FE/mpy (2020) Injury Burden	0.72 FE/mpy (2020) Risk of Injury or Fatality

SAFETY NUMBERS (SAFETY AT A GLANCE)				
REPORTING PERIOD	INCIDENTS AND NEAR-MISS OCCURRENCES	NON-PERMANENT INJURIES	PERMANENT INJURIES	FATALITIES
2011 – 2020	52,780	12,661	485	42
2020	5,732	1,895	44	3

¹ Based on facilities and devices with three or more periodic inspections.



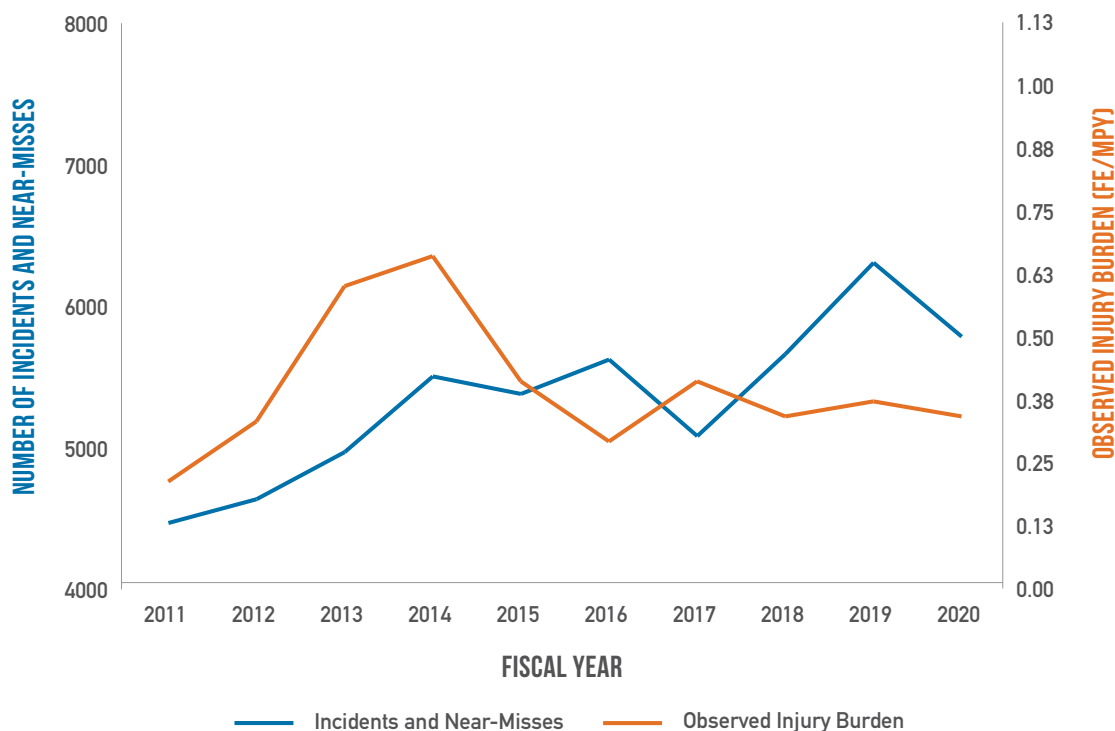
State of Safety Highlights

TSSA reports on two main measures of public safety and risk:

- 1. Observed Injury Burden**, which summarizes what has happened in the past and quantifies fatalities and injuries, expressed in terms of fatality equivalents per million people per year (FE/MPY).
- 2. Risk of Injury or Fatality (RIF)**, which uses a predictive approach [1] developed by TSSA; it is a composite score over all TSSA-regulated sectors that uses past data to predict what might happen in the future.

The inspection risk spectrum measures the risk of orders issued during periodic inspections; the number shown in the pie chart in Figure 1 is the percentage of periodic inspections with high-risk (red) orders. The compliance rate is the percentage of periodic inspections with no orders issued. The inventory risk profile in Figure 1 measures the risk of devices or facilities.

Figure 2: 10-Year Safety Trends for All Programs



- Areas of concern are the same as last year, except “user interactions on elevators in retirement and long-term care homes” has been renamed “elevator risks in retirement and long-term care homes” (due to further analysis of the data, it was found that other risks, in addition to those caused by user interactions, were substantial)
- Inspection risk spectrum percentage of major issues is the same as last year
- Inventory risk profile percentage of high-risk devices and facilities has increased slightly from last year
- Five-year average compliance rate has increased slightly since last year
- Risk of injury or fatality has reduced since last year
- Three fatalities in 2020 and 42 over 10 years
- [Refer to Appendix A for further information on cross-program data](#)

[1] Square [] brackets denote references found in the Technical Appendices Report: Appendix S.

State of Public Safety in Ontario

Boilers and Pressure Vessels Safety Program

Figure 3: State of Public Safety for Boilers and Pressure Vessels

PROGRAM AREA ACTIVITIES	PRESSURE VESSELS LIFECYCLE
Boilers and pressure vessels include equipment that produce and distribute hot water, steam, compressed air, and other compressed liquids and gases used in commerce and industry. - Regulates all pressure-retaining components manufactured or used in Ontario - Ensures safety of boilers and pressure vessels and piping systems - Conducts periodic inspections on uninsured boilers and pressure vessels - Certifies inspectors, including those employed by insurance companies licensed to underwrite boiler and machinery insurance - Provides engineering services - Audits program quality, manufacturers, insurers, installers, repair and alteration organizations, and safety-valve repair organizations - Conducts inspections of: - New manufacturing of boilers and pressure vessels in Ontario - Installation and alteration of boilers and pressure vessels - Repairs of all uninsured boilers and pressure vessels	Design
	Manufacture
	Installation
	Operation
	Maintenance
	Decommissioning

HEALTH IMPACT ¹		
OBSERVED		POTENTIAL
0.00 FE/mpy (2011 – 2020) Injury Burden	0.00 FE/mpy (2020) Injury Burden	0.04 FE/mpy (2020) Risk of Injury or Fatality

SAFETY NUMBERS ¹ (SAFETY AT A GLANCE)				
REPORTING PERIOD	INCIDENTS AND NEAR-MISS OCCURRENCES	NON-PERMANENT INJURIES	PERMANENT INJURIES	FATALITIES
2011 – 2020	297	3	6	0
2020	143	0	0	0

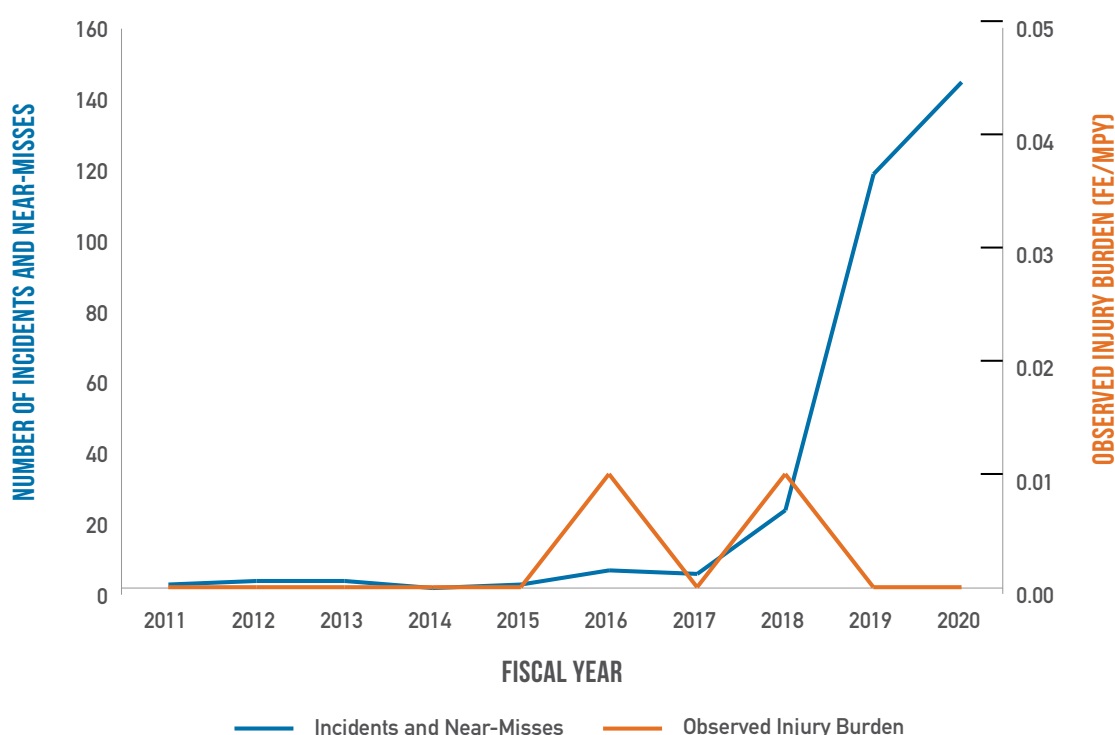
¹ Uninsured boilers and pressure vessels only.

Boilers and Pressure Vessels

TSSA's Boilers and Pressure Vessels Safety Program ensures the safe design, construction, maintenance, use, operation and repair of pressure-retaining components in Ontario. This includes those that produce and distribute hot water, steam, compressed air and other compressed liquids and gases for industrial, commercial or institutional purposes.

TSSA regulates all pressure-retaining components manufactured or used in Ontario and ensures safety of boilers and pressure vessels and piping systems. TSSA also conducts periodic inspections on uninsured boilers and pressure vessels, certifies inspectors, including those employed by insurance companies licensed to underwrite boiler and machinery insurance, provides engineering services and audits program quality, manufacturers, insurers, installers, repair and alteration organizations, and safety-valve repair organizations. In addition, TSSA conducts inspections of new manufacturing of boilers and pressure vessels in Ontario, installation and alteration inspections of boilers and pressure vessels and repair inspections of all uninsured boilers and pressure vessels.

Figure 4: 10-Year Safety Trends for Boilers and Pressure Vessels



- The large increase in incidents over the past couple of years was due to an increase in reporting, not to an increase in the actual number of physical incidents; this was due to better collaboration with the Ministry of Environment, Conservation and Parks Spills Action Centre (SAC), (which is responsible for receiving and recording incidents reported from external stakeholders) and receiving reports that were not previously sent to TSSA; the result was an increased number of reports related to grocery stores
- Most incidents in 2020 were leaks of A1 refrigerants (low toxicity and low flammability)
- Risk of injury or fatality has increased slightly since last year and is still very low
- No fatalities in 10 years
- [Refer to Appendix B for further information on boilers and pressure vessels](#)

Boilers and Pressure Vessels Case Study:

Alkaline Hydrolysis Machine Incident in Quebec

Background

An alkaline hydrolysis machine is an alternative to a crematorium for deceased individuals (see Figure 5). This process uses less energy than cremation and takes much less time. It is a process that is only legal in a few provinces and states.

A pressure vessel for this unique process located in Quebec had the quick-opening door on the pressure vessel fail, causing an explosion (see Figure 6). Replacement parts were required in order to return the door construction back to its original design. No one was injured, but the seriousness of the incident could easily have resulted in fatalities.

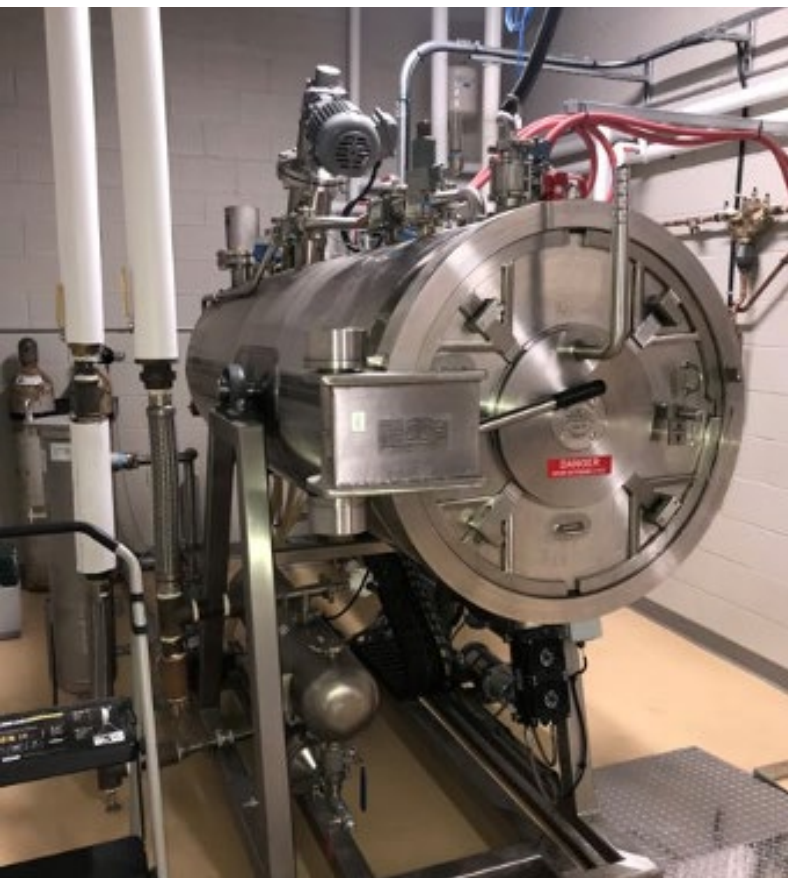


Figure 5: Alkaline Hydrolysis Machine

There are three similar installations in Arnprior, Kingston and Peterborough, Ontario. The designer of the process told the sites to immediately shut down the vessels until the right corrective actions were taken. Since this equipment was in full use and expected to be in full use due to COVID-19 deaths, there were many people anxious to see Ontario's equipment up and running as soon as possible.



Figure 6: Photos from Site of Occurrence

Conclusions

Due to the COVID-19 lockdown, the incident in Quebec was not investigated by Régie du bâtiment du Québec (RBQ). However, the designer of the process determined that the vessel manufacturer had modified the quick-opening door and did not get agreement from the door manufacturer.

TSSA Actions

Due to COVID-19 restrictions, it took some time for the required replacement parts along with proper certificates to arrive from the United States. TSSA inspected the alkaline hydrolysis machine door modifications in Ontario, and the equipment was put back into service for safe use.

Message from Roger Neate, Interim Boilers and Pressure Vessels Statutory Director

Partnerships Make Progress on Certificates of Inspection, Canadian Registration Numbers and OASIS

The Boilers and Pressure Vessels (BPV) Certificate of Inspection (COI) program has been active for two years. TSSA continues to collect data on the number of boilers and pressure vessels operating in Ontario. Over the past year, TSSA has continued to work with industry stakeholders to revise and streamline the COI process.

Throughout the year, the BPV Safety Program also took a lead role in working with its counterparts from other provinces to establish a new national registration process for Canadian Registration Numbers (CRNs). The process serves to streamline registrations and reduce the burden on industry.

While TSSA continued to see increased reporting of refrigerant leak incidents in Ontario, there is currently no evidence to conclude that more incidents had occurred; rather, more incidents had been reported to TSSA from the Spills Action Centre which also receives reports for the Ministry of the Environment, Conservation and Parks. TSSA will continue to monitor these incidents over the coming year to determine if additional actions are necessary.

Over the past year, BPV Safety Program staff, along with other members of the TSSA team, worked extensively to set out design requirements for TSSA's new information system, known as the Operations Analytics Safety Innovation System (OASIS). System design has been progressing well, and testing will begin shortly, with planned implementation for early next year.



State of Public Safety in Ontario

Operating Engineers Safety Program

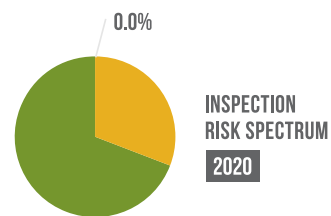
Figure 7: State of Public Safety for Operating Engineers

INVENTORY	PROGRAM AREA ACTIVITIES
3,366 Plants 12,500 Operating Engineers	- Registers, inspects and regulates the safety of plants in Ontario - Examines and certifies operating engineers - Performs oversight of the management, operation and maintenance of plants to ensure compliance to the regulation and established safety standards

2016 - 2020
FIVE-YEAR AVERAGE

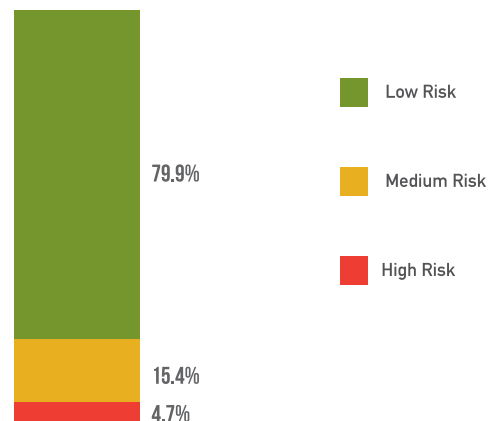
41.2%

PERCENTAGE COMPLIANCE



INVENTORY RISK PROFILE¹

2020



HEALTH IMPACT		
OBSERVED		POTENTIAL
0.00 FE/mpy (2011 – 2020) Injury Burden	0.00 FE/mpy (2020) Injury Burden	0.01 FE/mpy (2020) Risk of Injury or Fatality

SAFETY NUMBERS (SAFETY AT A GLANCE)				
REPORTING PERIOD	INCIDENTS AND NEAR-MISS OCCURRENCES	NON-PERMANENT INJURIES	PERMANENT INJURIES	FATALITIES
2011 – 2020	51	1	3	0
2020	7	0	0	0

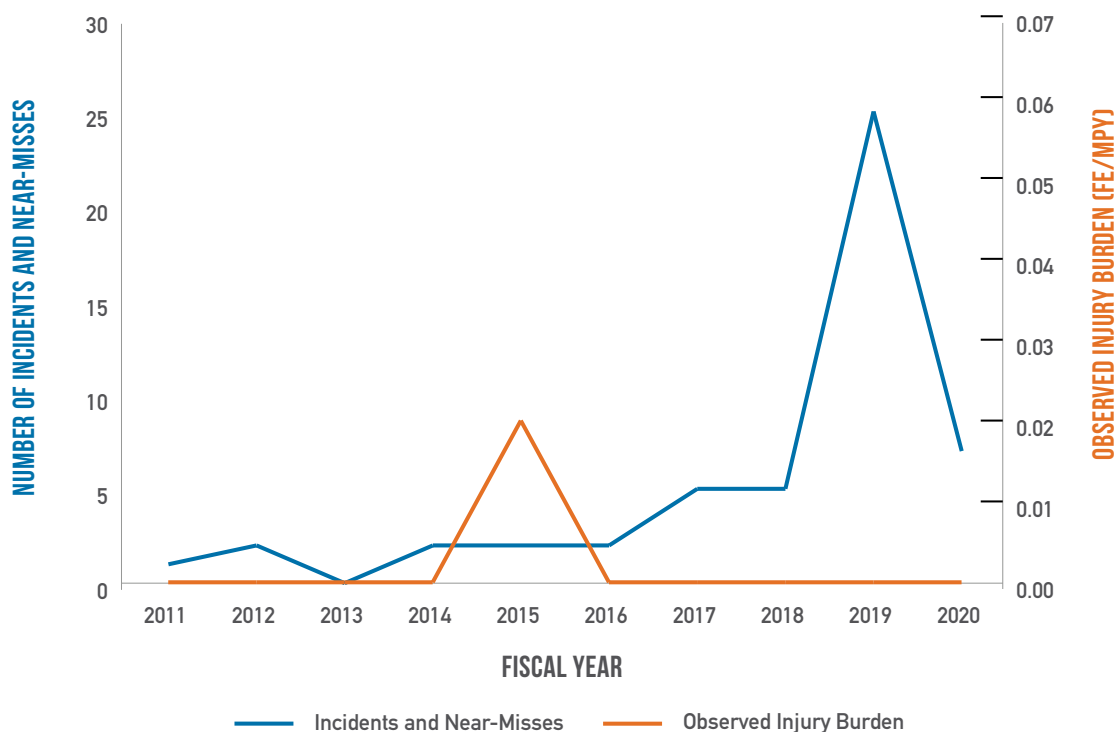
¹ Based on facilities with three or more periodic inspections.



Operating Engineers

TSSA's Operating Engineers Safety Program registers, inspects and regulates plants that power Ontario with electricity, refrigeration, heating and cooling and is also responsible for the examination and certification of operating engineers (also known as power engineers). In addition, TSSA provides oversight of the management, operation and maintenance of plants to ensure compliance to the regulation and established safety standards.

Figure 8: 10-Year Safety Trends for Operating Engineers



- All incidents in 2020 involved the release of refrigerants
- Inspection risk spectrum percentage of major issues has reduced slightly since last year
- Inventory risk profile percentage of high-risk devices and facilities has increased since last year
- Five-year average compliance rate has increased slightly since last year
- Risk of injury or fatality is the same as last year
- No fatalities in 10 years
- [Refer to Appendix C for further information on operating engineers](#)

Operating Engineers Case Study: Ammonia Leak at Community Centre

Background

One day in April 2019, a facility operator arrived at a community centre around 6 a.m. Upon arrival, he heard an alarm in the compressor room. He checked the ammonia detection system and the reading was 321 parts per million (ppm). The current occupational exposure limit for ammonia in Ontario workplaces is 25 ppm. The operator called the refrigeration contractor and 911.

The fire department and the refrigeration contractor arrived at the scene between 6:30 and 7 a.m. The refrigeration contractor, equipped with the full gas mask, checked the ammonia level with his detector which read 343 ppm. He shut down the plant.

He found that the exhaust fan was working. However, the fresh air intake was not open, as the linkage on the actuator arm that opens the louvres was not moving. Subsequently, he opened the air intake and waited until the ammonia level went down.

In the afternoon, the level was 75 – 80 ppm. The refrigeration contractor entered the compressor room wearing a full gas mask and found the leak point: the gasket of the screw compressor cover had ruptured. He isolated the compressor and replaced the gasket.

The ammonia level eventually declined below 10 ppm. There were no injuries.

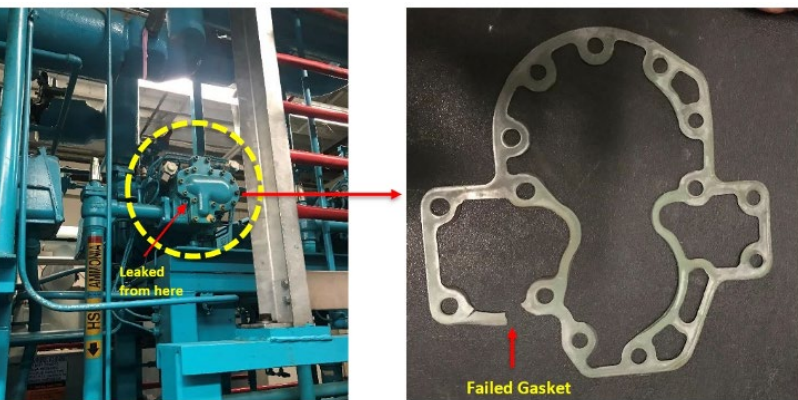


Figure 9: Photo of Gaskets

Conclusions

The ammonia release was due to a failure of the screw compressor cover gasket (see Figure 9). The compressor had been running for eight years and the gasket had been replaced five years prior. Its running time was approximately 2,000 hours.

In addition, the air intake louvres were not working due to a loose bolt on the connecting rod, thus impeding dispersion of the ammonia once it had leaked. The air intake louvres had been inspected the previous January during annual maintenance. Going forward, the community centre will be updating its daily operation procedure to include checking the air intake louvres daily.

TSSA Actions

TSSA issued the following orders:

- Replace blown head gasket to manufacturer's specifications;
- Replace ammonia sensor on refrigerant detection system, as it was saturated with ammonia;
- Develop a safe working procedure for staff to test fresh air damper operation before entering mechanical room; and
- Repair defective linkage on fresh-air damper.

TSSA also recommended a bolt tightening procedure for the screw compressor cover. However, this was a recommendation only, as TSSA does not have jurisdiction over rotating equipment.

Message from Roger Neate, Interim Operating Engineers Statutory Director

Preparation for Alternate Rules Launch

As part of TSSA's journey to becoming an outcome-based regulator, the Operating Engineers Safety Program continued to work with industry stakeholders to develop the framework and guidelines for Alternate Rules. The purpose of Alternate Rules is to provide flexibility for industry to achieve compliance with the Ontario Operating Engineers regulation. The changes are intended to address recommendations laid out in the 2017 Operating Engineers Expert Panel Report and allow for adoption of a risk-informed regulatory framework developed by the Operating Engineers' Risk Task Group.

In the future, owners will have the option of following one of three Operating Engineers paths to compliance: the existing regulation, Path 1 or Path 2.

- Path 1 represents enhanced, risk-based plant rating and staffing (Operating Engineer and Operator) from the existing regulation.
- Under Path 2, owners develop and submit to TSSA site-specific Risk and Safety Management Plans (RSMPs), including Process Safety Management (PSM) principles, which, once approved, are implemented. TSSA inspects these plants to ensure RSMPs are continuously in effect.

The option to follow Path 2 is expected to be available later this year.

Like its counterparts in the BPV Safety Program, the Operating Engineers Safety Program team was heavily involved in establishing the design requirements for the Operations Analytics Safety Innovation System (OASIS), TSSA's new information system scheduled to launch in 2021.



State of Public Safety in Ontario

Amusement Devices Safety Program

Figure 10: State of Public Safety for Amusement Devices

INVENTORY	PROGRAM AREA ACTIVITIES	REGULATED DEVICES	
2,401	- Licenses operators - Reviews and registers rides - Conducts inspections and investigations - Issues permits for rides - Provides engineering services	- Circular motion rides (e.g., Ferris wheels, merry-go-rounds) - Roller coasters - Water slides, flumes, dry slides - Go-karts, bumper cars	- Inflatables (bouncy castles and obstacle courses) - Bungee jumps and bungee-assisted rides - Zip lines (track and cable rides) - Spinning and whirling rides

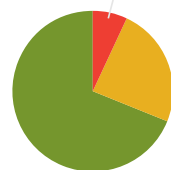
TOP SAFETY ISSUES (EXTERNAL FACTORS)			
DEVICE TYPE		OCCURRENCE TYPE	
BY NUMBER OF OCCURRENCES	BY OBSERVED INJURY BURDEN	BY NUMBER OF OCCURRENCES	BY OBSERVED INJURY BURDEN
Water Slide Coaster Ride Zip Line	Water Slide Coaster Ride Circular Ride	Physical Impact Sudden Movement Trip/Fall	Physical Impact Fall from Height Sudden Movement

2016 - 2020
FIVE-YEAR AVERAGE

57.5%

PERCENTAGE COMPLIANCE

7.0%



INSPECTION
RISK SPECTRUM
2020

INVENTORY RISK PROFILE¹

2020



Low Risk

Medium Risk

High Risk

HEALTH IMPACT		
OBSERVED		POTENTIAL
0.08 FE/mpy (2011 – 2020) Injury Burden	0.15 FE/mpy (2020) Injury Burden	0.23 FE/mpy (2020) Risk of Injury or Fatality

SAFETY NUMBERS (SAFETY AT A GLANCE)				
REPORTING PERIOD	INCIDENTS AND NEAR-MISS OCCURRENCES	NON-PERMANENT INJURIES	PERMANENT INJURIES	FATALITIES
2011 – 2020	6,457	5,860	221	1
2020	1,377	1,232	26	0

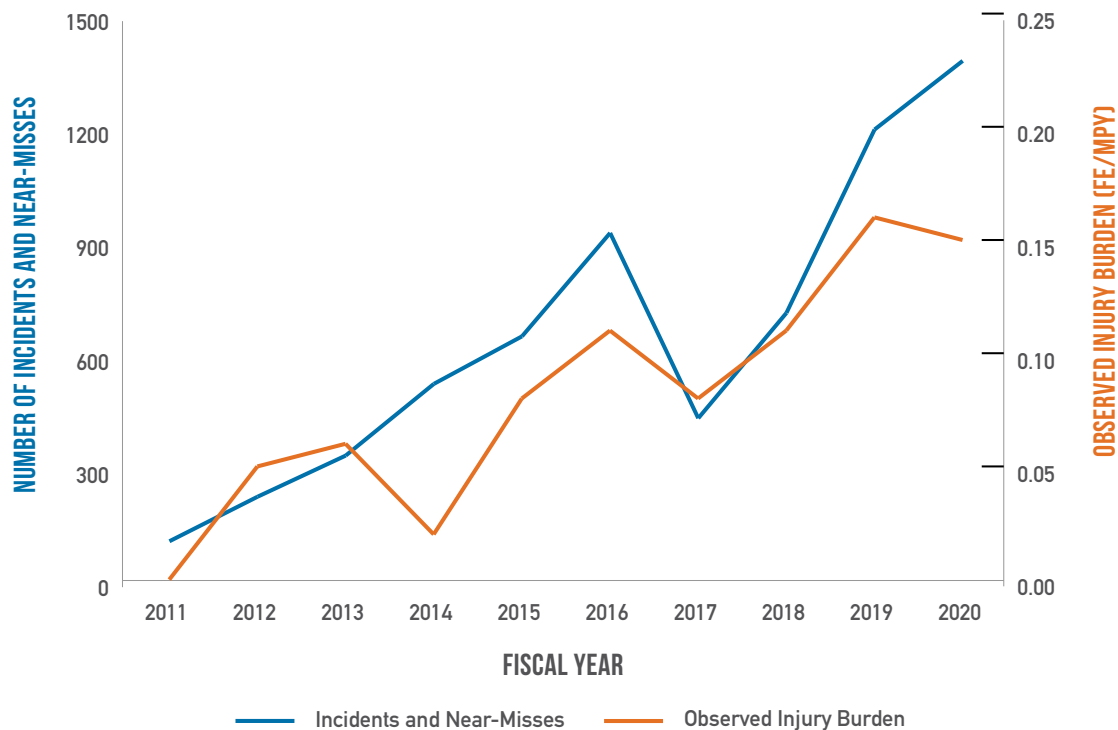
¹ Based on devices with three or more periodic inspections.



Amusement Devices

TSSA's Amusement Devices Safety Program regulates amusement rides in Ontario to ensure all devices conform to the Act and its associated regulations, codes and standards. As part of the Amusement Devices Safety Program, TSSA: licenses operators; reviews and registers rides; conducts inspections and incident investigations; provides engineering services; and, issues a permit for each ride in the current operating season.

Figure 11: 10-Year Safety Trends for Amusement Devices



- Inspection risk spectrum percentage of major issues has increased since last year
- Inventory risk profile percentage of high-risk devices and facilities has reduced since last year
- Five-year average compliance rate has increased since last year
- Risk of injury or fatality has increased slightly since last year
- No fatalities in 2020 and one fatality over 10 years
- [Refer to Appendix D for further information on amusement devices](#)

Amusement Devices Case Study:

Failure of Amusement Ride Sweep Arm

Background

In May 2019, there was a structural failure of an amusement ride sweep arm. This arm is used to connect the passenger carrying units to the rotating axle of the ride. TSSA attended the site to complete an investigation on the failure. After an in-depth inspection, TSSA issued orders to the owner to have the manufacturer provide TSSA with a detailed repair procedure. In conjunction with the manufacturer, a third-party engineer conducted an assessment and provided a repair procedure. This procedure entailed the addition of reinforcement members to the sweep arm. The manufacturer along with the engineering firm decided to make these modifications to all existing sweep arms on the device.

Once the repair was made and all orders were complied with, an inspection with the engineering firm was conducted and the device was returned to service.

In February 2020, it was reported to TSSA that another sweep arm had experienced structural failure. This failure was not located in the same area or on the same arm as the original failure in May 2019. Originally, when the structural reinforcement was added, there was an area on two of the sweeps where the reinforcement could not be added due to the configuration of the those sweeps. The failure of the sweep was in the area where no reinforcement could be added. The manufacturer/engineer then determined that the two sweeps must be made of thicker steel. This would create a consistent thickness throughout the entire sweep arm.

Once the arms were replaced, the device was, once again, inspected and returned to service.



Figure 12: Amusement Ride Sweep Arm

Conclusions

This device was 22 years old and metal fatigue may have played a role as well as the design thickness of the sweep arms.

TSSA Actions

TSSA collaborated with the amusement device owner, the manufacturer and the third-party engineer to resolve the issue. In particular, TSSA inspected the equipment and issued orders for its refurbishment.

Message from Dean McLellan, Interim Amusement Devices Statutory Director

Inflatable Device Materials Put to the Test

This past year, the Amusement Devices Safety Program continued to test the material that is used to construct inflatable devices. As specified by the American Society for Testing and Materials (ASTM) International standard, inflatable devices must be composed of flame-retardant fabric, in the event that people using the devices are exposed to fire. TSSA performed a flame test—an assessment method prescribed in the National Fire Prevention Association (NFPA) standard—on inflatable device material and identified a number of devices that did not meet the test requirements.

The Amusement Devices Safety Program has since informed other Canadian jurisdictions of its findings and presented on the topic at ASTM International meetings to advise additional authorities and manufacturers of the issue. Furthermore, inflatable devices that were not composed of flame-retardant fabric did not receive licences until they were found to be in compliance.

It is important that owners contact manufacturers of these inflatable devices prior to purchasing to ensure their devices comply with the ASTM standard. TSSA will continue to ensure Ontario's inflatable devices fulfill standard requirements during annual inspections.



Figure 13: Flame Test

Safety Partners Collaborate to Bolster Amusement Device Electrical Compliance

Electrical compliance of amusement devices was also an area of focus for TSSA, in the year past. All amusement devices in the province of Ontario must have their electrical equipment certified by the original manufacturer or a certifying body. When changes are made to the original electrical equipment in a device, recertification may be required.

TSSA collaborated with Ontario's Electrical Safety Authority (ESA) to develop educational material and train owners of devices on electrical requirements. In addition, the Amusement Devices Safety Program worked with industry to set expectations and compliance timelines to ensure that all new and existing devices met compliance standards.

Currently, all licensed devices in Ontario conform with the applicable electrical device standards and/or have been approved by a field evaluation agency. TSSA continues to perform inspections and partner with ESA to ensure electrical safety and compliance on amusement devices.

State of Public Safety in Ontario

Elevating Devices Safety Program - Elevators

Figure 14: State of Public Safety for Elevators

INVENTORY	PROGRAM AREA ACTIVITIES	REGULATED DEVICES
59,887	- Reviews and registers devices - Issues licences - Conducts inspections - Performs incident investigations - Provides engineering services - Registers contractors - Certifies mechanics	- Types of elevators: passenger, freight, hand-powered, observation, sidewalk, temporary, limited use/application - Dumbwaiters, material and freight platform lifts - Lifts for persons with physical disabilities - Man-lifts, construction hoists, incline lifts, stage lifts, and parking garage lifts

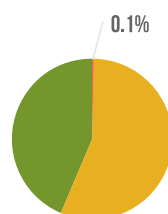
AREAS OF CONCERN (2020)	
AREAS OF HIGH RISK	
Elevator Risks in Hospitals	3.53 FE/mpy
Elevator Risks in Retirement and Long-Term Care Homes	1.32 FE/mpy

TOP SAFETY ISSUES (EXTERNAL FACTORS)			
LOCATION TYPE		OCCURRENCE TYPE	
BY NUMBER OF OCCURRENCES	BY OBSERVED INJURY BURDEN	BY NUMBER OF OCCURRENCES	BY OBSERVED INJURY BURDEN
Rental Apartment Office Condominium	Student Residence Office Rental Apartment	Flooding Door Closing Trip/Fall	Entrapment Door Closing Unintentional Movement

2016 - 2020
FIVE-YEAR AVERAGE

19.8%

PERCENTAGE COMPLIANCE



INSPECTION
RISK SPECTRUM
2020

INVENTORY RISK PROFILE¹

2020



Low Risk

Medium Risk

High Risk

HEALTH IMPACT		
OBSERVED		POTENTIAL
0.07 FE/mpy (2011 - 2020) Injury Burden	0.11 FE/mpy (2020) Injury Burden	0.67 FE/mpy (2020) Risk of Injury or Fatality

SAFETY NUMBERS (SAFETY AT A GLANCE)				
REPORTING PERIOD	INCIDENTS AND NEAR-MISS OCCURRENCES	NON-PERMANENT INJURIES	PERMANENT INJURIES	FATALITIES
2011 - 2020	5,016	1,407	80	9
2020	641	126	8	1

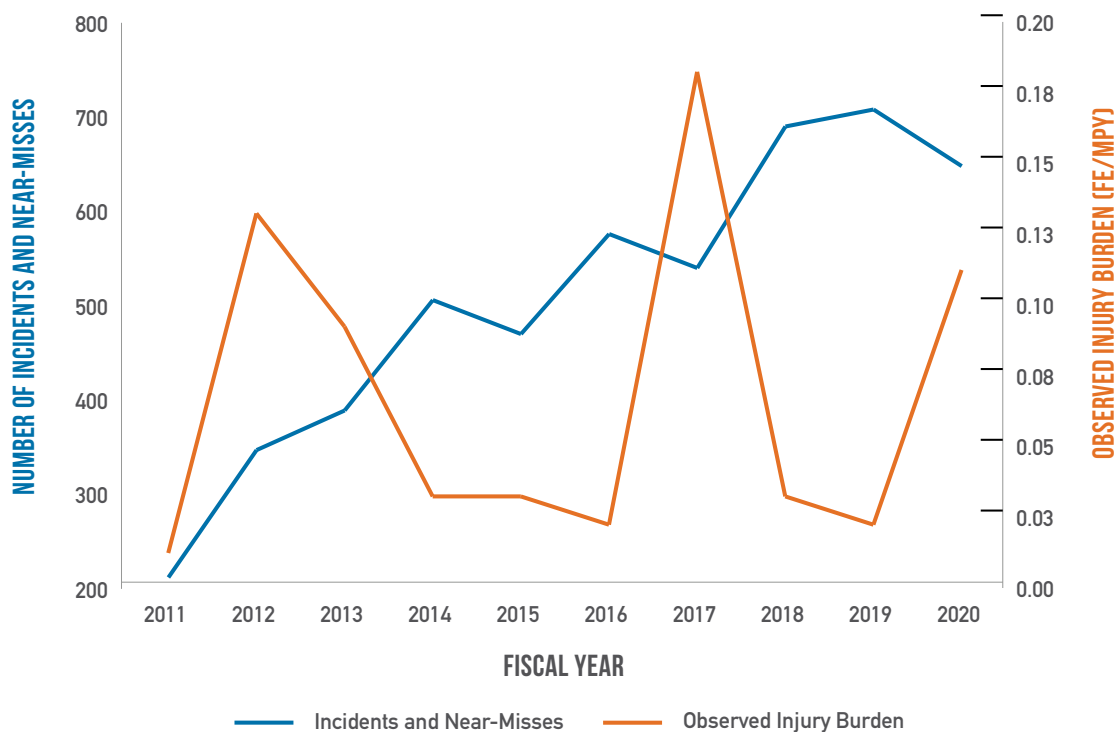
¹ Based on devices with three or more periodic inspections.



Elevators

The Elevating Devices Safety Program regulates elevators in Ontario to ensure all devices conform to the Act and applicable regulations, codes and standards. TSSA reviews and registers elevators, issues licences, conducts inspections, performs incident investigations, provides engineering services, registers contractors and certifies mechanics.

Figure 15: 10-Year Safety Trends for Elevators



- Two areas of concern (both high risk)
 - › Elevator risks in hospitals (risk of injury or fatality has increased slightly since last year)
 - › Elevator risks in retirement and long-term care homes (risk of injury or fatality has increased substantially since last year, taking all risks, not just user interactions, into consideration)
- Inspection risk spectrum percentage of major issues is the same as last year
- Inventory risk profile percentage of high-risk devices and facilities has reduced slightly since last year
- Five-year average compliance rate has reduced slightly since last year
- Risk of injury or fatality has increased slightly since last year
- One fatality in 2020 and nine fatalities over 10 years
- [Refer to Appendix E for further information on elevators](#)

Elevators Case Study:

Failure of an Elevator Hoist Rope

Background

In January of 2020, a hoist rope failure occurred on an elevating device. At the time of the incident, the victim was travelling from the 34th floor to the lobby of the building, when a high-speed stop of the elevator occurred at approximately the 4th level of the building, causing the victim to fall to the elevator floor and sustain minor injuries.

Once on site, the initial investigation showed that one of the hoist ropes had broken. Upon further investigation it was noted that Maintenance Task 8.6.4.1 for Suspension and Compensating Wire Ropes – rouging², breaks, etc. was not signed as being complete and compliant by the maintaining contractor. The logbook indicates that this is a twelve-month interval and was last verified for compliance in October 2017. There are no further indications documented of any issues or that the hoist ropes were being monitored for loss of diameter and rouge. According to the on-site information, the device had trapped people several times during operation. Most entrapments were caused by the compensation switch. This may have been a sign that the ropes were stretching and were beginning to fail with abnormal stretch.

Eventually a catastrophic failure of the hoist rope happened, causing minor injuries to the occupant. TSSA's investigation of the remaining hoist ropes revealed a loss of diameter and rouge in several locations.



Figure 16: Rough and Frayed Hoist Rope

Conclusions

TSSA's root cause analysis showed that the root cause was due to improper/negligent maintenance work practices.

TSSA Actions

In addition to the affected hoist rope, TSSA also inspected the hoist ropes of the other elevators in the building for signs of rouging. TSSA oversaw the removal of the damaged hoist rope and the installation of its replacement, as well as testing the elevator before putting it back into service.

TSSA also provided education to the elevator maintenance contractor regarding hoist rope maintenance, particularly with regards to rouging.

² Rouge is a fine, red iron oxide which forms on the rope, giving it a "rusty" appearance and suggesting that advanced deterioration is taking place. Rouging is caused by fretting, a special type of abrasion which occurs when two solid surfaces bear against one another while under a heavy load and subjected to small amplitude vibrations. The small amplitude vibrations are due to load vibrations which occur during loading and unloading and starting and stopping of the elevator. The pressures from the heavy load and vibrations work out any lubrication that may have been present, and result in very small metal particles that have become abraded or torn out of the metal surface. In elevator rope, rouging begins with a lack of core support. This is usually due to a lack of proper field lubrication. The fibre core dries up and cannot provide the strands with the necessary support.

Message from Dean McLellan, Interim Elevators Statutory Director

Plans to Boost Elevator Compliance with Owner/Operator Support

Though elevators in Ontario have a low rate of incidents resulting in permanent harm or fatalities, elevator compliance continues to be low, particularly with maintenance obligations. TSSA is leveraging its compliance support program to assist owners in understanding and prioritizing their compliance requirements. In the future, TSSA's outcome-based regulator transformation will enable the Elevator Safety Program to incorporate additional tools to assist in achieving safety outcomes.

Hospital Elevator Risks Unrelated to Compliance

For the third year in a row, there has been an increased level of risk from elevators in hospitals; however, the risk is not related to compliance. These devices have increased usage, often running 24-hours-a-day and, therefore, are expected to encounter more incidents. While the primary occurrence types are associated with trips and falls specifically as the doors close, the main source of risk is hospital employees. Employees are expected to be more forthcoming in their incident reporting than passengers in other building types, which contributes to the data showing a higher risk level for hospital elevators.

Users' Interaction with Elevators Increases Risk at Retirement Homes

Elevators in Retirement and Long-Term Care Homes continue to show an increased level of risk. Similar to hospitals, this issue is mainly due to the way users interact with the devices, resulting in door strikes and trips/falls. Last year, TSSA continued its outreach with these owners, advising them on how to decrease door speeds and providing general awareness of elevator safety. Elevator Safety Program inspectors continue to remind owners of these procedures, and TSSA expects to see a decrease in risk over the coming years.

State of Public Safety in Ontario

Elevating Devices Safety Program - Escalators and Moving Walks

Figure 17: State of Public Safety for Escalators and Moving Walks

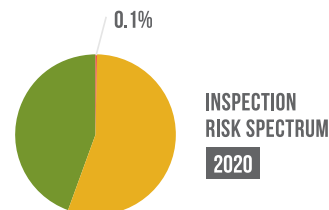
INVENTORY	PROGRAM AREA ACTIVITIES	
2,306	- Reviews and registers devices - Issues licences - Conducts inspections	- Performs incident investigations - Registers contractors and certifies mechanics - Provides engineering services

TOP SAFETY ISSUES (EXTERNAL FACTORS)			
LOCATION TYPE		OCCURRENCE TYPE	
BY NUMBER OF OCCURRENCES	BY OBSERVED INJURY BURDEN	BY NUMBER OF OCCURRENCES	BY OBSERVED INJURY BURDEN
Mass Transportation Commercial Office	Mass Transportation Commercial Assembly	Trip/Fall Entrapment Flooding	Trip/Fall Entrapment Unintentional Movement

2016 - 2020
FIVE-YEAR AVERAGE

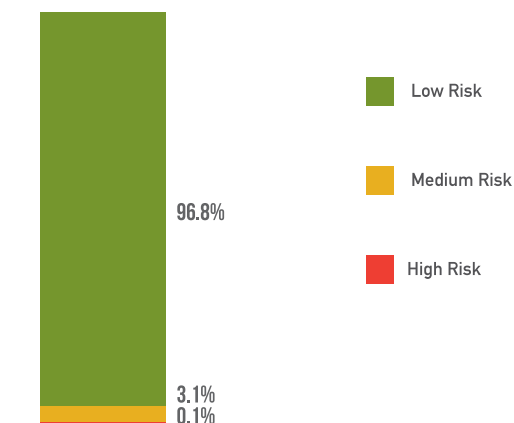
11.6%

PERCENTAGE COMPLIANCE



INVENTORY RISK PROFILE¹

2020



HEALTH IMPACT		
OBSERVED		POTENTIAL
0.01 FE/mpy (2011 - 2020) Injury Burden	0.00 FE/mpy (2020) Injury Burden	0.03 FE/mpy (2020) Risk of Injury or Fatality

SAFETY NUMBERS (SAFETY AT A GLANCE)				
REPORTING PERIOD	INCIDENTS AND NEAR-MISS OCCURRENCES	NON-PERMANENT INJURIES	PERMANENT INJURIES	FATALITIES
2011 - 2020	6,412	4,271	33	0
2020	670	456	1	0

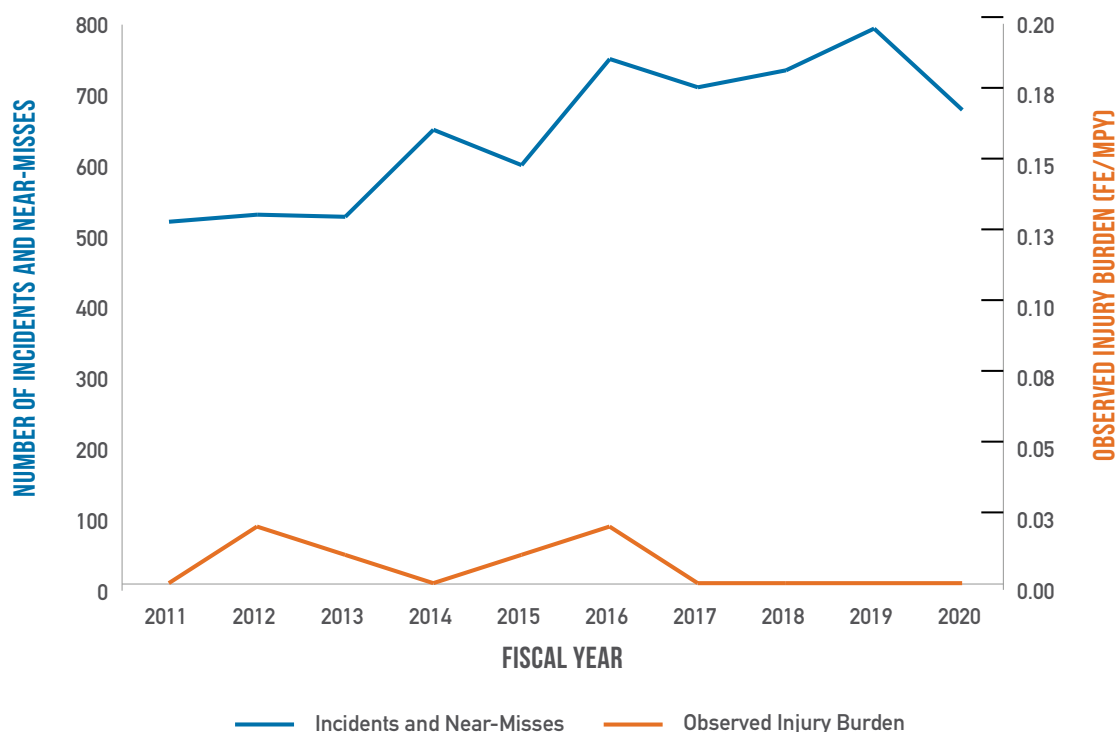
¹ Based on devices with three or more periodic inspections.



Escalators and Moving Walks

The Elevating Devices Safety Program regulates escalators and moving walks in Ontario to ensure all devices conform to the Act and applicable regulations, codes and standards. TSSA reviews and registers escalators and moving walks, issues licences, conducts inspections, performs incident investigations, provides engineering services, registers contractors and certifies mechanics.

Figure 18: 10-Year Safety Trends for Escalators and Moving Walks



- Inspection risk spectrum percentage of major issues has reduced since last year
- Inventory risk profile percentage of high-risk devices and facilities has increased slightly since last year
- Five-year average compliance rate has increased slightly since last year
- Risk of injury or fatality has reduced slightly since last year
- No fatalities in 10 years
- [Refer to Appendix F for further information on escalators and moving walks](#)

Escalators Case Study:

Step Demarcation Inserts Cracking/Missing

Background

Step demarcation has been in the code for quite some time. In fact, in 2007, the code changed to requiring yellow inserts be put into escalator steps, as the Code Committee felt that yellow paint would fade and wear over time. The purpose of these inserts is to enable passengers to identify the separation between steps.

A study had been completed with an American transit authority, as well the accessibility community. The inserts were chosen to be yellow, as this was a better colour for vision-impaired individuals. The strips are to be installed at the rear and the sides of the steps; the code is very clear as to the size, colour and location of the demarcation marks. Additionally, these markings act as a warning to stop passengers from standing near the sides and rear of the step of the device, where additional hazards exist.

During a periodic inspection, a TSSA inspector found several of these strips cracked as well as some missing. The device was running at the time and the missing strips could have caused a hazard to a rider of the device. The owner was completing daily checks and signing off on the step treadway even though sections were missing (see Figure 19) and cracked (see Figure 20). The owner informed the inspector that once the piece broke, they would inform the maintaining contractor and the contractor would come in and replace the broken part.



Figure 19: Escalator Step Treadway



Figure 20: Treadway Cracked

Conclusions

The escalators were improperly operating with cracked and missing demarcation strips, thereby posing a safety hazard to users.

TSSA Actions

TSSA has worked with the owner to ensure that the daily checks indicate they should notify the contractor when cracks are found, not just when pieces have broken off. We also educated both the owner and contractor that all incidents should be reported to TSSA and, if strips are missing, the device should immediately be removed from service. We are also working with the manufacturer to find out why these inserts are cracking.

Message from Dean McLellan, Interim Escalators and Moving Walks Statutory Director

Barring Escalators from Child's Play

Over the past few years, Ontario has had a number of incidents where young children playing around escalators grasp the handrail from outside of the escalator and hang on so the escalator lifts them off the ground and up the incline. While some children let go before reaching a significant height, sustaining minor injuries, others fell from considerable heights, resulting in serious harm.

TSSA investigations show that children either walked up the ledge of the escalator while holding onto the handrail, stepped around existing barricades or simply hung onto the handrail and rode it upwards.

As result of these incidents, TSSA initiated discussions with the Escalator Code¹ Committee to add new requirements for deck barricades that would prevent children from hanging from handrails on the outside of escalators. TSSA is optimistic that these changes will be incorporated into the 2022 edition of the code. The new requirements would prohibit persons from reaching or stepping around the existing barricades to hang from the handrail. In the meantime, TSSA will continue to ensure that the current deck barricade requirements are met during periodic equipment inspections.



Figure 21: Escalator Deck Barricade

¹ American Society of Mechanical Engineers (ASME) A17.1 and Canadian Standards Association (CSA) B44.

State of Public Safety in Ontario

Elevating Devices Safety Program

Passenger Ropeways (Ski Lifts)

Figure 22: State of Public Safety for Ski Lifts

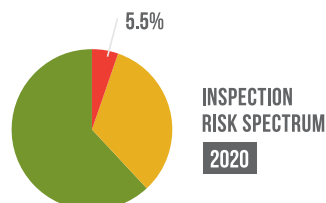
INVENTORY	PROGRAM AREA ACTIVITIES	
246	- Regulates bar and chair lifts, outdoor recreational conveyers, rope and tube tows - Reviews and registers lift designs - Conducts inspections and performs incident investigations	- Licenses lift devices - Certifies mechanics - Provides engineering services - Promotes safe ski lift behaviour - Registers contractors

TOP SAFETY ISSUES (EXTERNAL FACTORS)			
LOCATION TYPE		OCCURRENCE TYPE	
BY NUMBER OF OCCURRENCES	BY OBSERVED INJURY BURDEN	BY NUMBER OF OCCURRENCES	BY OBSERVED INJURY BURDEN
Chair Lift Bar Lift Passenger Conveyor	Chair Lift Passenger Conveyor Rope Tow	Trip/Fall Physical Impact Fall from Height	Entanglement Physical Impact Trip/Fall

2016 - 2020
FIVE-YEAR AVERAGE

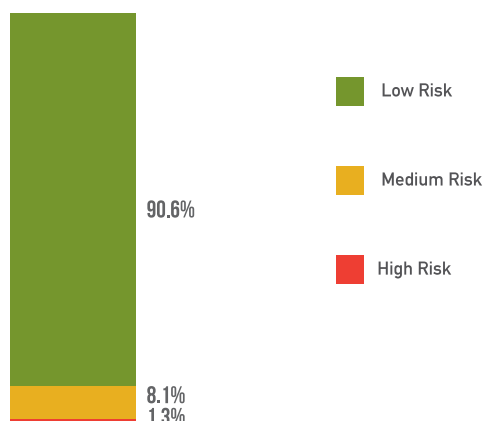
47.6%

PERCENTAGE COMPLIANCE



INVENTORY RISK PROFILE¹

2020



HEALTH IMPACT		
OBSERVED		POTENTIAL
0.01 FE/mpy (2011 - 2020) Injury Burden	0.00 FE/mpy (2020) Injury Burden	0.01 FE/mpy (2020) Risk of Injury or Fatality

SAFETY NUMBERS (SAFETY AT A GLANCE)				
REPORTING PERIOD	INCIDENTS AND NEAR-MISS OCCURRENCES	NON-PERMANENT INJURIES	PERMANENT INJURIES	FATALITIES
2011 - 2020	854	676	15	0
2020	89	61	1	0

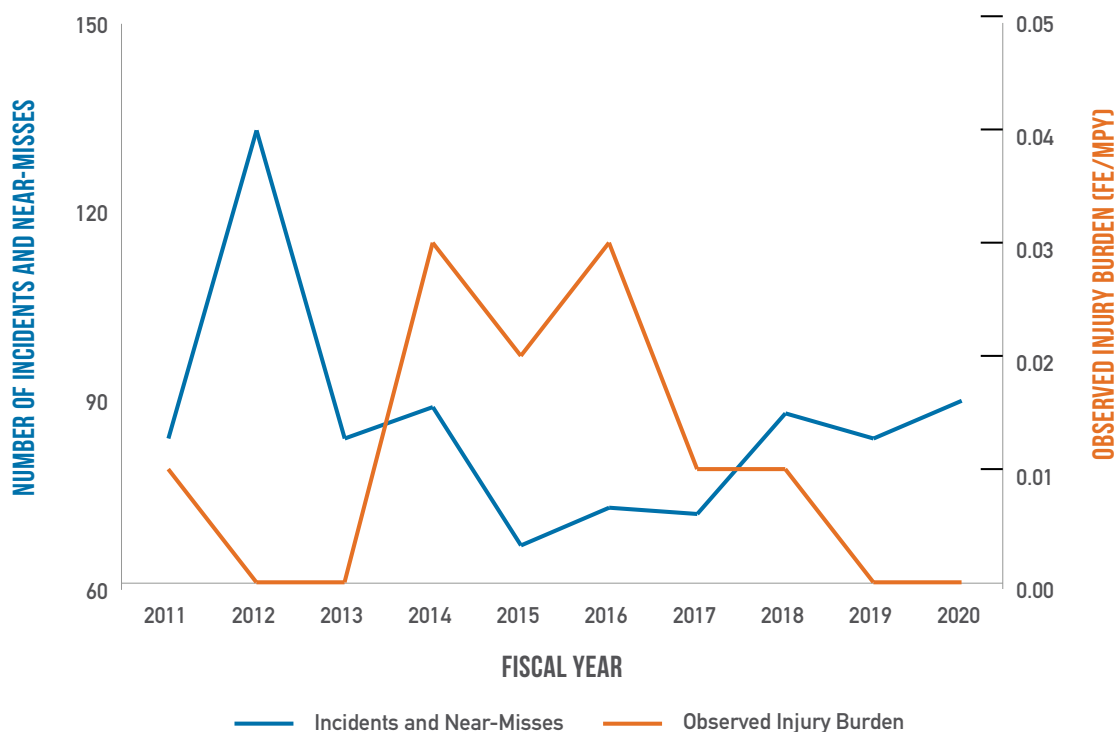
¹ Based on devices with three or more periodic inspections.



Passenger Ropeways (Ski Lifts)

The Elevating Devices Safety Program regulates passenger ropeways in Ontario to ensure all devices conform to the Act and applicable regulations, codes and standards. TSSA reviews and registers passenger ropeways (bar and chair lifts, outdoor recreational conveyers, rope and tube tows), issues licences, conducts inspections, performs incident investigations, provides engineering services, registers contractors and certifies mechanics.

Figure 23: 10-Year Safety Trends for Ski Lifts



- Inspection risk spectrum percentage of major issues has increased since last year
- Inventory risk profile percentage of high-risk devices and facilities has substantially reduced since last year
- Five-year average compliance rate has slightly reduced since last year
- Risk of injury or fatality has slightly reduced since last year
- No fatalities in 10 years
- [Refer to Appendix G for further information on passenger ropeways \(ski lifts\)](#)

Ski Lifts Case Study:

Periodic Engineering Review and Assessment of Aging Ski Lifts

Background

In June 2007, TSSA released a bulletin that required engineering testing be completed on all above surface ski lifts that were 15 years of age or older or had a total operation time of 22,500 hours. The bulletin then broke down the timelines for additional assessments after the initial one. The Periodic Engineering Review and Assessment would identify ski lift parts that were affected by fatigue and vibration of both moving components and fixed structures, resulting in cracks and fractures of connections and parent metal.

Environmental factors, such as snow, ice, rain, temperature, humidity, and dust, were also considered, as they can cause corrosion and deterioration of structural, mechanical and electrical components. The assessment would determine the extent of the component deterioration and evaluate their safety. The bulletin also required non-destructive testing (NDT) be completed on both fixed structures and moving parts of the device.

Conclusions

After receiving reports for several devices across the province, issues found included cracks in bullwheels (see Figure 24) and counterweight brackets (see Figure 25), wall thickness thinning on towers, and worn parts.

This bulletin has helped identify flaws that existed in the devices that may not have been noticed by the human eye and has very likely helped in preventing incidents in the future.

TSSA Actions

TSSA issues directors' orders, advisories, bulletins and guidelines as new information becomes available to help ensure safety in this and other regulated programs.



Figure 24: Crack in Bullwheels



Figure 25: Counterweight Brackets

Message from Dean McLellan, Interim Ski Lifts Statutory Director

Chair Lifts Not Culpable for All Falls

Each year in Ontario, people fall from chair lifts, even when the devices meet compliance requirements. It should be noted that not all incidents stem from device deficiencies.

This past year, a six-year-old child fell approximately 7.62 metres (25 feet) from a chair lift when the parent was no longer able to keep hold of the child. TSSA's investigation showed that the device was in full compliance with regulation. The child was a beginner skier who had not been properly seated on the chair lift. In addition, the hill had been exceptionally busy that day, and the operator failed to notice the child in an incorrect seating position. Fortunately, the child was not injured in the fall. The device operators were subsequently required to undergo refresher training on chair lift operation, including hazards and risks.

Several years ago, TSSA worked with industry members to create better signage to inform riders of potential chair lift risks and provide instructions on safely boarding a device. During yearly operational site inspections, TSSA continues to work with industry to ensure operators receive proper training from owners.



Figure 26: Ski Lifts in Ontario

State of Public Safety in Ontario

Fuels Safety Program

Figure 27: State of Public Safety for Fuels

FACILITIES	PROGRAM AREA ACTIVITIES	FUELS LIFECYCLE	REGULATED FUELS
4,221 Liquid Fuels 1,328 Propane	- Licenses fuel facilities - Registers contractors - Certifies tradespersons who install and service equipment - Reviews and approves facility plans for licensed sites - Approves custom equipment - Conducts inspection services - Provides engineering services	Transmission, Distribution and Transportation	- Natural gas - Propane - Butane - Hydrogen - Digester gas - Landfill gas - Liquid fuels (fuel oil, gasoline, diesel)
		Storage and Dispensing	
		Utilization (burning)	

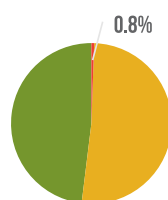
AREAS OF CONCERN ¹ (2020)			
AREAS OF HIGH RISK		AREA OF MEDIUM RISK	
CO Risks in Apartments & Condominiums	3.54 FE/mpy	Fuel Risks in Business Units	0.61 FE/mpy
Fuel Risks in Private Dwellings	2.65 FE/mpy		
Fuel Risks in Schools	0.38 FE/mpy		

LIQUID FUELS

2016 - 2020
FIVE-YEAR AVERAGE

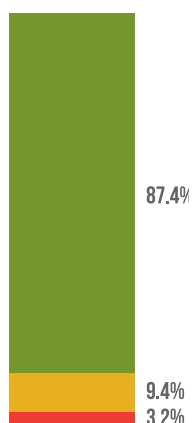
42.3%

PERCENTAGE COMPLIANCE



INSPECTION
RISK SPECTRUM
2020

INVENTORY RISK PROFILE¹
2020



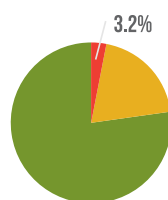
Low Risk Medium Risk High Risk

PROPANE

2016 - 2020
FIVE-YEAR AVERAGE

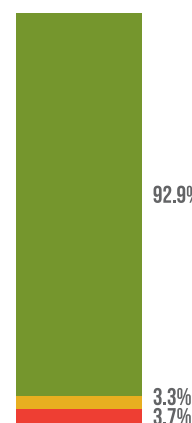
73.2%

PERCENTAGE COMPLIANCE



INSPECTION
RISK SPECTRUM
2020

INVENTORY RISK PROFILE¹
2020



Low Risk Medium Risk High Risk

HEALTH IMPACT		
OBSERVED		POTENTIAL
0.21 FE/mpy (2011 – 2020) Injury Burden	0.07 FE/mpy (2020) Injury Burden	1.34 FE/mpy (2020) Risk of Injury or Fatality

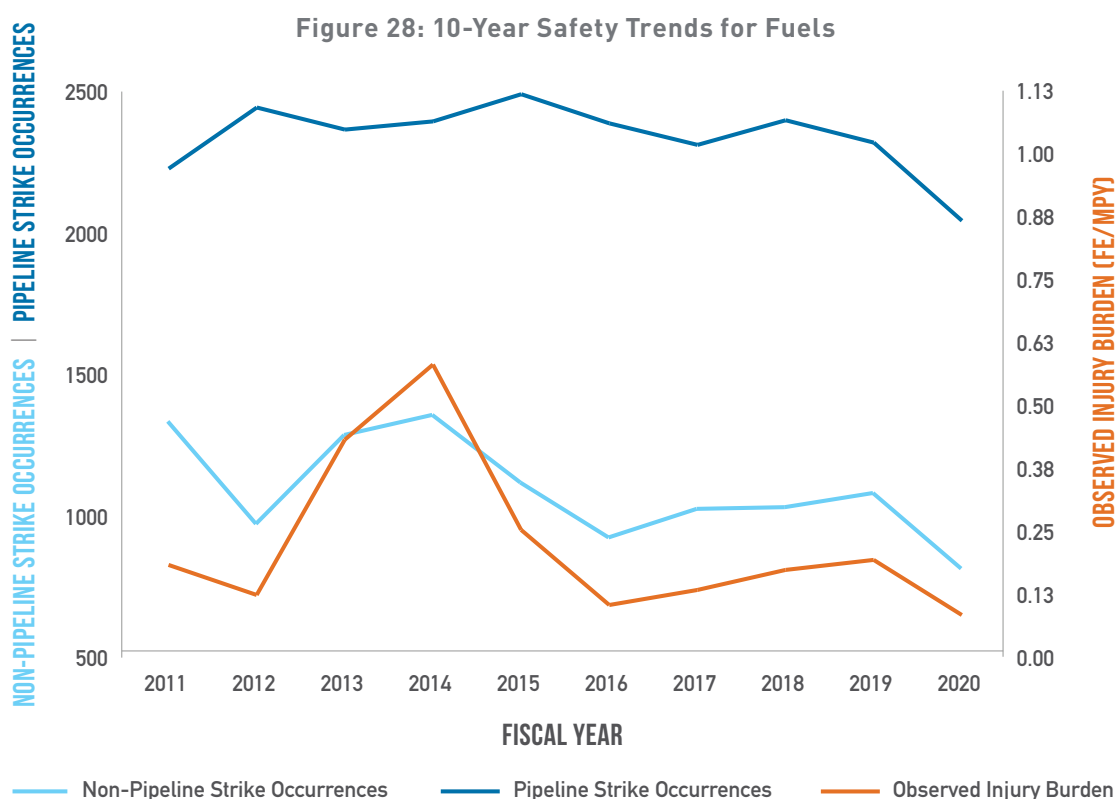
SAFETY NUMBERS (SAFETY AT A GLANCE)				
REPORTING PERIOD	INCIDENTS & NEAR-MISS OCCURRENCES	NON-PERMANENT INJURIES	PERMANENT INJURIES	FATALITIES
2011 – 2020	33,693	443	127	32
2020	2,805	20	8	2

¹ Based on facilities with three or more periodic inspections.



Fuels

TSSA's Fuels Safety Program regulates the transportation, storage, handling and use of fuels in Ontario. Fuels under this program include: natural gas; propane; butane; hydrogen; digester gas; landfill gas; fuel oil; gasoline; and, diesel. TSSA licenses fuel facilities, registers contractors and certifies tradespeople who install and service equipment. TSSA also reviews and approves facility plans for sites licensed by TSSA and performs custom equipment approvals and provides engineering services, inspection services to ensure safe handling and usage of fuel.



- Areas of concern in 2020
 - › Areas of High Risk
 - Carbon monoxide (CO) risks in apartments and condominiums (risk of injury or fatality has reduced slightly since last year)
 - Fuel risks in private dwellings (risk of injury or fatality has reduced slightly since last year)
 - Fuel risks in schools (risk of injury or fatality has reduced slightly since last year)
 - › Area of Medium Risk
 - Fuel risks in business units (risk of injury or fatality has increased slightly since last year)
- Liquid Fuels
 - › Inspection risk spectrum percentage of major issues has reduced slightly since last year
 - › Inventory risk profile percentage of high-risk devices and facilities has increased since last year
 - › Five-year average compliance rate is the same as last year
- Propane
 - › Inspection risk spectrum percentage of major issues has reduced slightly since last year
 - › Inventory risk profile percentage of high-risk devices and facilities has reduced since last year
 - › Five-year average compliance rate has increased slightly since last year
- Risk of injury or fatality has reduced slightly since last year
- Two fatalities in 2020 and 32 fatalities over 10 years
- [Refer to Appendix H for further information on fuels](#)

Fuels Case Study:

Carbon Monoxide Fatality in a House

Background

During a carbon monoxide (CO) release in a single-family home with a husband and wife, sadly, the husband died, while the wife suffered CO poisoning, but survived after a hospital stay.

There were two CO alarms in the house. However, both had been taken down from their mountings and had their batteries removed.

A natural draft boiler and water heater were on site (see Figure 29); neither had been maintained for three years. The family's pets lived in the same room as the boiler; all of which survived.

Conclusions

Animal hair and other debris clogging the boiler burners (see Figure 30), which can be easily become clogged, led to incomplete combustion, which resulted in a CO release. Note that a casual inspection with a flashlight by the homeowner could not have detected this issue. The boiler would require a thorough disassembly, which would have occurred had the boiler been maintained by a TSSA-certified technician.

In addition, high humidity on the day of the incident created a resistance to the natural draft operation of the equipment.

Note that if the CO alarms had been operational, the outcome might have been very different. Further, all homeowners are encouraged to have their fuel-burning appliances inspected yearly by a TSSA-certified technician.

TSSA Actions

TSSA performed a site inspection and an in-depth root cause analysis of the incident. We also frequently run education campaigns to inform homeowners about the importance of functioning CO detectors and proper equipment maintenance.



Figure 29: Boiler and Water Heater



Figure 30: Animal Hair Clogging Burners

Message from John Marshall, Fuels Statutory Director

New Initiatives Complement Ongoing Programs to Abate Areas of Concern

The injury burden for the Ontario fuels industry overall is lower than it has been in previous years. While carbon monoxide (CO) Risks in Apartments and Condominiums, as well as Fuel-Related Risks in Private Dwellings, continued to be top areas of concern this past year, TSSA saw an encouraging decline in the risk of injury or fatality (RIF) in the sectors, which translates into a reduction in the severity of harm experienced by Ontarians. The Fuels Safety Program attributes the improvement, in part, to the 2017 regulation that made CO alarms mandatory in all Ontario homes; other contributing factors include ongoing partnerships and educational campaigns, coupled with newly-launched awareness initiatives and regulatory compliance assistance services.

This past year, TSSA launched its “Working Together in our Community - Think Safe” campaigns in select communities in Ontario, in partnership with local government and emergency service providers. The three-week campaigns included a robust, multi-dimensional CO safety education component targeted at the general public.

In response to findings from the previous year’s Public Safety Report, which reported that inadequate installation and poor work were major contributing factors to the fuels- and CO-related risks in people’s homes, the Fuels Safety Program kicked off its first ‘Trunk Slammers’ Enforcement Campaign. Launched during 2020 Fraud Prevention Month, the program warned Ontarians about the risks of hiring uncertified gas technicians and unregistered fuels contractors who operate out the trunk of their cars (a.k.a. Trunk Slammers).

Compliance Standards Modernize Fuels Safety

The Fuels Safety Program was very active in TSSA’s transition to an outcome-based regulator and developed four industry compliance standards this past year. Compliance standards allow TSSA to focus on high-risk issues and requirements and put the responsibility for compliance on regulated parties.

Based on risk analytics of inspection and incident history, which was then vetted and finalized by internal and external subject matter experts, the four compliance standards were established for cylinder exchanges, tanker trucks, fuel oil distributors and heating contractors.

For cylinder exchanges and tanker trucks, risk analytics demonstrated that a formal periodic inspection program was unwarranted, and the compliance standards were used for educational outreach during the licence renewal process.

For fuel oil distributors, the analytics indicated the need to introduce an audit program so distributors can show compliance with their six core regulatory responsibilities.

For heating contractors, the analytics demonstrated the need to revise the existing audit program so that contractors can show compliance with their seven core regulatory responsibilities.

The introduction of compliance standards has modernized the Fuels Safety Program in these four areas.

Pipeline Strike Damages Reduced

Like the previous year, there was no demonstrable trend in pipeline strike occurrences this past year. However, there was a reduction over the same period in the damage ratio (a measure of damage prevention performance by the volume of damages per thousand notifications).

TSSA is closely examining the plateau in the reduction of pipeline strikes to better understand what additional actions the Fuels Safety Program can take with its partners—Ontario Regional Common Ground Alliance and Ontario One Call—to address it, in addition to ongoing public awareness campaigns, such as “Call or Click Before you Dig”.

