

TSSA PUBLIC SAFETY REPORT **2021**





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

On behalf of TSSA and the Public Safety Risk Management team, I am pleased to present this year's edition of the Public Safety Report, which covers the period from May 1, 2020, to April 30, 2021 (fiscal year 2021 or FY21). The report presents key safety performance metrics that illustrate the state of public safety in Ontario as it relates to the industries and technologies TSSA regulates.

Key Findings

Overall, key safety indicators for the province remain stable with flat trends or no trends at all. The Observed Injury Burden (OIB), which tracks the number of people harmed as a result of TSSA authorization holder activity, was 0.26 fatality equivalents per million people per year (FE/mpy) – this is the equivalent of the four fatalities, 13 permanent injuries and 415 non-permanent injuries recorded. In comparison, the average OIB for the past 10 years has been 0.40 FE/mpy.

We attribute this fiscal year's OIB reduction primarily to a substantial decline in the number of permanent and non-permanent injuries in the Amusement Devices sector – which saw 86 per cent fewer injuries compared to the past 10-year average – and Ski Lift sector – which saw 61 per cent fewer injuries compared to the past 10-year average.

This change, while positive, is most likely temporary. Safety program analysis of the data suggests that the reduction in permanent injuries and fatalities is a direct result of Ontario's province-wide business closures implemented throughout the year to limit the spread of the COVID-19 virus. Essentially, the closures meant that amusement devices and ski lifts were mostly inoperative during their respective seasons.

Enhanced RIF Formula

As TSSA continues its transformation to an Outcome-Based Regulator, our ability to assess and manage risk data is critical to the safety of Ontarians. Following a peer engagement process in FY20, we have continued to find opportunities to strengthen our risk analytics.

In 2019, we made the decision to transition to a new formula for Risk of Injury or Fatality (RIF), our predictive risk metric. The new RIF formula is a more precise and predictive measure of risk and better accounts for the severity of incidents and injury.

With the shift to the new formula, RIF values have decreased but are now more aligned with the level of injury that we actually observe which was a key driver for making the change. It is important for the reader to note that the decrease is driven by a change in our approach. Throughout the report, we have clearly explained the rationale of any significant changes to our key safety metrics to avoid confusion and we have chosen to show both the former and new RIF values.

Furthermore, it is important to note that the results of the new RIF calculation have changed the picture on the areas of concern. While the new RIF calculation moves some former areas of concern under the critical risk threshold, the public safety concerns that rank highest in the sectors we regulate remain legitimate safety concerns. Across all of our sectors, we are looking to identify and target anything that represents a high risk, even if the total number of high-risk devices and facilities are low.

In addition to our risk model and the safety data that we have, we are equally interested in the information and data that we don't have. This lack of data can result from a number of factors including poor incident reporting to illegal activity. Continuing to improve our data collection methods and risk scores presents an opportunity to more fully reflect the safety risks in Ontario.

TSSA will continue on its journey of continuous improvement in the months ahead – leveraging the insights provided by the technical and regulatory experts involved in our FY20 peer engagement group – to review and enhance our risk model and assess whether additional modifications would improve the clarity and quality of our report on the state of public safety in Ontario.

Data-Driven Safety Community

I hope you find this report helpful in understanding the state of safety among TSSA's regulated sectors. We have included a number of case studies to help bring the work that we do to life. And, if you work in or contribute to the industries that are represented in this report, I hope that you find the data, analysis and case study lessons to be valuable resources as you endeavour to enhance your own safety practices.

For more detailed tables with breakdowns of the data and additional metrics, please refer to our [Data Table document](#). The [Technical Appendices document](#) outlines our approaches, methodologies and definitions. We hope making this data available will help others who are looking to make data-driven decisions.

I encourage you to delve into the data and the findings from this report. Let us know what you think, and if you use the data in this report, let us know how by joining the conversation on social media.



Viola Dessanti
Director, Strategic Analytics

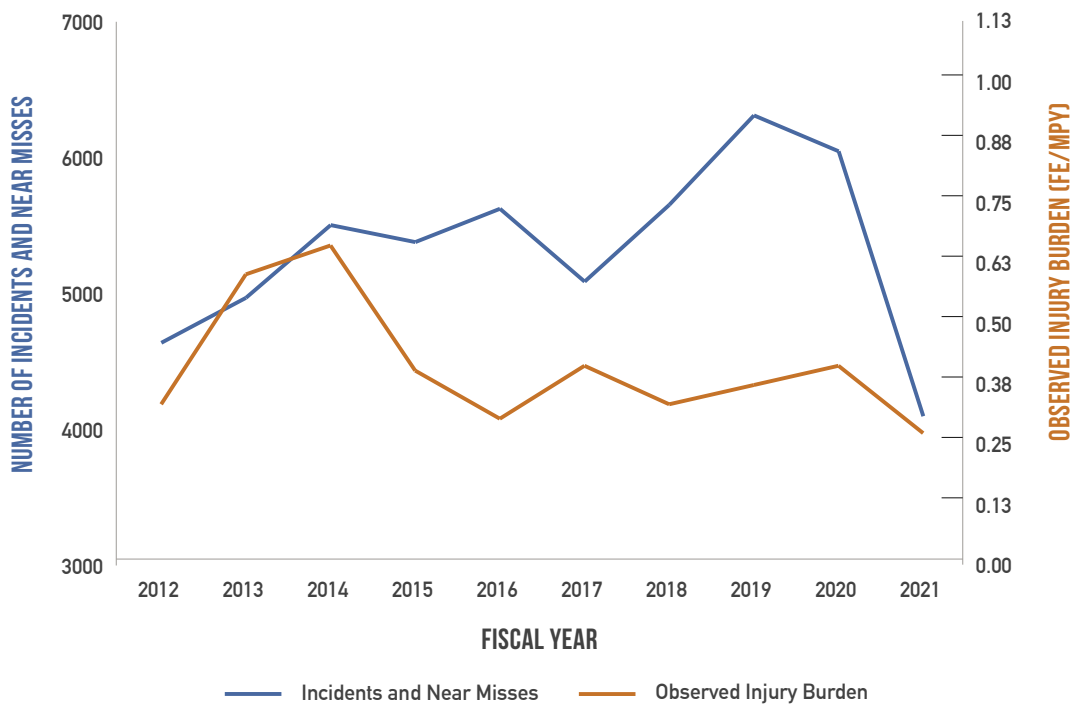


State of Public Safety in Ontario

All Programs Combined

HEALTH IMPACT		
OBSERVED		POTENTIAL
0.40 FE/mpy (2012 – 2021) Injury Burden	0.26 FE/mpy (2021) Injury Burden	0.40 FE/mpy (2021) Risk of Injury or Fatality

Figure 1: 10-Year Safety Trends for All Programs



The overall number of injuries and health impact to Ontarians this fiscal year was 0.26 FE/mpy – this is below the average from the last 10 years of 0.40 FE/mpy. As is described in this report, most of this is attributed to a decrease in the number of occurrences and associated injuries in the sectors most impacted by COVID-19. The resultant shorter season, with fewer exposures to TSSA’s regulated technologies, appears to be driving this decrease.

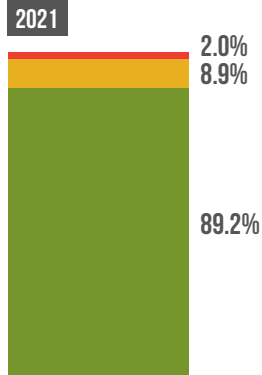


SAFETY NUMBERS (SAFETY AT A GLANCE)

REPORTING PERIOD	INCIDENTS AND NEAR MISS OCCURRENCES	NON-PERMANENT INJURIES	PERMANENT INJURIES	FATALITIES
2012 – 2021	52,855	12,437	481	40
2021	4,052	415	13	4

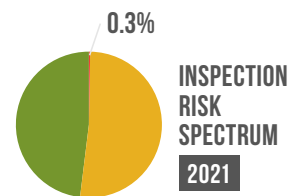
Data presented here and throughout represents an extract from TSSA records as of May 1, 2021. In some cases, older records have been updated via data cleansing or new information and thus historical records may not match previous editions of the report.

INVENTORY RISK PROFILE¹



This fiscal year, 2 per cent of TSSA's regulated devices and sites for which there is a risk score are considered high risk. High-risk devices are inspected more frequently and supported through TSSA's Compliance Support Program to improve their safety outcomes.

2017 - 2021
FIVE-YEAR AVERAGE
28.2%
PERCENTAGE COMPLIANCE



This fiscal year, less than 1 per cent of inspections found high-risk non-compliances. About half of the inspections found non-compliances that are considered low risk.



GREEN
LOW RISK

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



YELLOW
MEDIUM RISK

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



RED
HIGH RISK

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

TSSA monitors incident reports and analyzes any patterns that could indicate an area of concern. The areas below are listed because they are the top areas of risk for Elevating Devices and Fuels. TSSA continues to monitor and analyze the causes of these risks and take action to improve outcomes. For more details, please see page 9.

TOP AREAS OF RISK (2021)

ELEVATORS		FUELS	
Elevator Risks in Hospitals	0.29 FE/mpy	Fuel Risks in Retirement and Long-Term Care Homes	0.21 FE/mpy
Elevator Risks in Retirement and Long-Term Care Homes	0.14 FE/mpy	Fuel Risks in Private Dwellings	0.16 FE/mpy
Elevator Risks in Condominiums	0.05 FE/mpy	Fuel Risks in Business Units	0.03 FE/mpy

TSSA has three strategic goals: Modern Regulatory Framework, Service Excellence, and Safety Awareness & Active Compliance. They are outlined further below.

- **Modern Regulatory Framework.** TSSA is progressing in its transformation to become an Outcome-Based Regulator. For example, Operating Engineers Alternate Rules were introduced to better serve individual customer requirements.
- **Service Excellence.** TSSA is progressing with its Compliance Support Program, which will place more emphasis on reducing high-risk orders.
- **Safety Awareness & Active Compliance.** The Public Safety Report falls mainly under this goal, as its purpose is to report safety data from all of TSSA's regulated programs. The PSR is undergoing continuous improvement in order to make it more readable and to focus more on its intended audience (the Ontario Ministry of Government and Consumer Services, as well as our industry stakeholders).

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

[Refer to Appendix A](#) for more detailed information on cross-program data.



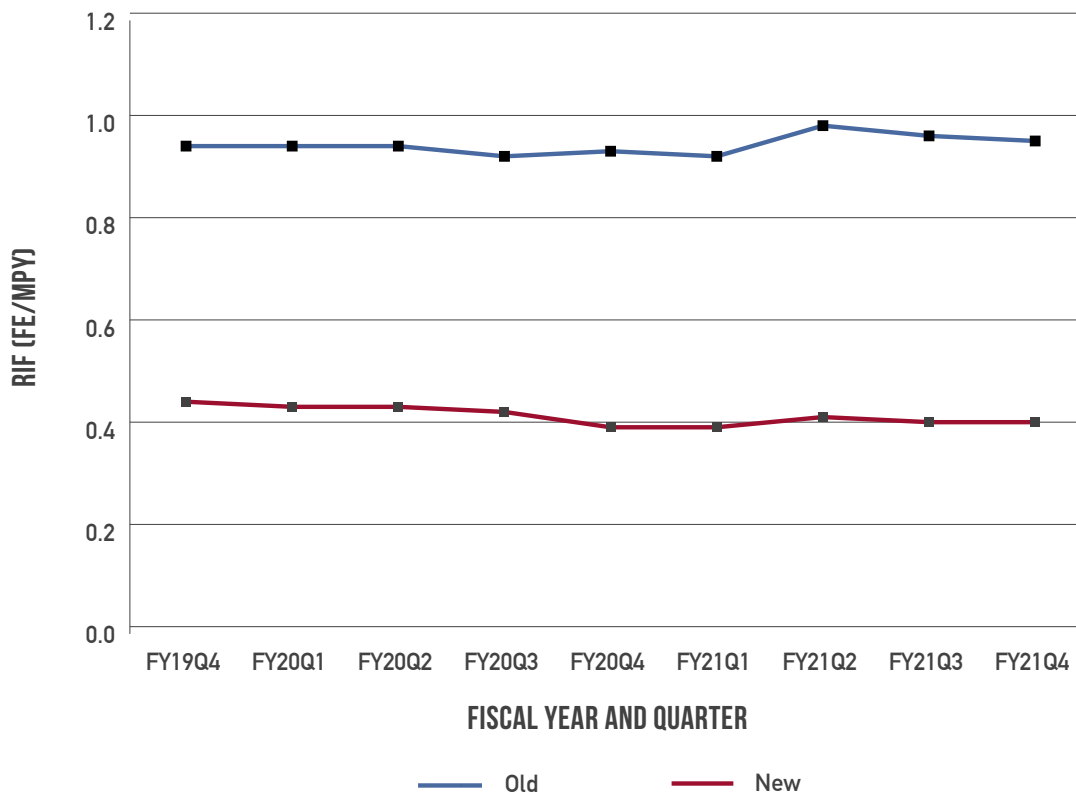
Changes to the Risk of Injury or Fatality (RIF) Calculation

In 2019, TSSA changed its method of calculating the risk of injury or fatality (RIF) to better reflect the reality of occurrences. Introduced in 2012, the RIF calculation has provided TSSA a way of measuring the potential for harm, particularly where injuries may not have fully manifested themselves (e.g., near misses, “luck” and other random characteristics). In the past couple of years, TSSA has noticed the following weaknesses in the RIF calculation:

- 1. It overestimated the risk significantly when compared to the observed injury burden (the actual number of injuries and fatalities that have occurred in the past).**
- 2. Within some defined parameters, it was numerically unstable and sometimes saw big swings.**
- 3. It didn't fully account for the nature of the incidents (e.g., some occurrence types have a high injury burden while others do not).**

TSSA's new RIF calculation employs the same logic as the previous calculation, but with certain adjustments to the formula. While the result is more stable and reliable, it also significantly lowers the estimated risk, which raises some questions and has TSSA looking to review and enhance the model. More information on the changes to TSSA's RIF calculation can be found in the [Data Tables](#) section of this report.

Figure 2: Trend of RIF Values for All Programs Combined for Fiscal Years 2019 – 2021



Further Examination of RIF Calculation Accuracy

It is important to note that the results of the new RIF calculation may not accurately reflect the true level of safety risk across all of the areas TSSA regulates. Upon review of the past year's findings, TSSA noticed that some public safety concerns from previous years were not being identified as areas of risk using the new RIF calculation.

Furthermore, there are some areas under TSSA's regulatory purview for which TSSA does not yet have sufficient reporting data; therefore, the risks associated with those areas are not accurately reflected in the RIF results.

TSSA also observed in some safety program areas – elevating, ski and amusement devices, for example – that the RIF and observed injury burden remained flat over the past few years, even though the number of incidents and near misses had generally increased.

While the new RIF calculation provides safety risk averages suitable for comparison across TSSA's program areas, the averaging of data appears to be diluting the impact of some areas known to be legitimate safety concerns.

With all of this in mind, TSSA is not taking the new RIF findings at face value. In fiscal year 2020, TSSA engaged technical and regulatory experts in a peer review of its risk model and used the input to identify ways to strengthen how the organization uses data to make risk-informed decisions. TSSA will continue on its journey of continuous improvement in the months ahead to evaluate and enhance its risk model and assess whether additional modifications would improve the clarity and quality of the organization's report on the state of public safety in Ontario.



Top Areas of Risk

Due to the new RIF calculation determining values much lower than those of the previous calculation, this fiscal year none of TSSA's safety areas were above the risk thresholds of 1.00 fatality equivalents per million people per year (FE/MPY) for the general population and 0.30 FE/MPY for sensitive sub-populations. Therefore, there were no areas of concern this fiscal year. As such, TSSA developed risk profiles to demonstrate the top areas of risk. These profiles have been categorized into the elevators and fuels safety areas and by general population and sensitive sub-populations¹, as shown below.

Figure 3: TSSA's Risk Profile for Elevators¹ (General Population) (2021)

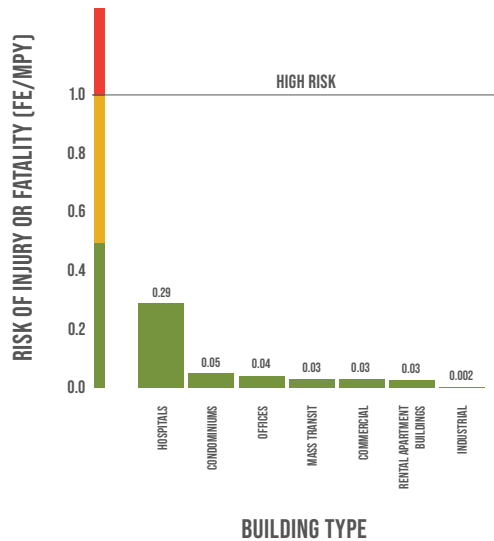


Figure 4: TSSA's Risk Profile for Elevators (Sensitive Sub-Populations) (2021)

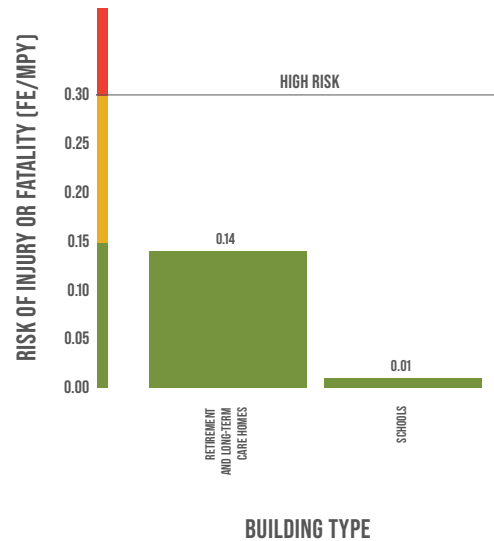


Figure 5: TSSA's Risk Profile for Fuels (General Population) (2021)

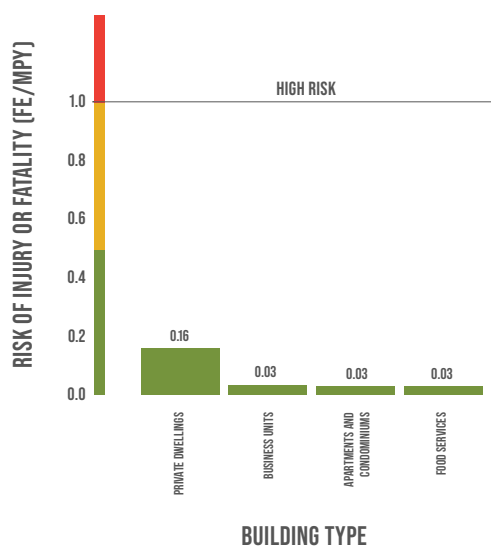
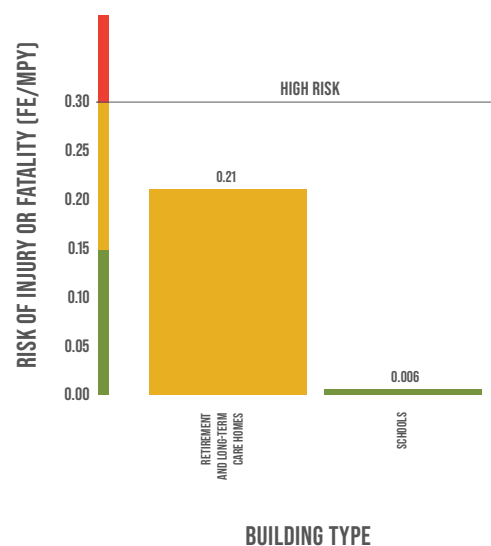


Figure 6: TSSA's Risk Profile for Fuels (Sensitive Sub-Populations) (2021)



¹ The calculated RIFs for elevators in Hotels and Assemblies were 1.14 and 0.29 FE/MPY, respectively. Assemblies are locations where the public can congregate; some examples include libraries, churches, museums, convention centres, community centres, casinos, theatres, concerts, tourist attractions, and sporting events/facilities. However, these building types have been omitted from the figure since there are uncertainties in their exposed population estimates. TSSA will continue to refine the population estimates for next year's report.

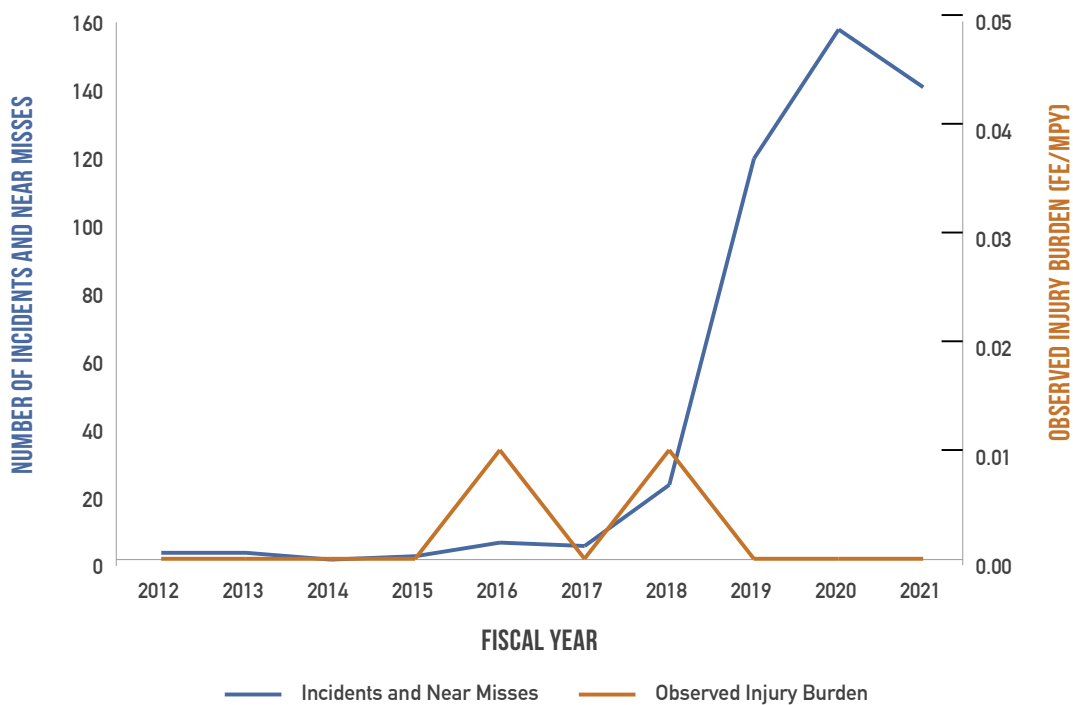
State of Public Safety in Ontario

Boilers and Pressure Vessels Safety Program

PROGRAM AREA ACTIVITIES	PRESSURE VESSELS LIFECYCLE
<p>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.</p> <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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		
OBSERVED		POTENTIAL
0.003 FE/mpy (2012 – 2021) Injury Burden	0.00 FE/mpy (2021) Injury Burden	0.001 FE/mpy (2021) Risk of Injury or Fatality

Figure 7: 10-Year Safety Trends for Boilers and Pressure Vessels



[Refer to Appendix B](#) for more detailed information on boilers and pressure vessels.



Most incidents in 2021 were leaks of A1 refrigerants (low toxicity and low flammability) and about half of them were in grocery stores. Note that the large increase in incidents in the past few years was due to an increase in reporting, not to an actual increase in the number of physical incidents. The increased reporting was due to better coordination with the Spills Action Centre in the reporting of incidents. There were zero reported injuries last fiscal year and there were zero again this fiscal year. There have been no fatalities in the last ten years.

This fiscal year, the compliance rate for BPV is not reported, since TSSA only inspects a small fraction of boilers and pressure vessels in Ontario while the remainder are inspected by insurance companies.

Occurrence data is reported for all boilers and pressure vessels. However, TSSA is reviewing its incident reporting guidelines to ensure that data presented is complete and of high quality.

SAFETY NUMBERS (SAFETY AT A GLANCE)				
REPORTING PERIOD	INCIDENTS AND NEAR MISS OCCURRENCES	NON-PERMANENT INJURIES	PERMANENT INJURIES	FATALITIES
2012 – 2021	449	3	6	0
2021	139	0	0	0



Boilers and Pressure Vessels Case Study: Poorly Maintained Pressure Vessel Leaks Ammonia into Atmosphere

Background

At approximately 6 a.m. at a production facility in Southern Ontario, high concentration levels of ammonia were monitored due to a leak into the atmosphere from a pressure vessel located outdoors.

Operators on site took immediate actions to curtail the ammonia release. As a result, ammonia concentration levels near the facility perimeter decreased to an acceptable level within roughly 45 minutes. No injuries resulted from this incident.

Examinations of the device and its components found that no over-pressurization of the vessel had occurred. The analysis indicated that the ammonia leaked through the flange due to corroded bolts on the vessel.



Figure 8: Pressure vessel flange from which ammonia leaked



Figure 9: Corroded bolts

Conclusions

Contacted by the Spills Action Centre to investigate the incident, TSSA discovered that the pressure vessel had last been inspected by the manufacturer at the time of its fabrication more than 10 years back.

Regular inspections, as per the manufacturer's guidelines, likely would have prevented the incident, as would the implementation of a device maintenance plan with regular testing for ammonia leaks.

TSSA Actions

TSSA issued several regulatory non-compliance orders to the production facility regarding safe pressure vessel maintenance and regular device inspection obligations.

The production facility has since had the pressure vessel fully inspected and contacted its insurance company to have the vessel added to TSSA's device inspection listing.

In recent years due to a change in sources of incident information, most reported incidents for pressure equipment are of refrigeration leaks. TSSA highlights this case study to reinforce the importance of proper device maintenance and regular inspections in preventing safety risks in and around plants and facilities.

In addition, TSSA reminds its regulated stakeholders about the importance of having an active authorization and continues to encourage device owners, operators, and insurers to inform TSSA of device inspection statuses with valid Certificates of Inspection. This is a critical part of the oversight framework in ensuring all boilers and pressure vessels in the province are operating safely (note that most boilers and pressure vessels in Ontario are inspected by insurance companies).

Message from Ajay Raval, Boilers and Pressure Vessels Statutory Director

In Ontario, TSSA does not perform periodic inspections of most boilers – insurance companies perform these inspections, and device owners are responsible for informing TSSA of their inspection status. While the Boilers and Pressure Vessels (BPV) Certificate of Inspection (COI) program has been active for three years now, TSSA launched a new COI portal with added functionality for owners and insurers this past year, as part TSSA's rollout of its new IT system known as the Operations Analytics Safety Innovation System (OASIS). Through this portal, the BPV Safety program will continue to collect data on the number of boilers and pressure vessels operating in Ontario to ensure the individuals and businesses that own boilers are legally authorized to safely operate the devices.

Over the past year, the BPV Safety program continued to see increased reporting of refrigerant leak incidents in Ontario. However, there is currently no evidence to conclude that more incidents occurred; rather, more incidents were 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 in the coming year.

Looking ahead, TSSA is adding agricultural boilers and pressure equipment to its safety program purview and risk data collection and analyzing activities. Last year, the Ministry of Government and Consumer Services (MGCS) undertook an assessment of the agricultural operations exemption from safety regulations. MGCS's in-depth consultations with stakeholders, industry and other relevant groups resulted in the Ontario government's revocation of the agricultural equipment exemption from *Ontario Regulation 220/01: Boilers and Pressure Vessels*, effective July 1, 2021.



State of Public Safety in Ontario

Operating Engineers Safety Program

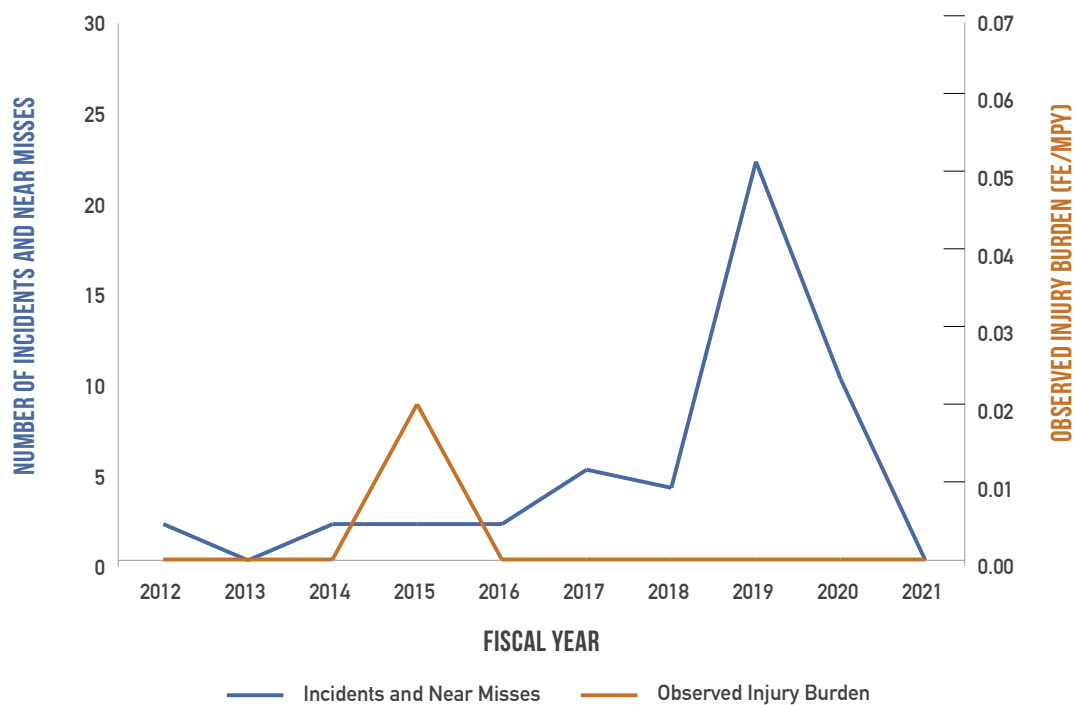
PROGRAM AREA ACTIVITIES

- 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

HEALTH IMPACT

OBSERVED		POTENTIAL
0.002 FE/MPY (2012 - 2021) Injury Burden	0.00 FE/MPY (2021) Injury Burden	0.002 FE/MPY (2021) Risk of Injury or Fatality

Figure 10: 10-Year Safety Trends for Operating Engineers



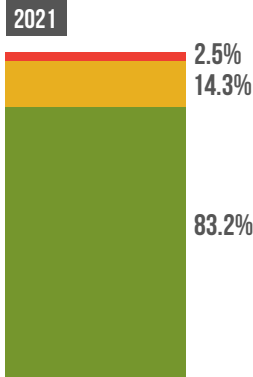
There were zero incidents to report for this fiscal year, although there are some still under investigation. Over the last 10 years, there was an average of five incidents per year, so low incident numbers are typical of this program. There have been no fatalities in the last ten years.



SAFETY NUMBERS (SAFETY AT A GLANCE)

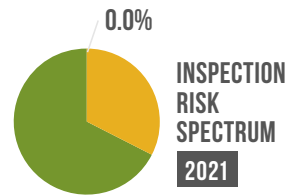
REPORTING PERIOD	INCIDENTS AND NEAR MISS OCCURRENCES	NON-PERMANENT INJURIES	PERMANENT INJURIES	FATALITIES
2012 – 2021	49	1	3	0
2021	0	0	0	0

INVENTORY RISK PROFILE²



This fiscal year, there were 72 (or 2.5 per cent) operating plants (for which there was a risk score) that were considered to be high risk. This is down from 132 (or 4.7 per cent) the previous fiscal year.

2017 - 2021
FIVE-YEAR AVERAGE
40.9%
PERCENTAGE COMPLIANCE



This fiscal year, 0 per cent of inspections found high-risk non-compliances, which is the same as the previous fiscal year. The most common issue found involved uninspected equipment and the issue with the highest level of risk involved missing registered TSSA seals.

There are 3,318 plants and 12,026 operating engineers in Ontario.



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.

² Based on facilities and devices with three or more periodic inspections.

[Refer to Appendix C](#) for further information on operating engineers.



Operating Engineers Case Study: Student Burned by Steam from Unanchored Boiler Piping

Background

While turning a boiler valve as part of a class lesson, a powerhouse engineering student suffered a steam burn in a Southern Ontario lab. The incident occurred when the activation of the boiler valve moved a pipe that should have been anchored to and directed at a drain in the ground.

When the pipe dislodged, the force of the 340-degree Fahrenheit steam sprayed the student's shoulder, leaving a five-inch burn with minor skin peeling and reddening. No other injuries were suffered.

Conclusions

As a result of the incident, the instructor placed a padlock on the boiler so it could no longer be used in class.

Upon investigation, TSSA determined the incident occurred, in part, because the boiler had a quick-opening valve which, when turned, instantly caused the unsecured drainpipe to twist out of position due to pressure of the steam being released.

TSSA Actions

TSSA issued safety orders. After discussions with the facility staff about how the equipment is intended to be operated on a regular basis, it was agreed the best course of action was for the facility to update all valves to slow-opening types. TSSA is planning a follow up to ensure compliance.

In addition, TSSA recommended that the facility revise its plant procedure manual to require that all steam and condensate valves be opened and closed slowly, to prevent similar future incidents.

Although the drainpipe has been secured since the incident, the padlock will remain on the boiler so that the boiler cannot be returned to use for class instruction until a TSSA inspector verifies the facility has complied with safety orders.

Historically, TSSA has not seen similar incidents in Ontario facilities. However, this occurrence reinforces the importance of being vigilant, recognizing safety risks and putting preventative measures and policies in place. During regular periodic inspections, TSSA continues to promote these precautionary actions among plant owners and operators.



Figure 11: Pipe (indicated in red) was initially lying down and pointing towards the water drain



Figure 12: Junction box that powers the boiler locked indicating it is not safe to use

Message from Ajay Raval, Operating Engineers Statutory Director

While there were no notable Operating Engineers (OE) incident trends in this reporting year, as part of TSSA's journey to becoming an Outcome-Based-Regulator, the OE Safety program successfully launched the risk-informed regulatory framework and guidelines for Alternate Rules. Developed using failure-rate data documented in academic and industry literature for various mechanical components (i.e., valves, pumps, and piping), the alternate rules are provided for certain requirements in the *Ontario Regulation 219/01: Operating Engineers* — including plant staffing, certification time requirements, and electronic logbook requirements. The alternate rules allow flexibility for the industry to achieve compliance with the regulation and enable applicants to use their own data and engineering calculations to demonstrate the safe staffing level of their plants. Plant owners and operators now have the option of following one of three paths to safety compliance, including the existing regulation. TSSA also established updated certificate holder requirements, which launched in June 2021.

Like its counterparts in the Boilers and Pressure Vessels (BPV) Safety program, the OE Safety program team worked extensively to ensure a successful launch of TSSA's new IT system, OASIS. Both the BPV and OE programs were involved in the first phase rollout this past year. OASIS features a new customer relationship management system that enables the OE Safety program to centralize inspection scheduling, better establish governance over data, and provide more accurate and clean data to help guide future safety decisions.



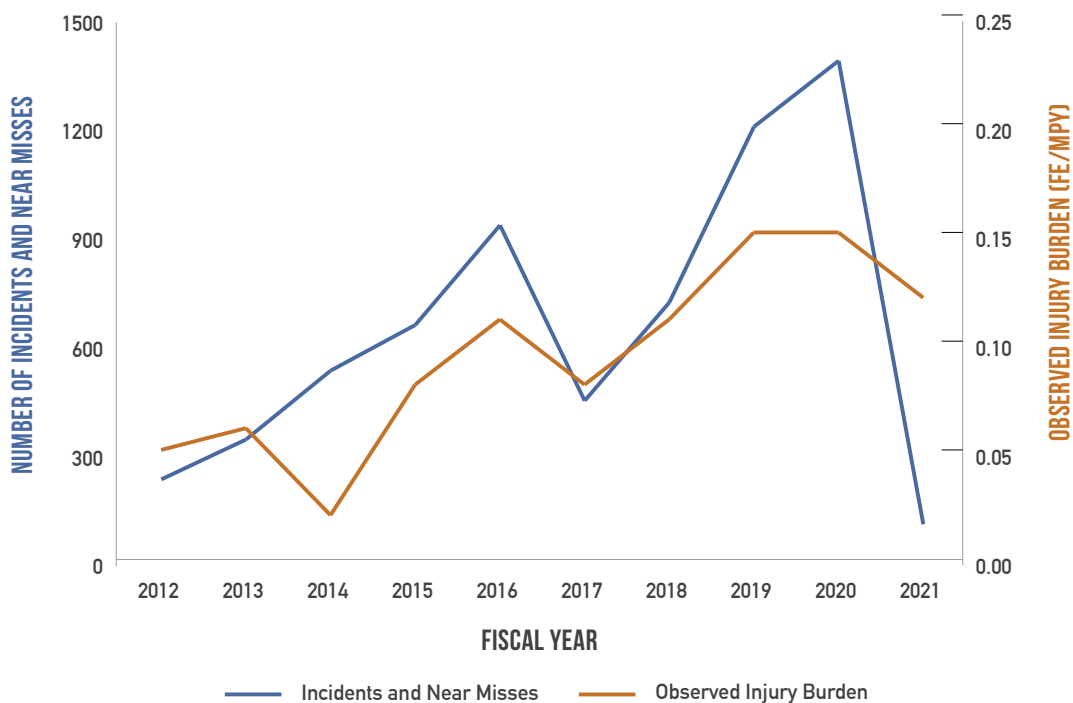
State of Public Safety in Ontario

Amusement Devices Safety Program

PROGRAM AREA ACTIVITIES	REGULATED DEVICES
<ul style="list-style-type: none"> Licenses operators Reviews and registers rides Conducts inspections and investigations Issues permits for rides Provides engineering services 	<ul style="list-style-type: none"> 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

HEALTH IMPACT		
OBSERVED		POTENTIAL
0.09 FE/mpy (2012 – 2021) Injury Burden	0.12 FE/mpy (2021) Injury Burden	0.09 FE/mpy (2021) Risk of Injury or Fatality

Figure 13: 10-Year Safety Trends for Amusement Devices



Incidents and near miss occurrences, non-permanent injuries, and permanent injuries have reduced substantially since the previous fiscal year. However, this is likely because of the government-mandated closure of amusement parks due to COVID-19.

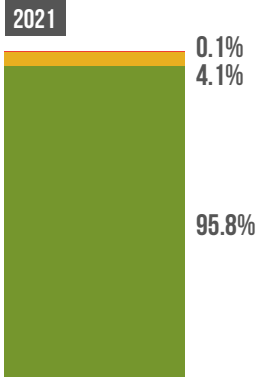
There was one fatality in 2021 on a zip line, where an individual made an illegal entry after hours and used a make-shift harness that failed, resulting in the individual being stranded in an inverted position for a length of time that led to the individual's death.



SAFETY NUMBERS (SAFETY AT A GLANCE)

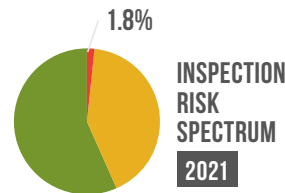
REPORTING PERIOD	INCIDENTS AND NEAR MISS OCCURRENCES	NON-PERMANENT INJURIES	PERMANENT INJURIES	FATALITIES
2012 – 2021	6,465	5,871	219	2
2021	98	89	1	1

INVENTORY RISK PROFILE³



This fiscal year, there were two amusement devices (for which there was a risk score) that were considered to be high risk. This is the same number as the previous fiscal year.

2017 - 2021
FIVE-YEAR AVERAGE
54.8%
PERCENTAGE COMPLIANCE



This fiscal year, 1.8 per cent of inspections found high-risk non-compliances, which is down from the previous fiscal year's percentage of 7.2 per cent. The most common issue found involved training records and the issue with the highest level of risk involved tie downs on inflatables.



GREEN
LOW RISK

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



YELLOW
MEDIUM RISK

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



RED
HIGH RISK

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

TOP SAFETY ISSUES

DEVICE TYPE		OCCURRENCE TYPE	
BY NUMBER OF OCCURRENCES	BY OBSERVED INJURY BURDEN	BY NUMBER OF OCCURRENCES	BY OBSERVED INJURY BURDEN
Water Slides Coaster Rides Zip Lines	Water Slides Coaster Rides Zip Lines	Physical Impacts Sudden Movements Trips/Falls	Physical Impacts Sudden Movements Falls from Height

There are 1,693 amusement devices in TSSA's inventory.

There is no amusement device case study this fiscal year due to shutdowns as a result of the government response to the COVID-19 pandemic. Only zip lines and go-karts were opened for a limited period of time.

³ Based on facilities and devices with three or more periodic inspections.

[Refer to Appendix D](#) for further information on amusement devices.



Message from Roger Neate, Amusement Devices Statutory Director

Due to the COVID-19 pandemic restrictions imposed on the sector this past year, there were very few amusement devices permitted to operate in Ontario. Despite this devastating disruption to business, the amusement device sector remained committed to safety training, innovation, and continuing education, as international sector participants assembled virtually for the Annual TSSA Amusement Ride Training Forum accredited by the National Association of Amusement Ride Safety Officials (NAARSO). In addition to hosting the event, TSSA presented on various topics, including the amusement device codes and standards that recently came into effect in Ontario.

Looking forward, TSSA is partnering with Ontario's Ministry of Labour, Training and Skills Development (MLTSD) to help the amusement sector reopen safely, by providing COVID-19 education while performing technical inspections. This joint effort is intended to ensure members of the public can enjoy amusement facilities safely and provide operators of amusement devices and water parks with the information they need to reopen safely and build their businesses post pandemic disruption.

Since historical data demonstrates that most amusement device incidents in Ontario are a result of rider behaviour, TSSA encourages the public to remain vigilant and aware, heeding all onsite rider safety announcements and postings, as they enjoy their return to amusement parks this season.



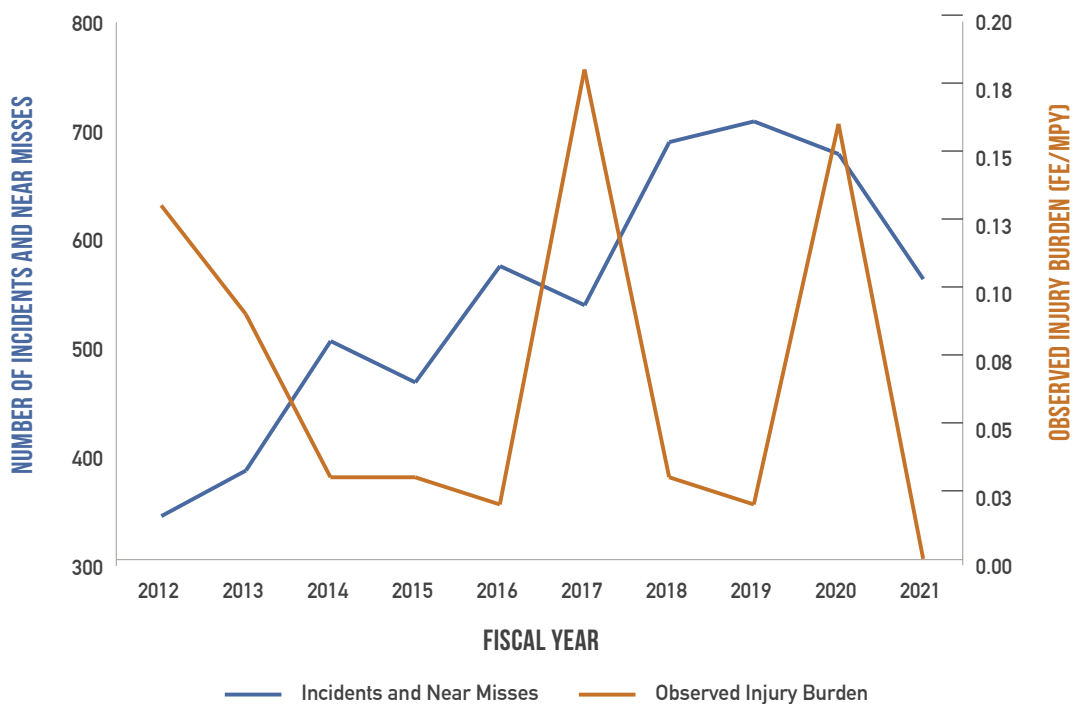
State of Public Safety in Ontario

Elevating Devices Safety Program – Elevators

PROGRAM AREA ACTIVITIES	REGULATED DEVICES
<ul style="list-style-type: none"> • Reviews and registers devices • Issues licences • Conducts inspections • Performs incident investigations • Provides engineering services • Registers contractors • Certifies mechanics 	<ul style="list-style-type: none"> • 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

HEALTH IMPACT		
OBSERVED		POTENTIAL
0.07 FE/MPY (2012 – 2021) Injury Burden	0.004 FE/MPY (2021) Injury Burden	0.07 FE/MPY (2021) Risk of Injury or Fatality

Figure 14: 10-Year Safety Trends for Elevators



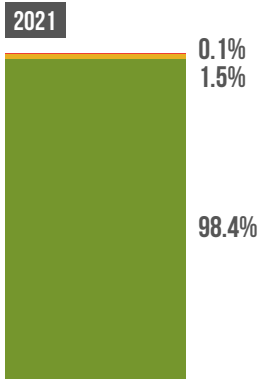
There were no significant changes in the safety results for the elevators program in 2021. In 2021, there were fewer incidents than there had been in the last three years. This is likely due to decreased usage of devices due to COVID-19 restrictions. However, there were 86 total injuries, a reduction of 37 per cent from the previous fiscal year’s total of 137. This drop may be largely attributed to COVID-19. There were no fatalities in 2021 compared to one in the previous fiscal year.



SAFETY NUMBERS (SAFETY AT A GLANCE)

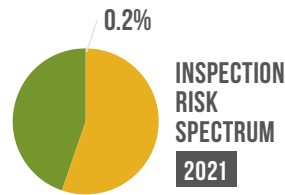
REPORTING PERIOD	INCIDENTS AND NEAR MISS OCCURRENCES	NON-PERMANENT INJURIES	PERMANENT INJURIES	FATALITIES
2012 – 2021	5,408	1,388	80	8
2021	558	82	4	0

INVENTORY RISK PROFILE⁴



This fiscal year, there were 38 elevators (for which there was a risk score) that were considered to be high-risk. This compares to 23 the previous fiscal year.

2017 - 2021
FIVE-YEAR AVERAGE
19.3%
PERCENTAGE COMPLIANCE



This fiscal year, 0.2 per cent of inspections found high-risk non-compliances, which compares to the previous fiscal year's percentage of 0.1 per cent. The most frequent issues were late annual testing. The issues with the highest level of risk involved brakes.



GREEN
LOW RISK

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



YELLOW
MEDIUM RISK

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



RED
HIGH RISK

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

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 Buildings Offices Condominiums	Rental Apartment Buildings Offices Condominiums	Flooding Door Closings Unintentional Movements	Entrapments Exposed Hoistways/Wellways Door Closings

TOP AREAS OF RISK (2021)

GENERAL POPULATION		SENSITIVE SUB-POPULATIONS	
Elevator Risks in Hospitals	0.29 FE/mpy.	Elevator Risks in Retirement and Long-Term Care Homes	0.14 FE/mpy.
Elevator Risks in Condominiums	0.05 FE/mpy.		

There are 61,038 elevators in TSSA's inventory.

⁴ Based on facilities and devices with three or more periodic inspections.

[Refer to Appendix E](#) for further information on elevators.



Elevators Case Study: Operator Injured While Attempting Work Unauthorized to Perform

Background

At the construction site of a Mississauga retirement home, two hoist operators decided to investigate a strange noise coming from a hoist as it descended the mast. One operator accessed the roof of the hoist through the emergency escape hatch, while the other controlled the device from within the car. As the two ascended the hoist mast, the operator on the roof grazed his head between a guardrail and a hoistway support mechanism.

Suffering facial abrasions and deep bruising and swelling to his eye and cheek, the injured operator returned to the site later that day after hospital release.

Conclusions

TSSA's onsite investigation determined the source of the odd hoistway noise was a piece of rigid insulation lodged within the machinery.

Having gone beyond the scope of their training, the hoist operators were not authorized or instructed by their employer to mount the roof of the hoist during operation to investigate the noise – the proper procedure would have been to call an elevating device mechanic.

TSSA Actions

TSSA revoked the responsibilities of both hoist operators and issued several orders, among which was that all site operators be retrained by the hoist installation company prior to returning to hoist operating duties. The hoist remained out of service until the retraining of the operators was completed and updated training instructions specific to hoist operator responsibilities were implemented.

While this particular hoistway incident is not a regular occurrence, historically, injuries due to improper operation of elevating devices have been recognized as a legitimate safety concern. This incident reinforces the value of comprehensive technical safety training and concise operational instructions to keep workers aware of potential elevating device risks and prevent on-the-job injuries.



Figure 15: View of construction hoist



Figure 16: Rigid insulation found in drive pinion

Message from Roger Neate, Elevators Statutory Director

The Elevating Devices Safety Program is pleased to report zero high-risk areas of concern in the sector this fiscal year. These results could be attributed to TSSA's continued efforts to provide higher-risk industry members with information to enhance their understanding of their regulatory responsibilities and guide them in taking steps toward compliance. TSSA Compliance Support Program advisors worked diligently with elevator owners and contractors to prioritize and address non-compliance issues. Of the 44 Elevating Device entities that accepted TSSA's offer of compliance support from the start of the program till the end of fiscal year 2021, 89.2 per cent saw a significant reduction in risk scores. The risk score reflects the compliance of the entity and any associated incidents. Entities that are more compliant have lower risk scores.

However, TSSA is concerned that failure to properly maintain elevators in Ontario still accounts for 56 per cent of the non-compliances Elevator Safety Program inspectors discover. That being the case, TSSA is taking a closer look at the extent to which these elevator maintenance tasks are overdue and will use that data to determine whether further action is required.

Over the coming year, TSSA and its industry partners will commence the development of new Compliance Standards for both hydraulic and traction elevators. These Compliance Standards are a major component of TSSA's larger Outcome-Based-Regulator strategy, under which TSSA will help owners and contractors to focus on high risk items and to take greater responsibility and ownership for the safety of their devices and their operation.



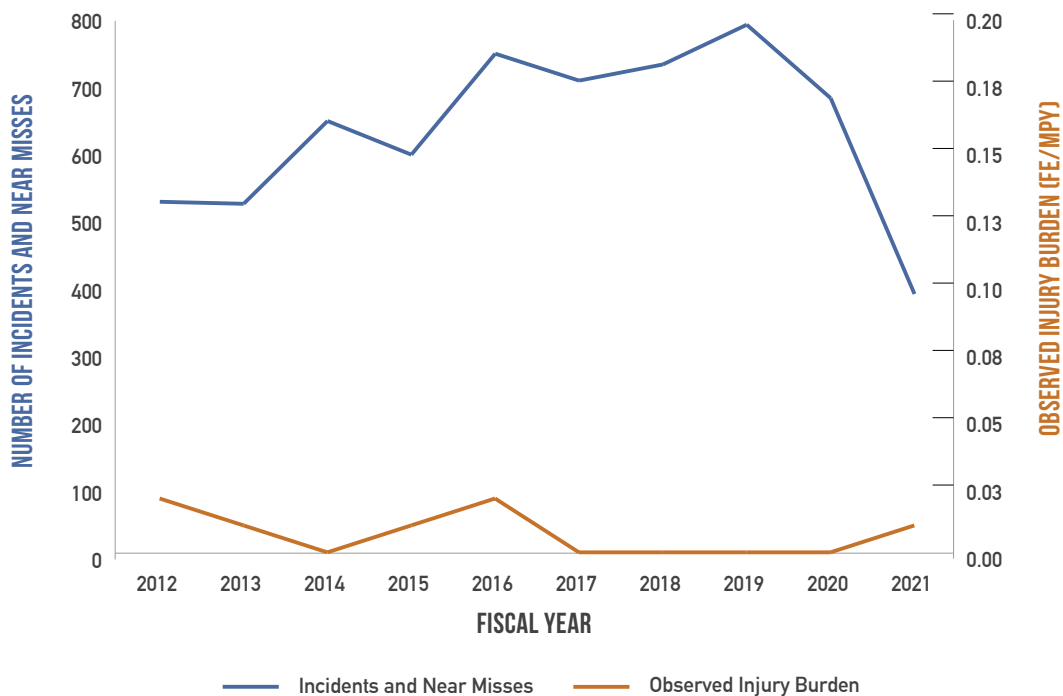
State of Public Safety in Ontario

Elevating Devices Safety Program - Escalators and Moving Walks

PROGRAM AREA ACTIVITIES	
<ul style="list-style-type: none"> • Reviews and registers devices • Issues licences • Conducts inspections 	<ul style="list-style-type: none"> • Performs incident investigations • Registers contractors and certifies mechanics • Provides engineering services

HEALTH IMPACT		
OBSERVED		POTENTIAL
0.01 FE/mpy (2012 – 2021) Injury Burden	0.01 FE/mpy (2021) Injury Burden	0.01 FE/mpy (2021) Risk of Injury or Fatality

Figure 17: 10-Year Safety Trends for Escalators and Moving Walks



Incidents and near miss occurrences and injuries are down by about a half this fiscal year compared to the previous fiscal year. This is likely because of the government-mandated closures of shopping malls and assembly buildings and reduced TTC subway usage due to COVID-19.

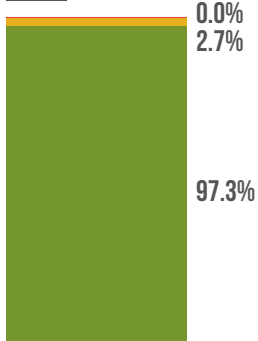
There have been zero deaths in 10 years of completed investigations. However, there was an incident this fiscal year where an individual tripped and fell on a subway escalator and died, likely due to a pre-existing medical condition. This investigation was still ongoing at the end of the fiscal year and therefore is not included in the safety numbers.



SAFETY NUMBERS (SAFETY AT A GLANCE)

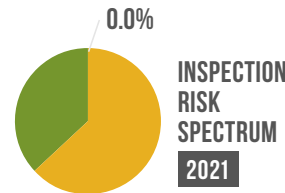
REPORTING PERIOD	INCIDENTS AND NEAR MISS OCCURRENCES	NON-PERMANENT INJURIES	PERMANENT INJURIES	FATALITIES
2012 – 2021	6,291	4,114	34	0
2021	385	203	3	0

INVENTORY RISK PROFILE⁵ 2021



This fiscal year, there were zero escalators and moving walks (for which there was a risk score) that were considered to be high risk. This compares to one device in the previous fiscal year.

2017 - 2021
FIVE-YEAR AVERAGE
12.4%
PERCENTAGE COMPLIANCE



This fiscal year, there were zero inspections that were found to have high-risk non-compliances. The most common issue found involved late annual testing and the issue with the highest level of risk involved inadequate brake torque.



GREEN
LOW RISK

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



YELLOW
MEDIUM RISK

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



RED
HIGH RISK

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

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 Offices	Commercial Mass Transportation Offices	Trips/Falls Entrapments Flooding	Trips/Falls Entrapments Unintentional Movements

There are 2,278 escalators and moving walks in TSSA's inventory.

⁵ Based on facilities and devices with three or more periodic inspections.

[Refer to Appendix F](#) for further information on escalators and moving walks.



Escalators Case Study: Be Safe, Not Sorry

Background

In this reporting year, due to a decrease in ridership as a result of provincial COVID-19 lockdown restrictions, Ontario was fortunate to see no significant escalator or moving walk incidents that would form the basis for a case study.

Historically, however, user behaviour has been a direct cause of several injurious escalator occurrences, so what follows serves as a reminder of the public risks associated with escalator and moving sidewalk use and the importance of taking preventative measures to avoid incidents that could cause injury or harm.



Figure 18: Patron's scarf caught in side of escalator

Conclusions

Of the relatively small number of escalator incidents that occur, many are related to rider conduct. These incidents include falls resulting from riders losing balance; entrapment in the mechanics of escalators caused by clothing, footwear, and suitcases; and the use of strollers, canes, walkers, and wheelchairs.

With this in mind, escalator and moving walk riders should be vigilant in following these safety rules:

- Hold the handrail.
- Stand in the middle and face forward.
- Keep feet, loose clothing, and shoelaces away from grooves and sides.
- Attend to children and hold their hands.
- Keep packages and handbags at a minimum and away from handrails.
- Use an elevator, where available, when travelling with a stroller, cane, walker, wheelchair, or excess baggage.

TSSA Actions

TSSA has produced a series of videos on public escalator safety that can be viewed online by clicking the following embedded links.

- [Keep loose clothing clear of steps & sides of escalators](#)
- [Using a stroller? Better to take an elevator](#)
- [Mind your manners!](#)
- [Mind your children when on escalators](#)

Message from Roger Neate, Escalators and Moving Walks Statutory Director

Findings from TSSA inspections this fiscal year have indicated that step/skirt performance index testing is not being performed properly and diligently during regular escalator and moving walk maintenance. Step/skirt performance index testing is a code requirement enforced to prevent escalator and moving walk entrapments. On more than one occasion, TSSA inspectors found that this testing had not been completed or had been performed incorrectly. TSSA will continue to monitor this issue to determine if further action is required.

Further advancing TSSA's Outcome-Based-Regulator transformation, the Elevating Devices Safety program developed compliance standards for escalators based on risks found through inspection and incident history, and with input from contractors and building owners. With high-risk compliance issues documented in a checklist, the industry will gain a clearer understanding of safety responsibilities and TSSA inspections will be more consistent. TSSA looks forward to implementing escalator compliance standards in the future.



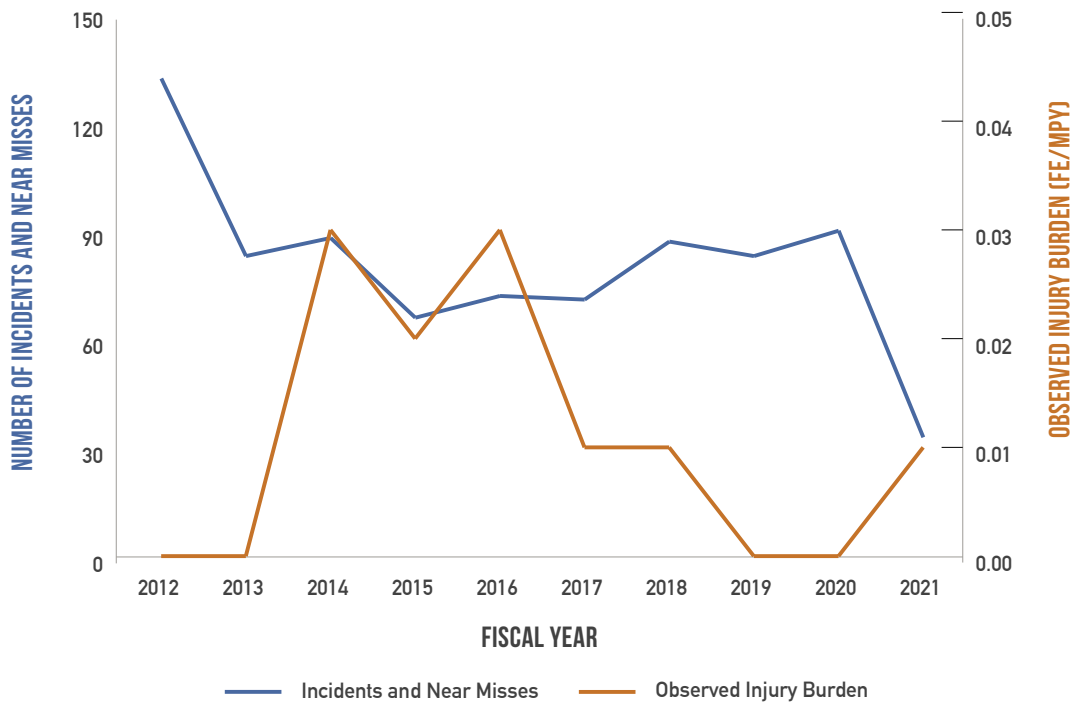
State of Public Safety in Ontario

Elevating Devices Safety Program - Passenger Ropeways (Ski Lifts)

PROGRAM AREA ACTIVITIES	
<ul style="list-style-type: none"> Regulates bar and chair lifts, outdoor recreational conveyers, rope and tube tows Reviews and registers lift designs Conducts inspections and performs incident investigations 	<ul style="list-style-type: none"> Licenses lift devices Certifies mechanics Provides engineering services Promotes safe ski lift behaviour Registers contractors

HEALTH IMPACT		
OBSERVED		POTENTIAL
0.01 FE/mpy (2012 - 2021) Injury Burden	0.01 FE/mpy (2021) Injury Burden	0.01 FE/mpy (2021) Risk of Injury or Fatality

Figure 19: 10-Year Safety Trends for Ski Lifts



Incidents and injuries have reduced by about two-thirds from the previous fiscal year. However, this is likely because of the shortened ski season as a result of the government-mandated closures of ski resorts due to COVID-19.

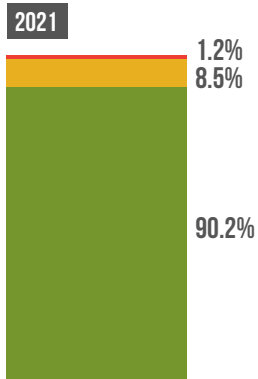
There have been no fatalities in the last 10 years.



SAFETY NUMBERS (SAFETY AT A GLANCE)

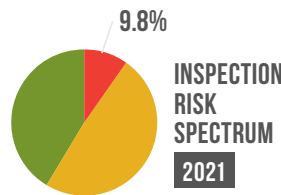
REPORTING PERIOD	INCIDENTS AND NEAR MISS OCCURRENCES	NON-PERMANENT INJURIES	PERMANENT INJURIES	FATALITIES
2012 – 2021	805	635	17	0
2021	33	25	2	0

INVENTORY RISK PROFILE⁶



This fiscal year, there were three ski lifts (for which there was a risk score) that were considered to be high risk. This is the same number as the previous fiscal year.

2017 - 2021
FIVE-YEAR AVERAGE
42.6%
PERCENTAGE COMPLIANCE



This fiscal year, 9.8 per cent of inspections found high-risk non-compliances. The most common issue found involved personnel not being trained and the issue with the highest level of risk involved inadequate clearance to the carrier.



GREEN
LOW RISK

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



YELLOW
MEDIUM RISK

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



RED
HIGH RISK

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

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 Lifts Passenger Conveyors Bar Lifts	Chair Lifts Rope Tows Passenger Conveyors	Trips/Falls Physical Impacts Falls from Height	Physical Impacts Trips/Falls Entanglements

There are 233 ski lifts in TSSA's inventory.

There is no ski lift case study this fiscal year due to the shortened season as a result of the government response to the COVID-19 pandemic.

⁶ Based on facilities and devices with three or more periodic inspections.

[Refer to Appendix G](#) for further information on passenger ropeways (ski lifts).



Message from Roger Neate, Ski Lifts Statutory Director

This past year, TSSA established compliance standards for ski lifts based on the highest risks found through inspections and incident history. While these compliance standards are still in the early review phase, TSSA will use the standards to help the industry understand the key safety items they need to focus on to help ensure the safety of their devices and the persons who use them.

The province's ski industry was heavily impacted by COVID-19 safety restrictions and activity was halted for much of the past season. TSSA is hopeful for a safe and dynamic return to the slopes for Ontarians and the sector in the forthcoming winter months.



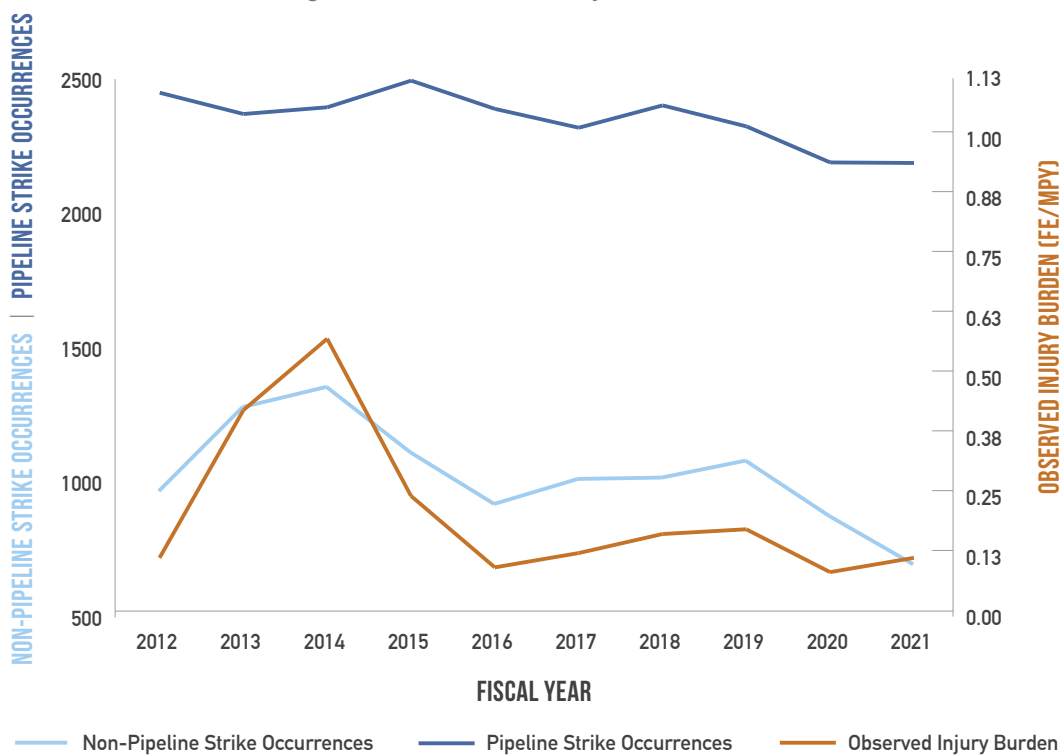
State of Public Safety in Ontario

Fuels Safety Program

PROGRAM AREA ACTIVITIES	FUELS LIFECYCLE	REGULATED FUELS
<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Natural gas Propane Butane Hydrogen Digester gas Landfill gas Liquid fuels (fuel oil, gasoline, diesel)
	Storage and Dispensing	
	Utilization (burning)	

HEALTH IMPACT		
OBSERVED		POTENTIAL
0.21 FE/mpy (2012 – 2021) Injury Burden	0.11 FE/mpy (2021) Injury Burden	0.22 FE/mpy (2021) Risk of Injury or Fatality

Figure 20: 10-Year Safety Trends for Fuels



The observed health impact to Ontarians this fiscal year was 0.11 FE/mpy – this is below the average from the last 10 years of 0.21 FE/mpy.

There were three fatalities in 2021 compared to three for the 10-year year average. Two fatalities were in an explosion at a home where the precise cause was undetermined. Another fatality resulted from carbon monoxide at a home due to an indoor pool heater combustion air inlet that was blocked off.

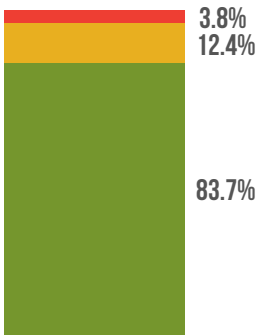


SAFETY NUMBERS (SAFETY AT A GLANCE)

REPORTING PERIOD	INCIDENTS AND NEAR MISS OCCURRENCES	NON-PERMANENT INJURIES	PERMANENT INJURIES	FATALITIES
2012 – 2021	33,388	425	122	30
2021	2,839	16	3	3

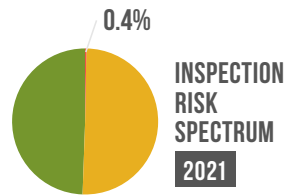
LIQUID FUELS

INVENTORY RISK PROFILE⁷ 2021



This fiscal year, there were 135 liquid fuels sites (for which there was a risk score) that were considered to be high risk. This compares to 111 in the previous fiscal year.

2017 - 2021
FIVE-YEAR AVERAGE
41.6%
PERCENTAGE COMPLIANCE



This fiscal year, 0.4 per cent of inspections found high-risk non-compliances. The most common issue found involved defective equipment needing to be repaired or replaced and the issue with the highest level of risk involved failure to notify a TSSA inspector after an occurrence.



GREEN
LOW RISK

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



YELLOW
MEDIUM RISK

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

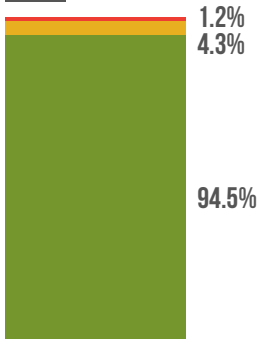


RED
HIGH RISK

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

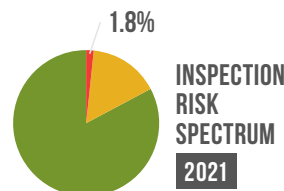
PROPANE

INVENTORY RISK PROFILE⁸ 2021



This fiscal year, there were 12 propane sites (for which there was a risk score) that were considered to be high risk. This compares to 39 in the previous fiscal year.

2017 - 2021
FIVE-YEAR AVERAGE
73.4%
PERCENTAGE COMPLIANCE



This fiscal year, 1.8 per cent of inspections found high-risk non-compliances. The most common issue found involved readily ignitable materials around the storage container and the issue with the highest level of risk involved failure to notify a TSSA inspector after an occurrence.

TOP AREAS OF FUEL RISK (2021)

GENERAL POPULATION		SENSITIVE SUB-POPULATIONS	
Fuel Risks in Private Dwellings	0.16 FE/mpy.	Fuel Risks in Retirement and Long-Term Care Homes	0.21 FE/mpy.
Fuel Risks in Business Units	0.03 FE/mpy.		

There are 4,177 liquid fuels sites and 1,319 propane sites in TSSA's inventory.

⁷ Based on facilities and devices with three or more periodic inspections.

[Refer to Appendix H](#) for further information on fuels.



Fuels Case Study:

Improper Gas Work Causes Fire Displacing Two Families

Background

A fire at a rental duplex house in Windsor uprooted two neighbouring families with children on Christmas eve night.

Originating from a living room fireplace, the fire ignited among a combination of wooden boards and plywood in the interstitial space between two floors where the fireplace vent was positioned to pull air from indoors for combustion and vent it outside. However, the fireplace venting had been severed and blocked by a sheet of plywood, preventing the combusted air to properly flow outside of the home.

While there were no physical injuries sustained by the eight individuals evacuated, significant property damage required both families to find new accommodations.

Conclusions

Several immediate hazard infractions were issued by the gas company, and the natural gas meter was removed from the home to ensure the safety of the incident location.

Upon further investigation, it was determined that a person hired by the previous homeowner to construct additional living space had severed and blocked the fireplace vent while constructing a new stairway and hallway.

While the individual who performed the work is unknown, TSSA believes the worker was unauthorized: a TSSA-certified technician would have been properly trained to make the appliance inoperable by removing the natural gas supply and would not sever and block a furnace vent.

TSSA Actions

Historically, fuels in private dwellings have proven to be a dominant source of risk when worked on by individuals unauthorized to do so.

Though the party responsible for performing the renovation was not definitively identified, TSSA relaunched the Trunk Slammers Enforcement Program—a campaign designed to inform the public about dangers of unauthorized fuels workers and how to report them—with expanded consumer awareness and education efforts.

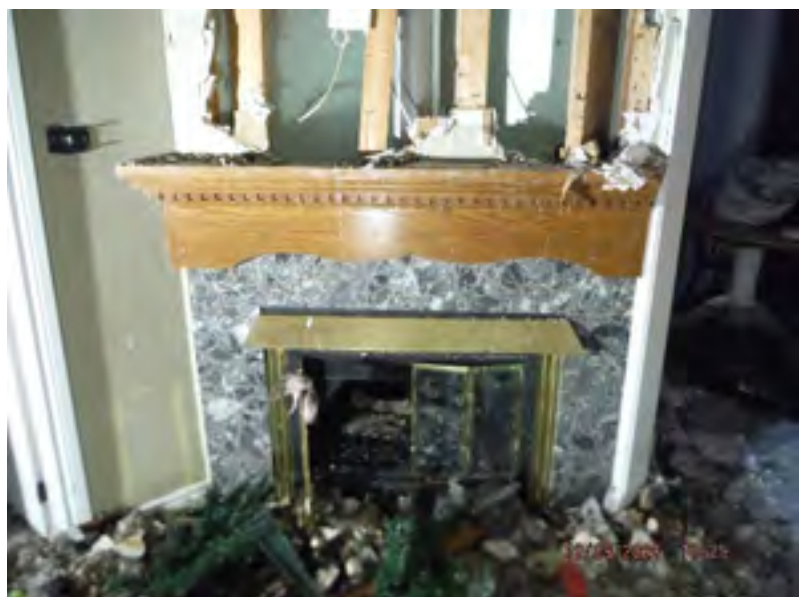


Figure 21: Fire originated in the fireplace



Figure 22: Staircase to second floor

Message from Sam Sadeghi, Fuels Statutory Director

For this reporting year, the fuels sector saw fewer incidents, on the whole, and there is a decreasing trend in most indicators, which is very reassuring. The observed fuels injury burden is slightly higher than that of the previous year. However, the number of injuries and fatalities related to fuels this past year is still below the 10-year average.

When comparing this past year's analytics with the previous year's, the Fuels Safety program saw an encouraging decline in the risk of injury or fatality (RIF)—which translates to the severity of injury or harm experienced by Ontarians — for carbon monoxide (CO) risks in apartments and condominiums. TSSA attributes the continuous decline in CO risks in private dwellings, in part, to the 2017 regulation that made CO alarms mandatory in all Ontario homes.

Another contributing factor to the RIF decline in the fuels sector is industry collaboration and compliance. As industry plays an essential role in keeping Ontario safe, TSSA worked with sector participants in a variety of ways to enhance their understanding of and ability to meet their regulatory responsibilities. The following are some examples:

- Oil and Gas Pipeline Oversight program development – includes documented compliance standards to inform pipeline operators of their safety priorities and requirements to reduce risk; field verification (targeted physical inspection) informed by the results of a risk-based audit and focused on the areas of operation that pose risks to public safety; and a safety intelligence framework that takes a systematic approach to data collection and risk analytics with a focus on collecting data directly tied to safety outcomes.
- Virtual Contractor Audits implementation – TSSA inspectors conducted remote audits throughout the year, requiring contractors to demonstrate compliance with seven primary safety responsibilities through their processes, procedures and records and preparing contractors for revised Fuels Heating Contractor Audit Program requirements coming in 2023 as part of TSSA's transition to an Outcome-Based-Regulator.
- Compliance Support success – Of the 20 Fuels entities that accepted TSSA's offer of compliance support from the start of the program till the end of fiscal year 2021, 71.4 per cent saw a significant reduction in risk scores. Risk scores reflect the compliance of the entity and any associated incidents. Entities that are more compliant have lower risk scores.

TSSA also engaged in several discussion forums with members of the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI), a non-profit national trade association representing manufacturers, wholesalers and contractors in the Canadian heating, ventilation, air conditioning and refrigeration industries. Topics of discussion included TSSA's Outcome-Based-Regulator transformation, new business model, industry compliance standards, and "Trunk Slammers" awareness campaign to deter unauthorized fuels work.

The Fuels Safety program remains focused on educating Ontarians and promoting public safety with a number of fuels-related initiatives designed to change behaviour. In the past year, TSSA's fuels public safety awareness programs included:

- CO Safety to increase awareness of the dangers of CO poisoning and how to prevent them
- Patio Heater Safety to address the hazards associated with the increased use of patio heaters by restaurants due to COVID-19
- Spring Flooding Safety to proactively increase awareness of fuels-related hazards caused by flooding
- "Trunk Slammers" Awareness to address the public safety issue of uncertified technicians and unregistered fuels contractors

TSSA will continue to educate Ontarians, partner with industry stakeholders and collaborate on future safety strategies and regulatory awareness initiatives.

