

X-XX: Fire/Emergency Response to Commercial Vessels

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Background

in Ontario, many fire departments have ports that dock commercial vessels. Vessels are regulated by Transport Canada under federal legislation such as the Canada Shipping Act, Transportation of Dangerous Goods, Marine Emergency Response Regulations, and the Oceans Protection Act. Further, while entering and leaving port, the vessel is under the direction of the Harbour Master which directs vessels including during emergencies. Depending on the size of the vessel or the cargo, the vessel must have an emergency plan which could include a third-party response team. The vessel may have an emergency response crew. Municipal Fire Departments with such ports needs to be prepared to deal with such emergencies.

Concerns/hazards

Many ships' designs are based on compartmentalization. Shipboard environments present unique hazards. These hazards include confined spaces, extreme heat conduction through steel, narrow passageways, including vertical passageways, which can enhance the spreading of heat through convection. The vessel's cargo can include hazardous materials under the Transportation of Dangerous Goods Act. The vessel may include large number of passengers

which could lead to mass casualty situation. New designed ships are being e-powered by Lithium-Ion batteries which can lead to their own risk factors and concerns.

There is also the risk of vessel stability. Unless anchored at port, the water can cause non-stable conditions both for the vessel with the emergency and the fire response vessel from the application of water. Inclement weather conditions and water current will enhance the instability. Consideration should be given to the hazards associated with unpredictable fire behaviour.

There is also the concern for the protection of the environment.

Actions for employers

Employers must:

- **Ensure their Establishing and Regulating By-Law (ER By-Law) includes Marine Fire/Emergency Responses:** Ensure the Fire Department's Establishing and Regulating By-Law allows for Marine Fire/Emergency Responses, whether at sea or at port. The by-law should also include any limitations such as port only responses, non-onboarding, and environment protection. (The utilization of the department's Community Risk Assessment would be a valuable tool).
- **Develop Standard Operating Guidelines (SOGs):** Create specific SOGs for marine vessel fires/emergencies that address the unique challenges of shipboard access and stability.
- **Personal Protection Equipment and Gear:** Be aware that standard structural bunker gear may not be suitable for all marine environments, especially those involving water entry or extreme steam hazards. SCBA's are not designed for underwater rescues. Specialized PPE may be required depending on the area of the ship or the cargo on the ship.
- **Provide Specialized Training:** Ensure personnel are trained to the standards of NFPA 1010.
- **Resource Allocation:** Ensure adequate staffing levels are dispatched including specialized staff if required; NFPA recommend increased personnel for complex, high-risk environments like large vessels.

Employers should:

- **Conduct Pre-Incident Planning:** Identify high-risk vessels and facilities within the jurisdiction. Maintain updated vessel familiarization plans in accordance with NFPA 1405.
- **Develop Relationships and Agreements:** Develop relationships and agreements with outside agencies such as: the local Port Authority, Canadian Coast Guard (CCG) and major transporting companies if possible. Agreements should indicate any restrictions of the fire Department's response.
- **Unified Command:** Establish clear communication and command structures with the Ship's Master, Port Authority, and Canadian Coast Guard. Look at ways to enhance communications such as assigning a staff member or providing a portable radio to the other agencies.

Considerations

- **Utilize Fixed Systems:** In accordance with CCG and Transport Canada practices, employees should prioritize the use of fixed firefighting systems (e.g., CO₂ or foam smothering) before attempting labor-intensive manual internal attacks. Beware that CO₂ systems, excessive rust and confined space considerations can cause oxygen deficient environments that may present a hazard to crews. Consider lockout procedures and air monitoring where appropriate.
- **Boundary Cooling:** Employees must identify and cool adjacent bulkheads and decks (six-sided cooling) to prevent fire spread through heat conduction—a critical CCG tactic for steel-hulled vessels.
- **Stability Monitoring:** Following CCG protocols, personnel must report all water application to the Commanding Officer or Incident Commander to prevent capsizing from free-surface effect.
- **Ventilation Control:** Personnel must coordinate the closing of fire dampers and isolation of galley or engine room vents with the ship's crew to starve the fire of oxygen.

Applicable regulations and acts

- [Occupational Health and Safety Act](#)
 - clause 25(2)(h) for taking every precaution reasonable to protect workers
- [Canada Shipping Act, 2001 \(S.C. 2001, c. 26\)](#)
 - Marine Emergency Response Regulations
- [Transportation of Dangerous Goods Act, 1992 \(S.C. 1992, c. 34\)](#)
- [Canadian Ocean Protection Plan](#)

Applicable standards

- [NFPA 1405: Guide for Land-Based Fire Departments that Respond to Marine Vessel Fires](#)
 - [NFPA 1010: Standard on Professional Qualifications for Firefighters \(incorporating previous marine firefighting qualifications\)](#)
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Related

Guidance Notes:

- [1-5 Life safety rope](#) and equipment
- [2-2 Crew](#) integrity
- [2-3 Radio communications](#)
- [2-4 Incident safety officer](#)
- [3-3 Heat and cold stress](#)
- [5-1 Firefighter accountability and entry control](#)
- [6-2 Firefighting near water](#)
- [6-4 Rope rescue](#)
- [6-11 Rapid intervention teams](#)
- [6-12 Rehabilitation during emergency operations](#)

- [6-48 Marine vessels](#)
- [6-5 Confined space rescue](#)
- [6-51 Air monitoring](#)

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This **resource does not replace the *Occupational Health and Safety Act* (OHSA) and its regulations and should not be used as or considered legal advice.** Health and safety inspectors apply and enforce these laws based on the facts they find in the workplace.
