Chief Safety and Risk Officer
Annual Report, 2012-2013

Technical Standards and Safety Authority
Province of Ontario

October 2013

This report is supplemented by the Chief Safety and Risk Officer review of TSSA's Annual Public Safety Performance Report for the period May 1, 2012 to April 30, 2013
Annual Report – Summary

This report covers the period from the CSRO’s start date, August 2012 to September 2013. Moving forward, the period for this Annual Report will be structured to coincide with TSSA’s fiscal year and Annual Public Safety Performance Report and Annual Report (May 1 to April 30). Pending the schedule of reviews, this report will be issued prior to TSSA’s Annual General Meeting, typically held in September. The CSRO is required to provide a minimum of two reports every year; a review of TSSA’s Annual Public Safety Performance Report (ASPR) and this CSRO’s independent Annual Report.

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Summary comments of TSSA’s 2012-13 ASPR: The ASPR report, with accompanying independent supplement by RSI - ‘Risk in Context’, is well written and provides a comprehensive overview of TSSA’s efforts to address and reduce the risks associated with delegated responsibilities. The introduced predictive measure, ‘risk of injury or fatality,’ facilitates prediction of the expected injury burden during the course of the upcoming year (or other time-frame). This is a valuable tool for public policy setting and for TSSA (and others) to set meaningful and measureable targets. Risk is a more meaningful indicator of public safety than compliance and the discussion within this year and last year’s ASPR provides an important distinction between the two. This is useful and should be continued in future ASPRs. The report also enables a common approach to public safety risk across agencies in Ontario and globally.

Main issues raised in the report: (i) Boilers and Pressure Vessels – rolling out overall corporate program to standardize orders and analysis, and partner with the insurance industry to establish a more comprehensive list of facility locations; (ii) Operating Engineers – continued application of RIDM to refine inspections and continued monitoring of operating engineers shortage; (iii) Amusement Devices – continued public safety campaigns, focus on water slides, active learning from other jurisdictions; (iv) Elevating Devices – increasing trend of ‘non-compliance’, application of standard orders, increasingly open and regular publication data; (v) Fuels – CO poisoning is the highest risk under TSSA’s mandate; approximately 5,500 facilities inspected at least once every three years, propane facilities inspected annually.

Comments provided: (i) The comparative table in this year’s ASPR highlighting various risks in Ontario is excellent, and should be provided annually going forward; (ii) Compliance metrics (and degrees of ‘non-compliance’) are being standardized in all TSSA sectors along with reporting frameworks. This is important as this will help to put findings in context over the full compliance period in the studies, e.g. the nine year period; (iii) The ASPR can provide a framework for Statutory Directors to set (and measure against) clearly defined performance targets for the upcoming year; (iv) More fulsome and regular benchmarking of safety levels and service standards would be beneficial (particularly against jurisdictions outside Canada).
This 2012-13 Annual Report summarizes the CSRO’s activities; outlines progress on the first agreed-to (annual) work plan; proposes the second work plan; and highlights several key areas initially reviewed by the CSRO. These areas include: risk measurement and communication, e.g. RIDM and fatality equivalents; establishing international benchmarking practices for TSSA; data management, e.g. moving toward open data provision of specific sectors such as elevating devices; and possibly combining and linking activities across several agencies.

Two broad concepts are notionally considered: (i) TSSA’s requirement to regulate ‘apples and oranges’ (e.g. the disparate nature of, say, stuffed articles vs BPVs) and (ii) TSSA’s ability to influence public safety writ large in Ontario (e.g. TSSA’s mandated risk reduction efforts represent about 0.1% of Ontario’s fatality rate due to unintentional injuries, yet the public safety expertise is readily transferrable to other areas). These are more broadly discussed in comments to the ASPR (see separate report).

Three specific suggestions are provided with regard to TSSA’s ongoing operations: (i) continued data collection and management efforts, with a view to be ‘open by default,’ perhaps starting with elevating devices; (ii) establishing a time-frame for at least registration of all BPVs in excess of specified capacity ratings by, say, 2017; (iii) integrating standardized inspection procedures with standardized risk metrics and the new fee structure.

Three general suggestions are provided that could be joint approaches (i.e. Ontario-wide, multi-sector) in areas where TSSA has (partially) mandated responsibilities: (i) the role and vulnerabilities of elevators in residential dwellings in excess of 10 stories; (ii) home servicing – move to Ontario-wide ‘home servicing’ paradigm (rather than ‘inspections’ – encourage broad public support and economic development, and ‘one stop servicing’ visits combining several residential objectives) - TSSA’s primary interest is CO monitoring with fuel burning appliances, furnaces; perhaps partnered with emerging service areas such as ‘weather hardening’ (pilot climate adaptation program underway in KW-Region) and emerging home inspector licensing. (iii) coordinated, and possibly combined, inspections with various agencies representing different government levels, through a culture of safety and resilience rather than compliance and enforcement (while supporting local economic development, e.g. ‘inspection’ version of 311).
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Structure and Role of CSRO Position

The structure and role of the Chief Safety and Risk Officer (CSRO) role and structure is relatively new. Launched February 2011, the position has not yet been filled by the same person for more than 18 months. The position is unique within the Province of Ontario’s governance and oversight structure and is still evolving.

Key aspects of the position include:

**Independence.** Although the position regularly interacts with TSSA staff and management, the TSSA Board, in particular the Governance, Safety and Human Resources Committee (GSHRC), and Ministry of Consumer Services (MCS) officials, as well as attending *ad hoc* field visits and community representative meetings, the CSRO is expected to operate independently. The CSRO formally reports to the TSSA Board.

**Access.** The position enjoys unfettered access to all key individuals. Related agencies, such as the Electrical Safety Authority, academia, and corporate representatives are quick to share opinions, information and relevant oversights.

**Broad Perspective.** Arguably, the most likely risks in Ontario are those that cross several jurisdictions and sectors; for example elevating devices. Licensing of elevators is a key mandate of TSSA, however safe elevator operation requires support from many stakeholders: e.g. local planning authorities (and building inspection processes); developers and building managers; inspection and maintenance personnel; Emergency Management Service (EMS) teams; and manufacturers. The CSRO position provides a (partial) overview of how each specific activity is related, and interconnects with other stakeholders, jurisdictions and regulators.

**Part-time Nature.** As the position is limited to no more than 50 days input per year, detailed reviews or comprehensive issues development are not possible. The position’s mandate is purposely kept modest with a sole focus on oversight and objective observations. From August, 2012 to September, 2013 the CSRO provided approximately 26 days total for field visits, staff and Board meetings, report reviews, and research management (details available upon request). This limited amount reduces potential disruptions to TSSA’s activities and minimizes cost, while still providing enough time to observe organizational activities. In future more time may be warranted, with delegated researchers on specific tasks (where independent but jointly directed work is undertaken by a third-party; this model was piloted for data collection in this year’s benchmarking effort – Annex 2). Expectations from the position need to be commensurate with the part-time nature, and independent operation, of the CSRO.
Baseline comparison

An initial study completed by the CSRO investigated similar delegated activities (elevating devices, fuels and BPVs) in other jurisdictions (outside Canada). Preliminary findings for New York, Chicago and Australia provide useful baseline comparisons (see Annex 2). Discussions are now underway to have this information regularly collected by TSSA, and other safety authorities. This is initially informational only and can therefore be collected directly by TSSA, or a delegated third party, with prior agreement on scope, review process, frequency and publication schedule.

Claiming that Ontario is ‘one of the safest jurisdictions in the world’ might be credible (as suggested at the 2013 AGM), however through RIDM and other risk metrics, this statement can be validated. How does the safety of Ontario’s elevators compare to Florida, Netherlands or Korea? Is fuel transport and distribution less risky in Ontario than say Australia? Which North American jurisdiction has the fewest incidents on amusement devices? Answering these questions will take time, however TSSA and other ‘world-class’ public safety agencies should regularly benchmark themselves against peers and over time.

Measuring Risk

As discussed in 2012 Annual Public Safety Performance Report (ASPR) the use of risk informed decision-making (RIDM) is accepted international best practice. Use of RIDM for risk analysis in the eight TSSA sectors is sound and provides an important platform for others to follow (and compare) in similar risk analysis, e.g. food safety, road safety, and accidental injury such as water safety. DALY – Disability Adjusted Life Years - is a standard international metric that facilitates credible comparisons and baseline monitoring. The metric combines morbidity and mortality thereby providing a more holistic account of safety impact. TSSA is now also augmenting DALY with an equivalency of “risk of injury or fatality”.

A discussion of how RIDM and other risk metrics can most effectively be used in Ontario and other jurisdictions is warranted. With TSSA technical expertise the

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1 The term DALY was originally developed by Harvard University for the World Bank in 1990. The term is now widely used in public health and broad health reporting, e.g. the 2012 Global Health Burden Report by the World Health Organization. RIDM – risk informed decision-making – is a general risk industry standard metric that originated in systems engineering. RIDM is widely used in the nuclear industry and other areas involving complex systems. An excellent summary review can be found in NASA’s April 2010 ‘Risk-Informed Decisions Making Handbook.’ 128p.

2 This type of DALY use only pertains to immediate injury of the activity in question, e.g. physical injury using an elevator or amusement device. The possible impact of say, communicable diseases or long-term health impacts that might be associated with the activity, such as long-term exposure to hydrocarbons or cumulative back strains from amusement rides are not captured here: This is standard industry practice.
CSRO is participating in a review to identify other safety regulators in Ontario, Canada and internationally that use a RIDM-like model; along with information about the model used, the stage of implementation, experience to date, and likely future applications. This review will inform an ad hoc provincial working group. The review will integrate TSSA’s recent US Patent for risk measurement, proposed CSA-supported international standard, and current international risk management standards such as the ISO 31,000 series.

**Elevating Devices**

Elevating Devices (ED) are a critical aspect of TSSA’s mandate however for a comprehensive ED safety regime support from other stakeholders is critical. Jurisdictional overlap, differing scales and timeframes, and changing circumstances may combine to warrant a broader review of ED safety in Ontario. This is particularly relevant: (i) in light of recent events with Super Storm Sandy in New York City with resulting sustained power outages and loss of life as elevators remained inoperable and; (ii) it’s estimated more than 150 high-rise residential buildings (in excess of 20 story) are under development in the Greater Toronto Area. Events like the recent strikes of elevator maintenance workers may also add to complexities as the number and critical nature of elevators increases. Elevators, and potential lack of access, are rapidly emerging in the GTA as a critical issue and a possible broad-based public safety risk.

**Data Management**

An early and important recommendation of Norm Inkster, CSRO (from 25 Feb, 2011 to 5 March, 2012), was the establishment of a Chief Information Officer (CIO) in TSSA. Demonstrable results are already being seen from the implementation of this position. The Government of Ontario and its delegated agencies have some 15 similar positions. An ad hoc meeting schedule is emerging among these CIOs. There is significant opportunity for synergies.

The next 10 years are likely to see inordinate attention on data management, the role of social media, and application of real-time sensors on critical equipment. This should be an emerging area of strength for TSSA. Development of ‘next-step’ efforts will however likely require broader agency participation and judicious integration of private sector partners.

A few possible data management future activities emerged during the first year:

(i) Make elevator inspection schedules public;

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3 Elevating and amusement devices provided $20,313,000 to TSSA revenue in FY 2013
4 A Disaster in the Making: Addressing the Vulnerability of Low-Income Communities in Extreme Weather, Tracy Ross, Center for American Progress, August 2013.
(ii) Review and report on the merits of opening TSSA data on other inspected operators and customers, e.g. boilers and pressure vessels;

(iii) Prepare a plan for TSSA database to be placed on 'Ontario Open Data';

(iv) Develop and share analytic tools on risk events and maintenance priorities, particularly with local governments;

(v) Continue to distinguish between enterprise risk management and public safety risk, while encouraging transfer of expertise between the two areas of risk management.

Coordination Among Government Inspections and a Provincially-Bridged ‘311’ Service

In Ontario a relatively small-scale company can have more than 30 government inspections per year. These are costly to the company both from a financial and time perspective. Coordination and synergies may be possible. Also significant risk reduction is possible through use of consolidated (and coordinated) data collection. A ‘311 one-call’ type-service is now common in many larger cities. However much greater coordination and synergies might be gained by combining provincial mandates, e.g. Labour and Environment, as well as by combining all levels of government, i.e. federal, provincial, regional, and local.

An effort of this magnitude is obviously well beyond TSSA’s purview; however TSSA and MCS could conduct a review and convene relevant counterpart agencies to explore the merits in combining inspections. A key aspect of this effort will be the need for the revisions to enhance public safety, and improve government service provision. Enhanced public safety and economic development should both be possible.

Home Inspections to Home Servicing

Routinely mechanics at local businesses service automobiles. Trust of the process comes from personal experience and confidence in broad government oversight, e.g. auto-mechanic certification 310S under the Ontario College of Trades. The process is now habitual with car owners (inspection only occurs at sale and emissions testing, which is being reduced: service is provided during the lifetime of the vehicle and is seen as ‘value for money’ by car owners).

Home inspections are typically carried out at time of sale; often by an accredited member of the Ontario Association of Home Inspectors. Other home inspections include fireplaces and woods stoves (WETT), home heating, energy audits, insurance agents, etc. The scope and frequency of home inspection is particularly relevant to TSSA as this may be the most practical way to address CO poisoning, which is TSSA’s largest public safety risk.
To better address CO and other TSSA regulated aspects such as home fuel-oil tanks, home servicing should become as habitual as automobile servicing. This should also increase homeowner convenience and safety and, as a secondary benefit, would encourage economic development. This change in mindset will take time to implement as existing regulations, individuals and existing businesses, oversight agencies, homeowner habits, and costs will all be impacted. However, from a public safety perspective, e.g. CO poisoning, this appears to be the most likely way to achieve significant and cost effective reductions in this specific risk. The potential ancillary benefits from the approach are large. Therefore there may be significant value in TSSA reviewing ways to encourage the emergence of an Ontario-wide culture of routine home servicing to augment (and possibly replace) the somewhat ad hoc and growing regime of home inspections and compliance.

**Items Under Review**

In addition to TSSA’s Annual Report the CSRO is monitoring progress on three reports (activities): (i) Draft amendments to Ontario Regulation 219/01 (Power Engineering Regulation); (ii) the Ontario Propane Safety Review, November 2008 (follow-on recommendations), and; (iii) TSSA’s Strategic Plan including links to the BPV insured vessels issue.

The evolving nature of risk and the links between risk and resilience is also highly topical and being monitored. Ontario and the GTA specifically, are likely to emerge over the next decade as ‘highly resilient regions’ best able to withstand the probable impacts of severe weather and other potential disasters. With the GTA's seismic stability, access to large bodies of fresh water, relatively secure power and food supplies, and by-in-large well-developed EMS, the region may well emerge as a critical global region of resilience and safety. Much can be done to enhance (and protect) this strength. TSSA is likely to play an important role as stakeholders and regulatory agencies work collectively to nurture and benefit from this confluence of circumstances.

**Training Programs**

An area that warrants more in-depth analysis is the purported pending shortage of power engineers. This may be partially addressed through amendments to Ontario Regulation 219/01. Only cursory discussions on this topic were held by the CSRO; a more thorough review is proposed.

**Safety and Trade Issues**

When reviewing upholstered and stuffed article activities the issue of safety (from fill material and possible contamination, e.g. rodents and bed-bugs) and trade protection emerged. The issue was only introduced at this time and follow-on discussions and investigations are proposed.
Proposed Work Plan – Year Two (Year 1 work plan in Annex 1)

Following on key activities initiated in Year 1, the CSRO proposes to carry out the following tasks:

1. Support a risk management practitioners workshop to review risk metrics, e.g. RIDM, local and global best practices, and solicit expert opinions on priorities for Ontario. Possible priority sectors include road and food safety.
2. Work with TSSA to establish on-going information collection practices to enable benchmark comparisons of TSSA relative to Canadian and international jurisdictions. Possibly start a program (ideally on TSSA website) where this baseline is published and regularly updated.
3. Convene or attend at least one workshop on data management looking at TSSA’s requirements and contributions relative to other agencies operating in Ontario. Prepare a draft discussion brief (key contact, TSSA-CIO).
5. Monitor and where appropriate comment on: (i) Draft amendments to Ontario Regulation 219/01 (Power Engineering Regulation); (ii) the Ontario Propane Safety Review, November 2008 (follow-on to recommendations), and; (iii) TSSA Strategic Plan.
6. Review and where appropriate comment on the integrated nature of regulations and standard practices pertaining to elevating devices.
7. Meet with representative Community Advisory Committees and conduct field visits with TSSA inspectors; possibly include a visit to look at issues specific to Northern Ontario.
8. Attend occasional TSSA staff, management and Board meetings; complete tasks that may be assigned by the Minster of Consumer Services.

Reporting

The methods of communication and workflow between the CSRO, staff of TSSA, TSSA Board, and representatives of MCS are still evolving but are now well documented. Next year the CSRO’s Annual Report will be structured to coincide with TSSA’s Annual Report and Annual General Meeting (pending provision of draft reports by TSSA staff).
Annex 1

Chief Safety and Risk Officer – Initial Draft Work Plan

The Chief Safety and Risk Officer, CSRO, is unique in that substantive oversight functions are legislated to the Officer, while the position remains part-time. The Officer is also required to ensure an adequate understanding and professional relations with the Board, TSSA, and the Ministry of Consumer Services, while also keeping abreast of international best practice in risk management and public safety.

Reflecting the scope of CSRO position a ‘short-term’ and ‘long-term’ work plan is proposed. The immediate priority for the new Officer is to obtain a much better understanding of TSSA, the relations across TSSA including the Board, MCS and the public (customers - those that pay for TSSA services - and the general public that use the regulated services).

Two topic areas of particular interest in the short term are the process of risk informed decision making (RIDM) and its metric of disability-adjusted life year (DALY): the technical underpinnings, relevance to other sectors, comparability, and means of communication to the public. If and how RIDM is reducing risk in Ontario will be reviewed in the first few months of the work plan.

The second topic of immediate interest is TSSA’s data collection and publication system. Is there sufficient data for presented risk analyses, is there sufficient robustness in the data system to provide assurances to the Board and MCS in the event of an incident within delegated responsibilities.

Areas that are deferred to the longer term include: the establishment of an international best practice advisory board on risk identification and reduction; an overview of Ontario’s culture (and by extension governance) vis a vis risk management and public safety; advocacy by the CSRO for public safety as specified in the April 2010 MOU, and; an assessment of TSSA’s ability to increase public safety service for Ontario in a globalizing (and internationalizing) world.

Short Term

1. Improve overall understanding of TSSA: its structure, management, relations across TSSA, the Board, MCS and the public; customer perspectives on ‘value for money’ as it relates to safety.
2. Review RIDM as an internationally accepted and transferrable risk management tool, and DALY as an acceptable metric. Include a review of RIDM across several Provincial jurisdictions, and current and proposed International Standards Organization (ISO) activities.
3. Review TSSA’s data management system: progress in system upkeep and development; comprehensiveness of data being collected; reliability; public involvement; timeliness; links to other large data sets in Ontario.
Long Term

1. Establish a global advisory board on risk. Review risk identification, communication and minimization in Ontario, and compared to other jurisdictions.

2. Review the role of good governance in risk management and public safety. Advocate for risk reduction and public safety within the context of the April 2010 Ministry of Consumer Services and TSSA memorandum of Understanding (Sec 14, para 10, page 12).

3. Provide input into the question of how to ensure and enhance Ontario's public safety through TSSA in a globalizing world while taking into account Ontario's attributes, data management systems, opportunities and challenges.
Annex 2

Global Safety Practices and Standards in the Fuels, Boilers and Pressure Vessels, and Elevating Devices Sectors

A Joint Review by TSSA and the CSRO

Terms of Reference

Background: The Technical Standards and Safety Authority TSSA promotes and enforces public safety and seeks to be a valued advocate and recognized authority in public safety within the Province of Ontario.

Since 1997, TSSA has delivered public safety services on behalf of the government of Ontario in four key sectors: (i) boilers and pressure vessels, and operating engineers; (ii) elevating devices, amusement devices and ski lifts; (iii) fuels; and, (iv) upholstered and stuffed articles. TSSA is a not-for-profit, self-funded organization serving the Province of Ontario, with headquarters in Toronto. TSSA employs approximately 380 staff, and is governed by a 13-member board of directors. TSSA operates as a delegated authority and is accountable to the Ontario government, through the Minister of Consumer Services.

TSSA funds its operations by charging its industry customers a fee for provided services. While TSSA is required to enforce the Technical Standards and Safety Act and regulations, the organization has embraced a broader role than solely compliance. Through both promotion and enforcement actions, TSSA seeks to continuously enhance safety in Ontario as both a regulator and an advocate.

TSSA's safety value chain activities include:

- Influence codes and regulations: support government in developing regulations, and participate in code development and standard setting.
- Inform, educate and modify behaviour: inform and educate end-users and industry participants regarding better safety practices and issues, new codes, regulations and requirements, and seek to influence user behaviour.
- License, register and certify (examine): influence training institutions to properly train trades people, and effectively examine and certify trades people, register plants and equipment, and license devices, sites and contractors.
- Review designs: review the design of new technology, new installations, alterations and modifications to existing equipment and plants for compliance to codes and regulations.
- Inspect and monitor: inspect/audit trades people, contractors, plants, equipment and sites for compliance with codes and regulations, and monitor developing safety related trends or issues.
- Enforce: take appropriate regulatory actions to resolve non-compliance situations or actions before or after safety incidents.
- Investigate safety incidents or near-misses.

TSSA's value proposition is to emphasize preventative activities within the safety value chain. TSSA recognizes that the evolutionary path toward this goal will vary for each sector it
regulates. In delivering on its value proposition, TSSA is committed to ensuring compliance through the application of best practices. Where additional opportunities to enhance safety are identified, TSSA will design and implement preventative actions, such as public safety awareness campaigns. In doing so, TSSA recognizes the role of its regulatory customers and other stakeholders to have a shared responsibility for safety and encourages them to fully accept this responsibility.

TSSA uses global best practice in the measure and communication of safety, in particular through quantification of risk, e.g. risk informed decision making (RIDM) and the International Standard Organization’s definition of safety as ‘freedom from risk’.

Reviewing TSSA’s Operations in the Global Context

The TSSA is a unique amalgam of several regulatory mandates, i.e. elevating and amusement devices and ski lifts; boilers and pressure vessels; fuels; operating (power) engineers; and, upholstered and stuffed articles. In other jurisdictions these oversight functions may rest with several different authorities, e.g. elevating devices overseen by New York City while responsibility for fuels is overseen by the State of New York and various national agencies.

The proposed review is limited to three areas of TSSA’s delegated mandate – (i) fuels; (ii) boilers and pressure vessels; and, (iii) elevating devices, including escalators.

Fuels

TSSA’s Fuels Safety Program administers the Technical Standards & Safety Act 2000, providing fuel-related safety services associated with the safe transportation, storage, handling and use of fuels such as gasoline, diesel, propane, natural gas and hydrogen. Under this Act, TSSA regulates fuel suppliers, storage facilities, transport trucks, pipelines, contractors and equipment or appliances that use fuels. We also work to protect the public, the environment and property from fuel-related hazards such as spills, fires and explosions.

Boilers and Pressure Vessels

Under TSSA’s Boilers and Pressure Vessels (BPV) Safety Program, TSSA regulates all pressure-retaining components manufactured or used in Ontario. Our staff inspects pressure equipment during the manufacturing process and again after it has become operational. TSSA registers the designs of equipment in accordance with recognized codes and standards.

Elevating Devices

TSSA’s Elevating Devices (ED) Safety Program is responsible for regulating the safety of elevating devices in Ontario under the Technical Standards & Safety Act 2000. Devices that TSSA is responsible for include elevators, escalators, moving walks, lifts for persons with physical disabilities, passenger ropeways, construction hoists and ski lifts.

TSSA reviews and registers elevating device designs, conducts initial inspections and licenses devices when they conform to the Act, Elevating Device Regulation and adopted safety codes and standards. On existing elevating devices, TSSA conducts periodic inspections based on a risk-based cycle.
Tasks

Within the fuels, boilers and pressure vessels, and elevating devices sectors conduct a review of existing information (internet, literature, and personal communication) for:

- Legislative and regulatory framework
- Fees: direct and indirect
- Average staffing complements and expertise
- Historical incidences of safety violations and public injury
- Frequency of inspections
- Regulatory process; i.e. (which entity(ies) provides interim and final authorization and what are their legislated powers (actual and routinely enacted))
- Possible jurisdictional overlaps or missing segments
- Observed ‘best practice’ innovations in service delivery and risk minimization
- Data management

In addition Canadian comparators, e.g. Quebec’s recent review, complete this review as available information permits for at least five jurisdictions. Ideally these will include New York (and New York State); Illinois (with any unique aspects for Chicago); Australia; and as information availability warrants either France and Paris or the UK and London (or both); Brazil (Sao Paulo); and ideally a cursory review of Japan, Korea and an additional European country like the Netherlands, Sweden or Denmark.

This work will be carried out as a joint effort between the CSRO and TSSA (Vice Presidency of Research) and Ministry of Consumer Services as information warrants. A summary of the review will be presented by the CSRO to the TSSA Board. A final summary will – with annual updates as warranted – will be included in the CSRO’s Annual Report.

Annex 2.1 provides an example of information to be collected. The draft information is from published sources for New York (and New York City) and Illinois (and Chicago).

Following the lead of Quebec, a table for data submission needs to be developed, although there is much anecdotal and location specific information that will necessitate inclusion of summary discussions and interpretation of information (and website links).

Annex 2.1 – Initial Example Information

New York State

The Department of Environmental Conservation regulates petroleum storage facilities in the State of New York, under the Hazardous Substances Bulk Storage Program. Three laws form the legal basis of this program, namely:

1. Regulation of Major Oil Storage Facilities - In 1977, the NY Legislature passed the Oil Spill Prevention, Control and Compensation Act (Article 12 of Navigation Law) to regulate all oil terminals and transport vessels operating in the waters of New York.

2. Regulation of Petroleum Tanks – In 1983, the NY Legislature enacted Article 17, Title 10 of the Environmental Conservation Law, Control of the Bulk Storage of Petroleum, which applies to underground and aboveground storage tanks.
3. Federal Underground Tank Regulations - In 1984, the United States Congress added Subtitle I to the Resource Conservation and Recovery Act requiring the Environmental Protection Agency to regulate underground storage tanks (USTs). The goals of the law include: preventing leaks and spills; finding leaks and spills; correcting problems created by leaks and spills; ensuring that owners and operators are able to pay for spill cleanup; and developing and approving State regulatory programs for USTs.

New York City

The New York City Department of Buildings has jurisdiction over 975,000 buildings and properties, and enforces the City's Building Code (together with the Electrical Code, Zoning Resolution, New York State Labor Law and New York State Multiple Dwelling Law). A division of the Department of Buildings, the Elevator division, ensures the operational safety, reliable service and lawful use of elevators, escalators, amusement rides and other related devices.

The Elevator division performs inspections and testing, and enhances safety and awareness through outreach programs. The Division also grants permits for new technologies under pilot programs.

1. Training. The Elevator division provides a Qualified Elevator Inspector Training Program for all inspection staff. In addition, all inspectors attend monthly in-house training sessions. Newly-hired inspectors are mentored by senior inspectors, and regular presentations are made by outside vendors to keep staff updated on new technologies.

2. Applications and Permits. The Elevator division processes approximately 5,000 applications annually, and grants permits for the following stages in the project cycle:

- New Installations or Major Upgrades – The Division processes Elevator Applications for installation of new devices. Any major upgrades, alterations, replacements or modernization of existing elevators is also subject to the application process.
- Alterations, Replacements, or Modifications\textsuperscript{5} – An Elevator Building Notice must be filed to remove or dismantle an existing device or perform a minor alteration, repair or replacement. For both New Installations and Alterations, the Division issues permits to conduct work, which are valid until completion and sign-off.
- Removal or Dismantling
- Minor Work – In cases where no testing is required by the New York City Building Code, contractors may self-certify minor alterations.

3. Inspections and Tests. The Elevator division conducts approximately 90,000 inspections annually. Each year, the Division writes 36,000 violations.

\textsuperscript{5} Alterations include: change in speed, capacity, rise, structural and location. Replacements and modifications include: replacement/ modification of controller, machine, governor, etc.
• Quality Assurance Inspection – All inspectors are overseen twice a month by a supervisor during and after inspection. The Elevator Division Operational Manual was published to ensure uniform inspection standards.

• Complaint Inspections – Complaints are received from the NYC 311 call center, with response times conforming to targets set by the Office of the Mayor. Approximately 800 – 1000 complaint inspections are conducted each month.

• 24-hour Accident and Emergency Response – The Division responds in the event of accidents, and conducts inspections in cases of injury and death. Approximately 100 – 150 accidents occur each year, with a majority being minor accidents (Figure 1).

• Survey Inspections – Inventory of devices at a particular location.

• Annual Tests (Category 1) – Building owners must have a basic test conducted on their devices. This test must be performed by an approved Elevator Inspection Agency. The Elevator Inspection/Test report must be filed with the Department of Buildings. If defects are found, they must be corrected within 45 days, and an Affirmation of Correction Form must be filed.

• Three Year Test (Category 3) – Water Hydraulic Elevators must be inspected every three years, in addition to the Category 1 inspection. Owners must file the Elevator Inspection/Test Report with the Department to record the results. When Category 1 and Category 3 inspections occur in the same year, they can be performed and the results filed simultaneously.

• Five Year Test (Category 5) – A full load inspection test must be conducted on elevators every five years.

• Violation Re-inspections

• Sign-Off Inspections - After completion of work performed under an Elevator Application or an Elevator Building Notice, the Division inspects and tests the device. Upon sign-off, the elevator can be put into service. Approximately 500 inspections are conducted monthly.

Figure 1. Record of Elevating Device Accidents in New York City
4. *Filing Fees and Civil Penalties.*

**Table 1. Filing Fees**

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<tr>
<th>Filing Fees</th>
<th>Category 1: $30 per elevator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Category 3 or 5: $40 per elevator</td>
</tr>
<tr>
<td>Affirmation of Correction</td>
<td>$40 per violating condition</td>
</tr>
<tr>
<td>Waiver of Penalties</td>
<td>$35 per elevator</td>
</tr>
</tbody>
</table>

**Table 2. Civil Penalties**

<table>
<thead>
<tr>
<th>Buildings with 1-2 Residential Units</th>
<th>Failure to File* (per elevator)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Late Filing (per elevator)</strong></td>
<td><em><em>Failure to File</em> (per elevator)</em>*</td>
</tr>
<tr>
<td>Inspection &amp; Test Reports</td>
<td>$50 per month</td>
</tr>
<tr>
<td>Affirmation of Correction</td>
<td>$50 per month</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>All Other Buildings</th>
<th>Failure to File* (per elevator)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Late Filing (per elevator)</strong></td>
<td><em><em>Failure to File</em> (per elevator)</em>*</td>
</tr>
<tr>
<td>Inspection &amp; Test Reports</td>
<td>Category 1: $150 per month</td>
</tr>
<tr>
<td></td>
<td>Category 3 or 5: $250 per month</td>
</tr>
<tr>
<td>Affirmation of Correction</td>
<td>Category 1: $150 per month</td>
</tr>
<tr>
<td></td>
<td>Category 3 or 5: $250 per month</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Buildings with 1-2 Residential Units</th>
<th>Failure to File* (per elevator)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Late Filing (per elevator)</strong></td>
<td><em><em>Failure to File</em> (per elevator)</em>*</td>
</tr>
<tr>
<td>Inspection &amp; Test Reports</td>
<td>Category 1: $150 per month</td>
</tr>
<tr>
<td></td>
<td>Category 3 or 5: $250 per month</td>
</tr>
<tr>
<td>Affirmation of Correction</td>
<td>Category 1: $150 per month</td>
</tr>
<tr>
<td></td>
<td>Category 3 or 5: $250 per month</td>
</tr>
</tbody>
</table>

5. *Maintenance.*

Building owners are required by the Department of Buildings to have a contract with an approved agency to perform repair and maintenance work of passenger elevators. Maintenance work does not require a permit from the Department. Owners are also required to keep a maintenance log, detailing a Maintenance Control Program, which establishes a program of maintenance and upkeep for the device. Owners that repeatedly fail to maintain their elevators can face criminal court action from the Department. Using complaint data, violations, maintenance filings, and field inspection records, the Department publishes a Top 10 Elevator Offender list on their website.


- Building Information System – The Department of Buildings updates and posts elevator inspection results and publishes them online on the Building Information System.
• Outreach Program – The Elevator Advisory Council publishes technical bulletins based on lessons learned during inspections, testing and investigations to enhance safety standards and code enforcement.

Illinois

The Illinois Office of the State Fire Marshal (OSFM) is the agency tasked with protecting life and property from fire and explosions through inspection, investigation, training, education, data processing and statistical reports of incidents. The services provided by the agency include: fire prevention safety in buildings (including regulation of elevators), the program for petroleum and chemical tanks, and other related functions.

1. Elevator Safety and Regulation

The Elevator Safety and Regulation Act (Public Act 92-0873) was originally created and approved by the Illinois General Assembly in 2003, to provide for public safety and awareness of conveyances in Illinois. The Act regulates the design, construction, operation, inspection, testing, maintenance, alteration and repair of elevators, dumbwaiters, escalators, moving sidewalks, platform lifts, stairway chairlifts, and automated people conveyances. The OSFM is the enforcing body, while the Elevator Safety Review Board was created (also by Public Act 92-0873) to adopt rules consistent with the provisions of the Act and for its administration and enforcement. The Board has the authority to grant exceptions and variances, hear appeals, hold hearings, establish fee schedules, and authorize all licensing.

In certain cases, Municipality Agreements exist between a City, Town, Village or County and the Illinois Office of the State Fire Marshal. Such agreements allow a municipality to operate their own elevator program as long as they adopt and use the codes that have been adopted by the State regarding the inspection and certification of conveyances. If no Municipality Agreement exists, the State has jurisdiction. Chicago locations are exempt from the Elevator Safety and Regulation Act, with the exception of State-owned facilities. By 2009, 173 Municipalities had signed an agreement with the OSFM indicating that they would continue to run their own elevator Programs.

Table 3. Registrations, Permits, Certificates of Operation and Licensing for 2009
The Division of Elevator Safety of the Office of the State Fire Marshall is responsible for implementing the Elevator Safety and Regulation Act, including registration, inspection, certification, and licensing. As mandated by the Act, construction, wiring, alteration, replacement, maintenance, removal, dismantling, or inspection of any conveyance contained within buildings or structures must be conducted by a licensed individual. These may be contractors, mechanics, inspectors, inspection companies and apprentices. The Division assures that conveyances are correctly and safely installed and operated within the State of Illinois (outside the City of Chicago).

a. Applications and Permits

- Conveyance Registration – The registration process is completed for new conveyances, after which a Certificate of Operation and Inspection is submitted. Conveyances cannot be serviced, tested, or inspected unless they are first registered, or are in the registration process.

- Certificate of Operation - Once a conveyance is registered, it must be inspected by a State-licensed inspector. When the conveyance has passed inspection, an Application for Certificate of Operation is submitted together with the inspection report indicating that the conveyance has passed inspection. If the municipality where the elevator is located has an Agreement with the State, the application is submitted to the municipality.

- Variances – When a particular conveyance deviates from the specific Codes adopted by the Elevator Safety Review Board, the owner must submit an Application for Conveyance Variance. The Administrator or Local Administrator has the authority to grant exceptions and variances from the literal requirements of applicable State codes, standards, and regulations in cases where the variances would not jeopardize public safety and welfare. The Administrator has the right to review and object to any exceptions or

<table>
<thead>
<tr>
<th>License Break down:</th>
<th>Total</th>
<th>Active</th>
<th>Expired</th>
<th>Withdrawn</th>
<th>New</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractors</td>
<td>100</td>
<td>87</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limited Contractors</td>
<td>10</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td></td>
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<tr>
<td>Inspectors</td>
<td>209</td>
<td>184</td>
<td>12</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Inspection Companies</td>
<td>43</td>
<td>40</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Mechanics</td>
<td>1,872</td>
<td>1,568</td>
<td>238</td>
<td>59</td>
<td>7</td>
</tr>
<tr>
<td>Limited Mechanics</td>
<td>25</td>
<td>21</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Apprentices</td>
<td>841</td>
<td>714</td>
<td>100</td>
<td>27</td>
<td></td>
</tr>
</tbody>
</table>
variances granted by a Local Administrator. The Elevator Safety Review Board has the authority to hear appeals, for any denial.

When filing for a Variance, evidence must be submitted showing that strict compliance with the code or regulation would entail practical difficulty or unnecessary hardship, or is otherwise unwarranted. Evidence must also be shown that any requested variance/exception does not jeopardize the safety and health of those who would use the conveyance or work on the conveyance and that the methods, means, or practices proposed provide equal protection of the public’s safety and health.

• Alterations - A permit is required for any alteration of a conveyance. An alteration is any change to the equipment including its parts, components, or subsystems, other than maintenance, repair or replacement of the equipment (including its parts, components and subsystems).

• License applications – The Office of the State Fire Marshall processes applications and grants the following types of licenses:
  - Contractor License – renewed every 2 years.
  - Inspection Company License – renewed every 2 years.
  - Elevator Inspector License – renewed every 2 years.
  - Mechanic License – renewed every 2 years.
  - Apprentice/Helper Registration – does not expire.

The State of Illinois has Continuing Education requirements, consisting of not less than 8 hours of instruction to be completed within one year immediately preceding any license renewal. Continuing Education must include a minimum of 2 hours of code update training as part of the 8-hour requirement. In order to renew an inspector’s license (every 2 years), the Qualified Elevator Inspector (QEI) card must be renewed annually. This requires 8 hours of continuing education and the corresponding test, which must be completed through the organization that issued the QEI card. The QEI can be used to renew an inspector’s license as long as it was granted in the year prior to the license expiration date.

b. Inspection and Testing

The conveyance owner is responsible for hiring a third party inspector to perform annual conveyance inspections, unless the conveyance is located in a municipality that has an agreement with the State. In this case the municipality hires the inspector/inspection company to perform conveyance inspections. State-licensed inspection companies and elevator inspectors (independent of the owner’s maintenance company) conduct inspections, the reports of which are then submitted to the Division in application for Certificates of Operation. Owners or lessees of conveyances are required to report all injuries and damages over $1000 to the Division within one business day of the incident.

c. Fee Schedule

  Licenses
  • Elevator Mechanic (Initial and Renewal) - $250.00
• Limited Elevator Mechanic (Initial and Renewal) - $150.00
• Temporary Elevator Mechanic (Initial and Renewal) - $50.00
  (Note: Issued for 30 Days)
• Elevator Apprentice or Helper Registration (One-Time Fee) - $75.00
• Elevator Contractor (Initial and Renewal) - $1,000.00
• Limited Elevator Contractor (Initial and Renewal) - $500.00
• Elevator Inspector (Initial and Renewal) - $450.00
• Elevator Inspection Company (Initial and Renewal) - $500.00
• License Restoration (Any Type) Renewal Fee + $ 50.00
• License Replacement (Any Type) - $50.00
• Licensure Violations (Any Type) Not to Exceed $2,000.00/Occurrence

Registration and I.D. Tags
• Conveyance Registration (One-Time Fee) - $30.00
• I.D. Tag Replacement (Each) - $10.00
• Violation (for Contractors who fail to register a conveyance)
  Not to exceed $500.00/Day
• Variance/Exception (Per Conveyance) - $300.00

Permits
• New Installation - $400.00
• Material Alteration - $200.00
• Permit Extension - $100.00

Certification of Operation
• Initial Certificate of Operation - $100.00
• Temporary Certificate of Operation - $0
• Annual Renewal of Certificate of Operation - $75.00
• Renewal of Expired Certificate of Operation - $125.00
• Late Fee - $50.00

2.  City of Chicago

The City of Chicago’s Annual Inspection Certification (AIC) program requires building owners to engage qualified professionals to examine and document existing building systems and then report the conditions to the Department of Buildings using a web-based form. The national standards developed by the American Society of Mechanical Engineers for periodic inspections are used as the guidelines for the annual inspection.

Prior to April 2010, all conveyance devices were inspected by inspectors from the Department of Buildings. Under the AIC, owners within the Central Business District are now responsible for having an Authorized Technician inspect their devices. The AIC program was established to augment the City of Chicago’s enforcement to ensure compliance with the City building code. The AIC program fee is 50% of the Department of Buildings’ full inspection fee. Initial installations, modernizations, permitted repair inspections, 311 calls, and accident investigations continue to be performed by the Department of Buildings.
All buildings within the Central Business District of the City of Chicago with an elevator, escalator or other conveyance regulated under the Municipal Code and subject to an annual inspection are required to participate in the program. City-owned buildings are exempt and are inspected annually by the Department of Buildings, according to the agreement with the state of Illinois.

a. Annual Inspections

For elevators and escalators, an Authorized Technician performs an inspection to national standards for ‘periodic inspections’. Every conveyance device subject to the periodic inspections in the building code requires the submittal of the AIC report once a year.

For purposes of the AIC of conveyances, and Authorized Technician is a Qualified Elevator Inspector licensed by the State of Illinois as a Licensed Inspector. The Inspector must work for or be the sole proprietor of an Illinois Licensed Inspection Company for elevator inspections. The Technician must be an independent, third-party inspector in good standing with the State of Illinois. The owner is responsible for negotiating, contracting and paying for the services of the Authorized Technician.

b. Audits

A percentage of the AIC reports are randomly audited each year, and the conveyances may be inspected by Department of Buildings personnel. There are no additional inspection fees associated with audits, but any issues will result in a violation notice.

3. Fuels – Above-ground Storage Tanks

The Division of Petroleum and Chemical Safety (DPCS) of the Office of the State Fire Marshal regulates Above-ground Storage Tanks (ASTs) containing flammable or combustible liquids, but not tanks containing liquids that are neither flammable nor combustible (e.g., tanks for water storage, food additives, nonflammable or noncombustible processing chemicals, etc.). A product must have an associated flash point or fire point to be regulated by OSFM.

A permit application is required by the OSFM prior to installation of regulated tanks (flammable or combustible liquid storage tanks or LP-Gas tanks). All storage tanks intended to dispense fuels are subject to application submittal and subsequent field inspection by OSFM. All bulk liquid storage tanks of greater than 110 gallons capacity are subject to the submittal and field inspection process.

Within the rules and operating procedures of the OSFM, the term "bulk" is not connected to the capacity of the tank, but rather to simply distinguish the purpose of tank storage from a "dispensing tank". Bulk storage tanks include tanks used for the storage of flammable or combustible liquids that are not dispensed directly into the fuel tanks of vehicles. Typical contents of bulk storage tanks include: fresh and waste motor oils, transmission and hydraulic fluids, petroleum products stored for off-loading into bulk storage trucks, chemical products (if flammable or combustible) and emergency generator fuel tanks. Even though products such as fresh motor oils or transmission fluid are intended for use in vehicles, they are not
dispensed into the fuel tanks of the vehicles and therefore the OSFM classifies such
tanks as bulk storage tanks and not as "dispensing" tanks. Likewise, if flammable or
combustible products are off-loaded from an aboveground tank into the cargo tank
of a bulk storage truck, such a tank would be considered a bulk storage tank and not
a dispensing tank. The tank would only be designated as a dispensing tank if the
contents of the tank are dispensed directly into the fuel tank of a vehicle - in other
words, the vehicle's motor runs off of the product being dispensed into the fuel tank.

a. Applications

If an existing AST is being replaced with a different tank, a permit application
must be filed with OSFM. When a tank is being relocated on the same property, a
permit application must also be submitted for approval (to ensure that the
relocation remains in compliance with applicable separation distances
prescribed by codes).

OSFM does not impose a fee for the review of AST permit applications or the
field inspection that is conducted upon installation. AST permit applications are
typically reviewed and corresponding documentation of findings are returned to
the applicant within one week to 10 days receipt of the application by the
agency.

Illinois has established separate administrative rules for ASTs intended to be
used for dispensing fuel into motor vehicles, as opposed to those used for bulk
storage purposes. Furthermore, tanks containing liquefied petroleum gas (i.e.,
propane, butane, etc.) are addressed by yet another separate section of the
Illinois Administrative Code.

The term "dispensing" is used by the OSFM to distinguish a tank from a bulk
storage tank. Dispensing storage tanks contain products that are dispensed
directly into the fuel tank of a vehicle. Typical contents of dispensing storage
tanks include: gasoline, diesel fuel, gasohol, and gasoline/ethanol blends. It
should be noted that the applicable rules prohibit the retail sale/dispensing of
fuel from an AST and that even when installed for non-retail use, dispensing
ASTs are limited to 2,500 gallons capacity and any one facility is limited to the
installation of only two such dispensing ASTs, except for very limited
circumstances that include airports, farms and mining facilities.

For LP-Gas tanks, single tanks of greater than 2,000 gallons capacity, or multiple
tanks at the same facility with an aggregate capacity of greater than 4,000
gallons, or any size tank that will be used for dispensing LP-Gas into smaller
cylinders or vehicles, are subject to the OSFM permit application and field
inspection process.

Separate and distinct permit applications are required for (i) Dispensing Tanks,
(ii) Bulk Storage Tanks, and (iii) LP-Gas Tanks. LP-Gas tanks are addressed
separately from either fuel dispensing or bulk storage flammable and
combustible liquid storage tanks. LP-Gas tanks, whether installed above or
below ground, are still considered LP-Gas tanks by the OSFM and not as
Underground Storage Tanks. Therefore, underground LP-Gas tanks, although
required to undergo the OSFM’s application and field inspection process upon
installation or relocation, are not required to be registered or pay annual fees under the OSFM's UST regulatory program.

For all three types of tanks, plan reviewers examine the permit application for compliance with applicable codes. Primary criteria verified by the reviewers include:

- Adherence to separation distance requirements to property lines, buildings and other tanks
- Provisions for electrical grounding of the tank
- The capacity of the tank(s) is within the maximum allowable limits
- The number of tanks at the facility is within allowable limits
- The presence and capacity of normal venting
- The presence and capacity of emergency venting
- The tank(s) to be installed are labeled/listed tanks
- The material of tank construction
- The method of secondary containment for the tanks(s)
- The presence and method of collision protection
- The fire rating of adjacent building walls or interior storage rooms (if applicable)
- Either fencing or other forms of tamper protection are present (for LP-Gas tanks)
- Listed and labeled dispensing devices are to be installed (for dispensing tanks)
- Presence of documentation verifying the condition of used tanks
- Nearby electrical equipment installations are code compliant.

If a tank is listed as fire resistant (as indicated by compliance with Underwriters Laboratories Standard 2080 or an equivalent) or protected (as indicated by compliance with U.L. Standard 2085 or an equivalent), it may be placed directly adjacent to a building, a property line, or other tank. However, for dispensing tanks, any vehicle being fueled from the tank must still maintain a 30-foot separation distance to all buildings, property lines and other tanks, i.e., the dispensing hose must be of sufficient length in order to allow the vehicle being fueled to be placed 30 feet from any buildings, property lines or tanks.

b. Design and Installation Rules

The number of ASTs that may be installed at a particular location depends upon the purpose for which the tank will be used. The rules allow a maximum of two aboveground flammable or combustible liquid storage tanks per facility if fuel is going to be dispensed into vehicles from the tanks. (The rules also allow that if the installation is a farm, four aboveground storage tanks may be installed). For bulk storage tanks there is no limit on the number of ASTs that may be installed, however tank-to-tank and tank-to-property line separation distance requirements, which increase as the volume of the storage tank increases, may limit the number of tanks that can fit on a site.

The rules limit the capacity of a tank intended for dispensing fuel into vehicles to 2,500 gallons. (Because only two aboveground dispensing tanks are allowed,
this limits the total fuel capacity at a facility to 5,000 gallons). Even though farm sites are allowed to have up to four aboveground dispensing storage tanks, they are also limited to a maximum of 2,500 gallons capacity each, and no one product can constitute more than 5,000 gallons of the total storage at the site. For dispensing storage tanks located at airport facilities and used only to fuel aircraft, the capacity is allowed to increase to 10,000 gallons per tank. Similarly, at mining and coal-fired electrical generation facilities, ASTs that are used to store specifically diesel fuel for off-road equipment are allowed to have capacities of up to 12,000 gallons.

Liquids that are regulated by the OSFM are classified as flammable or combustible, based upon their flash point. These liquids are sub-classified as follows:

<table>
<thead>
<tr>
<th>Classification</th>
<th>Flash Point (°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammable Liquid (e.g., Gasoline)</td>
<td>Less than 100</td>
</tr>
<tr>
<td>Combustible Liquid</td>
<td></td>
</tr>
<tr>
<td>Class II (e.g., Diesel fuel)</td>
<td>At or above 100 and below 140</td>
</tr>
<tr>
<td>Class III-A</td>
<td>At or above 140 and below 200</td>
</tr>
<tr>
<td>Class IIIB (e.g., Waste oil)</td>
<td>Above 200</td>
</tr>
</tbody>
</table>

The OSFM currently requires all flammable and combustible liquid storage tanks other than Class IIIB tanks to be provided with secondary containment regardless of the capacity of the tank. Acceptable methods of secondary containment for ASTs are: concrete dikes, earthen dikes, steel catch pans, double-walled tanks, concrete encased tanks, vaulted tanks, sealed room enclosures with raised doorsills and remote impounding. If cinder blocks are used as a method of secondary containment, a lining material or sealant must be applied. The secondary containment area must be able to contain the capacity of at least the largest tank contained within the secondary containment area. (It is not required that the secondary containment area be able to hold the total capacity of all tanks contained within a dike). Steel or concrete secondary containment installations are allowed to be equipped with a drainpipe as a method of removing rainwater from the secondary containment area of small dikes or steel pans. However, three conditions apply:

i. The piping must be equipped with a lockable valve that is kept locked in the closed position and only under the control of responsible personnel at the facility.

ii. The opening created when the pipe passes through the secondary containment wall must be sealed with appropriate material that will resist the passage of product to the outside of the containment area.

iii. Only one such penetration is allowed per secondary containment area.
Due to the absence of fire history related to the storage of Class IIIB liquids, the OSFM modifies the applicable rules for the regulation of Class IIIB combustible liquids in aboveground storage tanks. Aboveground storage tanks for Class IIIB combustible liquids are granted the following exceptions to the requirements set forth in Title 41 Illinois Administrative Code Part 160 "Storage, Transportation, Sale and Use of Gasoline and Volatile Oils: Rule and Regulations Relating to General Storage":

- Aboveground Class IIIB liquids are not required to be equipped with secondary containment;
- Not required to be electrically grounded;
- Required to be separated from combustible material by a minimum separation distance of only 5 ft.;
- Aboveground Class IIIB liquid storage tanks of less than 12,000 gallons are required to be separated from buildings, property lines that are, or can be, built upon and from any public way by only 5 feet;
- Required to be separated by only 3 ft. from other tanks storing Class IIIB liquids. (Tank-to-tank separation distances from Part 160 rules would continue to apply if the adjacent tank is other than a Class IIIB liquid storage tank);
- Aboveground indoor Class IIIB liquid storage tanks are not required to be physically separated from other areas of occupancy by fire rated barriers or by fire-rated tank design (regardless of occupancy classification);
- Aboveground indoor Class IIIB liquid storage tanks are not required to have vent piping extend to outside the building enclosure;
- Aboveground indoor Class IIIB liquid storage tanks are not required to be filled or emptied from connections located outside the building;
- Aboveground indoor Class IIIB liquid storage tanks are allowed to be located in the basement of buildings; and
- Aboveground indoor Class IIIB liquid storage tanks are allowed to be located in buildings of combustible construction.

Aboveground Class IIIB liquid storage tanks continue to be required to:

- Complete and submit an OSFM "bulk storage" AST application and undergo field inspection processes for new or relocated tank installations;
- Comply with Underwriters Laboratories (UL) listing requirements appropriate for the aboveground storage of combustible liquids;
- Be provided with proper regular and emergency venting applicable to the AST;
- Comply with collision protection requirements;
- Have any attached product piping testing upon installation in accordance with Part 160 rule requirements;
- Have each connection below normal liquid level through which liquid can normally flow equipped with an internal or external valve located as close as practical to the shell of the tank.

c. Exceptions
Although kerosene is a combustible liquid, kerosene tanks are treated differently in the OSFM rules, which allow for the indoor storage and dispensing of kerosene in tanks of up to 60 gallons in capacity. Furthermore, outdoor aboveground kerosene storage tanks are allowed to be installed even at self-service retail gas stations, only eight feet from roadways. (Dispensing from an aboveground kerosene tank is not allowed to be by self-service but rather must be performed by an attendant at a self-service station.)

Unlike regular dispensing sites, airports are allowed to install two tanks of up to 10,000 gallons capacity each, for a total storage capacity of up to 20,000 gallons. However, with this increased capacity allowance comes several restrictions:

- The tanks must be fire-insulated, UL 2085 listed tanks;
- The tanks may only be used to dispense fuel into aircraft, not vehicles;
- The tanks must be equipped with overfill and spill prevention equipment;
- The installation of such tanks requires the approval of not only the OSFM, but also the Illinois Department of Transportation's Division of Aeronautics. The OSFM offers a special application for such airport tanks.

Marina facility tanks that will be used to pipe fuel to piers for dispensing into boats and watercraft are further regulated beyond regular vehicular dispensing tanks because of their close proximity to waterways and the potential for high water/flotation problems. Marina dispensing tanks are required to be provided with double-walled piping with flexible fittings. Furthermore, emergency and manual shutoff means are required. Dispensing areas must be provided with spill containment means. Dispensing at marinas must be supervised by an attendant; self-service is prohibited. The application must indicate that the tank is to be installed above the high-water mark for the area, or indicate a method of anchoring to prevent tank flotation.

d. Motor Fuel Dispensing Facilities

The rules governing motor fuel dispensing facilities are found in 41 Illinois Administrative Code 174 & 175. The rules require that no construction of a motor fuel dispensing facility or modification of an existing motor fuel dispensing facility can be commenced until application and plans are given written approval by the Office of the State Fire Marshal. Furthermore, no motor fuel dispensing facility can open for business until inspected. Plan and application review for motor fuel dispensing facilities are handled by the Office of the State Fire Marshal’s Division of Technical Services. Construction or modifications that require application and plan submittal would include the following:

- A facility being newly constructed
- A facility being established in a building that previously contained a different occupancy
- Making substantial modifications to an existing facility. Substantial modification would include:
- Installation of new dispensing islands or dispensers in new locations
- Relocation of the master emergency shut off switch

- Changing from one facility category to another (even if only part of the facility is being changed or if the facility plans to operate under a different category for only a portion of a 24-hour period). Facility categories are:
  - Attended Self-Service Motor Fuel Dispensing Facilities
  - Unattended Self-Service Motor Fuel Dispensing Facilities
  - Fleet Vehicle Motor Fuel Dispensing Facilities
  - Full Service Motor Fuel Dispensing Facilities
  - Marine Motor Fuel Dispensing Facilities

- Construction or relocation of buildings on the property, even if they are not the “primary” motor fuel dispensing facility control building.

Modifications that would not be considered substantial, and therefore would not require application and plan submittal would include the following types of work (these modifications would simply be inspected when the facility is due for permit renewal):

- Like-for-like replacement of existing equipment (e.g., replacement of existing dispensing cabinets; changing existing dispensing nozzles, hoses or fittings; replacing an existing emergency shut off switch in its current location).

- Replacing (or installing additional) collision protection posts or guardrails.

- Changing or replacing warning or instructional signs.

- Replacing or adding to the complement of portable fire extinguishers.

Applications

The administrative rules require that site plans must accompany submitted motor fuel dispensing facility application forms. The plans must be submitted in triplicate. Such plans must include the following:

1. Lot lines and dimensions
2. Building lines and dimensions for all buildings on the property
3. Location and size of tanks and pump island
4. Location of control station (if applicable)
5. Type, make, model and location of dispensing devices or equipment
6. Fire extinguisher locations
7. Clearances from dispensing devices to property lines and buildings both on and off the property
Previously permitted motor fuel dispensing facilities that do not undergo changes are not required to resubmit permit applications or plans to the Office of the Illinois State Fire Marshal. Currently permitted motor fuel dispensing facilities are automatically re-inspected by the OSFM’s Division of Petroleum and Chemical Safety and renewed permits are issued upon determination of compliance with all applicable rules.

Upon submission of plans and applications for the construction of a new motor fuel dispensing facility (or changes to an existing motor fuel dispensing facility), the applicant is notified in writing of the findings of the OSFM’s review of the submitted documentation. A field inspector (Storage Tank Safety Specialist from the OSFM’s Division of Petroleum and Chemical Safety) then conducts an on-site inspection of the motor fuel dispensing facility. A facility may only begin operating upon final approval of the Division of Petroleum and Chemical Safety, and the issuance of the applicable motor fuel dispensing facility permit.

It should be noted that the rules and ordinances enforced by local authorities having jurisdiction may be more stringent than those imposed by the Office of the State Fire Marshal. The OSFM rules must be met as a minimum level of safety. However, local units of government may set more stringent requirements in their jurisdictions. Interpretations and appeals of local requirements need to be made to the local authority having jurisdiction and not the OSFM. On the other hand, compliance with local rules or ordinances does not guarantee compliance with OSFM requirements. Local jurisdictions are not granted the authority to issue OSFM motor fuel dispensing facility permits.

Motor fuel dispensing facilities within the borders of the City of Chicago do not undergo the Office of the State Fire Marshal permit application or field inspection process. These motor-fuel dispensing facilities are inspected by the City of Chicago. Contact with, or notification to, the OSFM is not required for motor fuel dispensing facilities located in Chicago.
Chief Safety and Risk Officer Mission (from TSSA website, relevant legislation and TSSA-Government of Ontario MOU)

The Chief Safety and Risk Officer’s (CSRO’s) mission is to provide the Board of Directors with an independent review of safety activities related to the public safety responsibilities assigned to the Technical Standards and Safety Authority (TSSA) pursuant to the Technical Standards and Safety Act (Act). To this end, the CSRO will furnish analysis, recommendations and information concerning the safety activities reviewed within the scope outlined below. In performing its role, the CSRO will strive to be an advocate for public safety and take a forward-looking approach based on current best practices and trends.

Chief Safety and Risk Officer Charter

Role
The CSRO function and primary duties are established under the Act and supplemented by the Memorandum of Understanding (MOU) between TSSA and the Minister of Consumer Services (Minister). This independent function, which is not performed by an employee of TSSA, reports to the Board of Directors with oversight provided by the Governance, Safety and Human Resources Committee (GSHRC).

Authorization and Responsibilities
Authorization is granted for full and complete access to any of the organization’s records (either manual or electronic), physical properties and personnel relevant to the CSRO’s engagement. Documents and information given to the CSRO during a periodic review will be handled in the same prudent and confidential manner as by those employees normally accountable for them.

The CSRO has no direct responsibility or any authority over any of the activities or operations that they review. In particular, the CSRO will not:

- report or comment on any finding of liability or fact or on any investigation, whether initiated by the corporation or another enforcement body, any legal proceeding, or reasonably foreseeable legal proceeding involving the corporation or the Ministry;
- report or comment on any action, or decision, by a statutory director under the Act, nor interfere in any duty, or power of a statutory director;
- investigate or review specific incidents, or individual complaints; or
- accept any statutory, regulatory, administrative or enforcement responsibilities.

The scope of the CSRO’s engagement encompasses the following activities:

- pursue any safety matters that the Board or the Minister may request or any safety matters as determined by the CSRO to be in the public interest;
- review the adequacy and effectiveness of TSSA’s public safety risk management systems;
- review established public safety risk management systems, policies and procedures to ensure the organization is operating consistent with best practices;
- appraise TSSA’s report on the adequacy and effectiveness of the organization’s safety management framework to ensure compliance with the delegated act and regulations;
• appraise public safety strategies TSSA has established to ensure that the regulatory framework continues to meet the needs of public safety;
• appraise TSSA’s report to the Board of Directors on recent developments involving the regulatory framework under which TSSA operates, including the proposed annual regulatory plan that outlines priorities and supporting rationale;
• review, analyze and report on TSSA’s annual safety performance reports;
• provide draft reports and meet with the GSHRC annually or as required to report on the delivery of responsibilities and maintenance of independence; and
• submit an annual report to the Board of Directors.

Reporting Accountabilities

The CSRO shall prepare a report on his or her independent review of TSSA’s safety activities or proposed safety activities related to TSSA’s delegated responsibilities under its Act, including comments on TSSA’s annual safety performance report.

The CSRO shall also prepare a report on an annual basis and this report shall include an overview of the CSRO’s activities and operations highlighting key recommendations arising out of any other report issued by the CSRO in the preceding year, and any other safety matter the CSRO considers relevant consistent with the Act, MOU and this mission and charter.

The CSRO may also be required to prepare other reports as may be requested by the Board or the Minister.

The CSRO may also prepare a report on any mater related to TSSA’s safety activities or proposed safety activities if the CSRO considers it in the public interest to do so.

Where either the Board or the Minister requests a report, the CSRO shall provide the report within the time indicated by the Board or the Minister as the case may be. For all CSRO reports other than reports requested by the Minister, the following process will be followed:

The CSRO will advise the Chair, GSHRC when a draft report has been prepared and TSSA management will be given an opportunity to correct any factual errors for the CSRO’s consideration. In addition, management may provide comments on the draft report that will be included as an addendum when the report is reviewed by GSHRC.

Following GSHRC’s review, the finalized report will be provided to the Board of Directors (with a courtesy copy of the report provided to the Deputy Minister) for review, and acceptance. Following Board review, the CSRO will provide the Board accepted report to the Minister for review.

For reports requested by the Minister, the following process will be followed:

The CSRO will acknowledge the Minister’s request for a report in writing and provide a draft Terms of Reference for review and approval by the Minister. A draft of the report will be provided to the Deputy Minister and TSSA management at the same
time for factual review. The final report will be submitted concurrently to the Board and the Minister prior to its public release.

Final reports of the CSRO will include management’s response as an addendum, if any. The CSRO will provide the Minister with thirty days to review all reports prior to public release. All reports will be made available at the corporation’s annual meeting and otherwise made available to the public by such means as determined by the CSRO.

The CSRO will be reviewed and assessed on an annual basis by the Board of Directors.

Clarification of Organizational Responsibilities

The Board of Directors is accountable to the Minister for TSSA’s safety performance, regulatory governance, including the appointment of the CSRO with the consent of the Minister and approval of the CSRO work plan and supporting budget.

The GSHRC assists the Board of Directors in fulfilling its responsibilities related to safety performance, regulatory governance and oversight of the CSRO, including making recommendations to the Board of Directors regarding the CSRO’s appointment, mission and charter, work plans and budget, performance and independence.

The President and CEO is ultimately responsible and assumes ownership for the delivery of effective safety performance, regulatory governance, while acknowledging the independence of the CSRO and statutory directors appointed under the Act.

The Vice President, Operations, has responsibility and accountability for the delivery of the organization’s safety services in all programs, contributes to organizational strategy and direction, and establishes and delivers on organizational goals and objectives.

The Program Directors combine the responsibilities of the statutory director with those of an operational director with the following responsibilities:

- making independent statutory decisions as required by the Act and regulations;
- managing safety risks borne by the public;
- managing the quality of TSSA’s regulatory performance with respect to its contribution to public safety risk management; and
- managing non-safety aspects of financial performance, organizational effectiveness, human resources, customer satisfaction, and other corporate goals.

The Senior Advisor, Public Safety and Risk Management (PSRM) is TSSA’s internal safety accountability advisor. The Senior Advisor, PSRM works with the statutory directors to enhance the quality of public safety decision making by giving strategic advice that promotes objective, quality decision making and providing formal risk management tools and processes.

Work Plans

Annually the CSRO will develop and provide a work plan to GSHRC for review with input
from management and approval by the Board of Directors. In addition, to the required annual review of safety performance reporting, the plan will identify the areas or safety activities of the organization selected for review. The areas and safety activities selected will be based on perceived risk to public safety with respect to TSSA’s regulatory responsibilities. Other input for consideration includes:

- prior CSRO report findings; and
- requests by the Board and/or Minister;

The work plan will highlight the scope of the proposed review, estimate associated time to complete and detail applicable costs to the organization.