



Health and Safety on Fishing Boats

CSST

Prevention,
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Health and Safety on Fishing Boats

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Introduction

In comparison with other occupations, fishing is a dangerous activity. The conditions under which fishermen work are difficult and the risks to their health and safety are considerable.

The sea is often a hostile environment. Boats are constantly rolling and pitching, except under calm water conditions. In bad weather, this rolling and pitching can increase considerably. Fishermen must learn to live with the boat's constant movements, even when they are relaxing. When on deck, fishermen are exposed to bad weather and to the hazards associated with the sea, fishing gear and catches. They are also exposed to risks of fire and of shipwreck.

Living quarters and working areas are often cramped. There is very little space for fishermen due to all of the equipment on board. Fishermen work in close proximity to one another and near powerful and dangerous machinery. In addition, the overcrowding resulting from the limited space is a source of stress for fishermen and promotes the transmission of diseases.

The risks for the health and safety of fishermen vary according to the type of fishing. Lobster fishing near the coast does not entail the same risks as trawling for shrimp in the Gulf of St. Lawrence. But other elements also play a role in the health and safety of fishermen: the size of the vessel, the equipment that the vessel is transporting, the place where fishing is practiced (near the coast, in protected bays, at high sea), the techniques used, the maintenance of the boat, and the tasks being performed by each fisherman.

Up until the early 1990s, the occupational safety of fishermen was under federal jurisdiction and was notably governed by regulations associated with the *Canada Labour Code*. However, following an initiative undertaken in Ontario, the provinces assumed responsibility for occupational safety in the fisheries sector. In Québec, the effect of this change was to subject commercial fishing enterprises to the *Act respecting occupational health and safety* (AOHS) and the related regulations.

This legislation, while it is applicable, is too general in nature to control certain specific risks. The aim of the present document is to make up for this shortcoming. It has been designed in large part based on the research work carried out by the Centre spécialisé des Pêches, an educational institution of the Collège de la Gaspésie et des Îles, and draws inspiration notably from the previously cited federal regulations.

This guide contains information on the risks and prevention measures associated with fishing. The first part deals with general safety on board, whereas the second part presents the safety rules related to certain fishing methods. The risks and means of prevention are briefly presented in table form, after which the prevention measures are explained in detail. Words in bold characters are defined in the glossary.

The *Act respecting occupational health and safety* requires that employers assume responsibility for the safety of their workers. This document, while not exhaustive, will help employers meet this requirement.

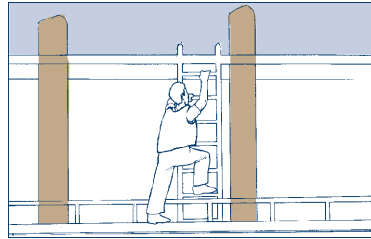
Part A
General Safety on Fishing Boats

Part A

General Safety on Fishing Boats

1. Boarding and exiting the boat

Risks	Means of prevention
Falling, being crushed between two boats or between the boat and the dock, drowning	<ul style="list-style-type: none"> • Never jump when going from the boat to the dock, from the dock to the boat, or from one boat to another. • Use the gangway or ladder instead.



General measures

- ✎ Never leave the boat until it is moored at the dock or **moored alongside** another boat.
- ✎ Appropriate means of access shall be made available to workers to allow them to board or exit the boat safely.
- ✎ Means of access and their surroundings shall be properly lit (see Chapter 15).
- ✎ Snow, ice, grease or any other substance that could cause a person to slip or fall shall be removed from access ways.
- ✎ Avoid walking under a cargo that is suspended in the air.

2. Refueling

Risks	Means of prevention
Explosion	<ul style="list-style-type: none"> • Do not smoke during refueling. • Turn off heaters, stoves and any other appliances having an open flame. • Ground the fuel nozzle and the filler line.
Asphyxiation	<ul style="list-style-type: none"> • Turn on the blower for at least five minutes before starting up the engine and ventilate cabins and enclosed areas well.

Fuel tanks

Fuel tanks, compressed gas cylinders and similar containers used to hold a hazardous substance shall be connected to fuel overflow and vent pipes that are located in such a way that fuel spills and vapors cannot be ignited through contact with hot exhaust pipes or other parts that are hot or that produce sparks.



3. Docking, anchoring and mooring

Risks	Means of prevention
Collision	<ul style="list-style-type: none"> • Devise a safe method for docking and follow it. • Train your staff.

Anchoring

- ↷ Defective anchors and chains shall not be used.
- ↷ When not in use, anchors shall be stowed away and immobilized to prevent them from causing accidents or damage.
- ↷ When it is time to drop or weigh anchor, workers must stay away from the windlass and the chain.

Mooring and unmooring

- ↷ During mooring operations, crew members must move to a safe location to avoid being hurt in the event that a rope or a cable breaks.
- ↷ A competent person shall be in charge of overseeing the mooring operation and shall make sure that no one is near a dangerous place, before giving the order to heave in or deploy the mooring line.
- ↷ Under no circumstances shall crew members find themselves in any bight formed by a mooring line on the deck.
- ↷ When boats are **moored alongside** one another, they shall be attached by adequate mooring lines.

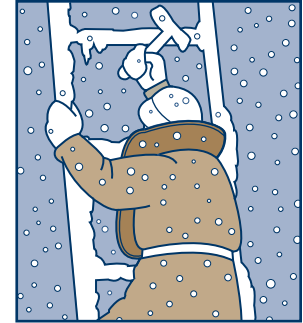
4. Work and moving about on board

Risks	Means of prevention
Slipping	<ul style="list-style-type: none"> • Alleyways, gangways, traffic areas on the deck and stairs shall be: <ul style="list-style-type: none"> - in good condition and kept clear; - maintained to avoid becoming slippery.
Falls	<ul style="list-style-type: none"> • All openings entailing a fall hazard shall be covered or protected by guardrails or other means of protection on all exposed sides.
Falling overboard	<ul style="list-style-type: none"> • The bulwark or the guardrails shall be of standard height, namely between 900 mm and 1200 mm. • Crew members shall wear a safety harness attached to a lifeline.

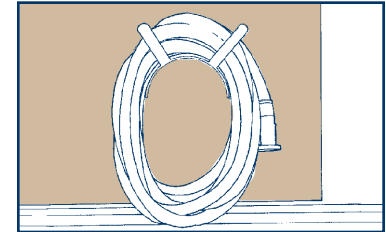
Moving on board

- Traffic areas shall have non-skid surfaces under both dry and wet weather conditions (fiberglass with a non-skid surface, metal grates with rubber).
- There shall be no running on deck.
- Any oil spill or spill involving another substance, which could cause a person to slip, shall be cleaned up immediately.

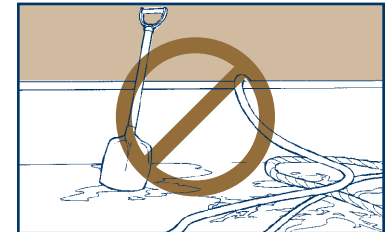
- Any snow, ice or frost that has accumulated shall be removed from work areas and passage ways.



- Keep decks clear, all ropes shall be coiled down and securely fastened, and hoses shall be rolled on a reel to prevent fall hazards.



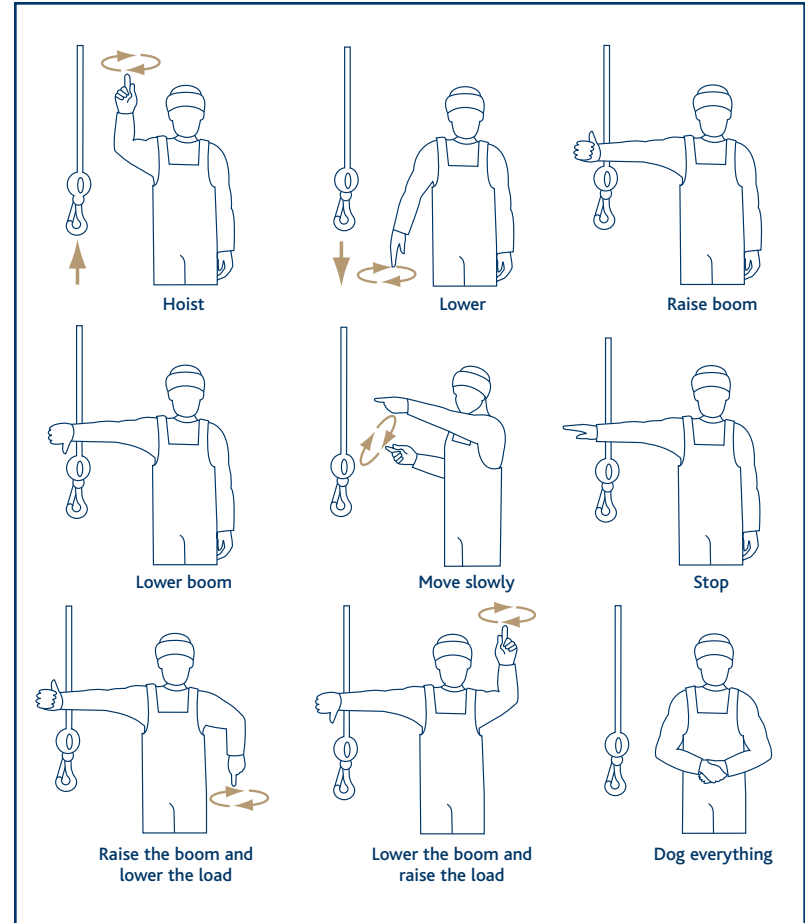
- Any element that could represent an obstacle on deck or at head height shall be identified with brightly coloured paint.



IMPORTANT NOTE: Fishing alone is prohibited.

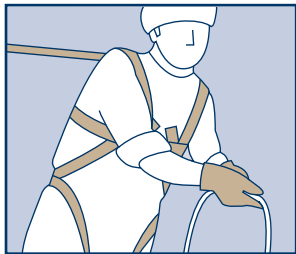
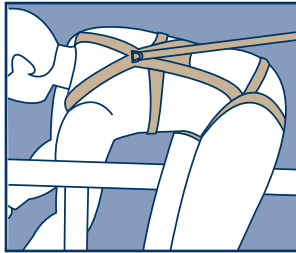
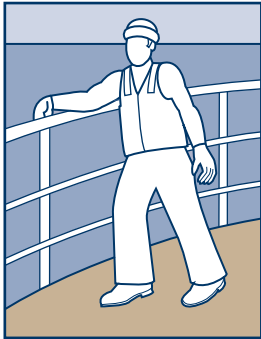
Working with a winch

- The winch control in the wheelhouse shall have a corresponding auxiliary control located on the deck, from where there is a good view of the winches and the men at work.
- An opening can be made on the main deck behind the wheelhouse in order to have a view of the rear deck.
- Using an interphone between the deck and the wheelhouse can improve verbal communication.
- Using hand signals that everyone understands will ensure an efficient transmission of information.
- A signalman should take part in the operations when the winchman does not have good visibility.



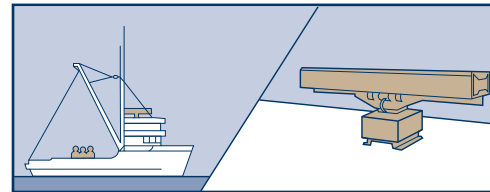
Working on deck

- ❏ Sitting on the **bulwark** or on the guardrails is strictly prohibited.
- ❏ During bad weather, lifelines shall be installed at the appropriate locations on deck.
- ❏ No crew member shall be on deck during bad weather unless it is absolutely necessary for his safety or that of the boat.
- ❏ Anyone who must go on deck during bad weather shall wear a harness attached to a lifeline or a fixed anchor point.
- ❏ Crew members working on deck should wear clothing made out of reflective material.



Working aloft

- ❏ A crew member shall wear a safety harness when working aloft.
- ❏ The crinoline ladder is recommended for working on the gantry. The crossbeam should be equipped with a guardrail and a handrail.
- ❏ The radar shall be turned off when a crew member is working aloft to avoid exposure to radiation or being struck by the radar equipment.



5. Training and drills

General measures

- ✎ The employer shall offer workers appropriate training, drills and supervision concerning, among other things:
 - work methods;
 - fighting fires (see Appendix I).
- ✎ All crew members should be trained in the use of firefighting equipment such as:
 - all portable fire extinguishers on board;
 - self-contained breathing apparatuses;
 - fire hoses with adjustable spray nozzles and employing a water spray;
 - any fixed equipment used to fight fires by spraying foam, CO₂ etc.;
 - fire blankets.
- ✎ Crew members must also know what to do in case of flooding or the abandoning of ship (see Appendix II) and must know how to use the communication systems.
- ✎ The vessel shall be equipped with a VHF radiotelephone or, when the service is available, with VHF equipment with digital selective calling (DSC).
- ✎ Every vessel shall have on board a person in charge of the radio watch who holds a radio operator's certificate.
- ✎ The employer shall inform crew members of the location of the radio equipment and make the user's guide available to them.

Man overboard

- ✎ A procedure to get a man who has fallen into the water back on board shall be available (**bulwark** ladder, rope ladder, etc.) (see Appendix III).

First aid

- ✎ Any crew member who is allergic to certain types of food or certain medications or who takes medications on a regular basis shall inform the person in charge of the vessel.
- ✎ The employer shall make sure that more than one person holding a First Aid certificate and who can immediately provide first aid to an injured worker is on board every vessel at all times.
- ✎ The captain or his second-in-command (in the event that the captain were to become incapacitated) shall consult with the firstaider and make the decision to evacuate the injured or the sick person using means that are appropriate for the situation.
- ✎ The employer shall provide the First-aid kit which corresponds to the type indicated in Appendix IV and shall make sure that it is fully stocked at all times.

6. Inclement weather and sea conditions

Risks	Means of prevention
Storm, bad weather	<ul style="list-style-type: none"> • Check the weather forecast before leaving.
Icing	<ul style="list-style-type: none"> • Regularly remove ice from all structures and ports.

General measures

- ☞ Before heading out to sea, check the short- and long-range weather forecast. When in doubt, the captain should not hesitate to prepare a sailing plan and file it with the Canadian Coast Guard Marine Communications and Traffic Services Centre.
- ☞ All cargo and equipment shall be properly stored and stowed.
- ☞ Hatches, doors and other openings should be tightly closed.
- ☞ When there is a risk of icing, all fishing gear should be brought back on board and stowed as low as possible on deck.
- ☞ The vessel's speed should be reduced and if possible, the upper works should be de-iced.
- ☞ Make sure that the ports are always free and de-iced in order to be able to clear the deck if necessary.
- ☞ Equipment and tools used for de-icing shall be available on board.

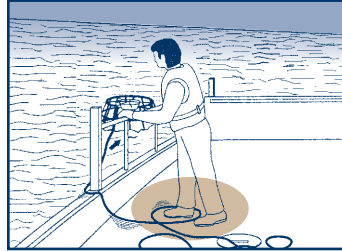
Weather warnings

- ☞ Marine weather forecasts include four types of severe weather warnings:
 - **Small Craft Warning:** Winds 20–33 knots and wave heights 2–3 meters.
 - **Gale Warning:** Winds 34–47 knots and wave heights 6–9 metres.
 - **Storm Warning:** Winds 48–63 knots and wave heights 9–16 metres.
 - **Hurricane Force Warning:** Winds 64 knots and over and wave heights over 16 metres.
- ☞ The captain is under the obligation to return to port or to take shelter in case of danger.

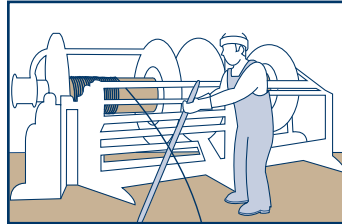
7. Ropes and tackle

Risks	Means of prevention
Pinch point and being drawn in	<ul style="list-style-type: none"> • Use appropriate ropes, blocks and winches.

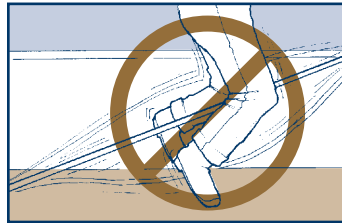
- Be careful to never put your foot in the bight of a rope or a cable.



- Use a tool to guide a wire. Never guide wire with your hands or feet.

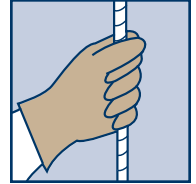


- Crew members must not stand on a tensed rope or cable, step over it or use it as a handrail or guardrail.



- All ropes and cables shall be made from good quality material, be of sturdy manufacture and have a resistance level appropriate to the use for which they are intended.

- Always wear heavy gloves when handling wire cables.



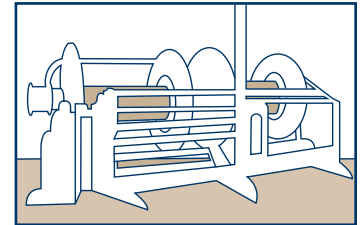
- Steel cables shall be rolled on a reel when not in use.

- All **pins**, axles, rope grooves, plates, bushings, nuts and bolts should be inspected regularly for signs of wear.

- Blocks should be regularly inspected, lubricated and maintained.



- All moving parts, drive belts and gears which are accessible shall be equipped with protective devices.

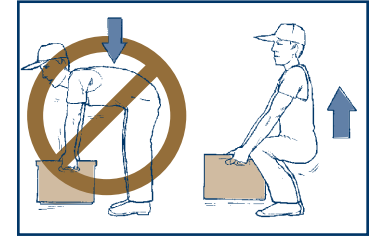


8. Handling and storage

Risks	Means of prevention
Lower lumbar lesions	<ul style="list-style-type: none"> • Use safe lifting methods. • Use hoisting appliances.
Falls	<ul style="list-style-type: none"> • Keep passage ways clear and dry to avoid slip hazards. • Have well defined storage spaces.
Collision injuries	<ul style="list-style-type: none"> • Avoid moving cargo when the sea is agitated.
Loss of vessel stability	<ul style="list-style-type: none"> • Respect the boat's cargo load limits. • Respect the safety rules for navigating in bad weather.

Manual handling

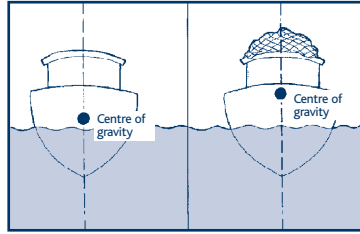
- ☞ The employer shall make sure that crew members have taken training on safe lifting and carrying techniques for loads of more than 10 kg. He shall also make sure that they apply these techniques.



Storage

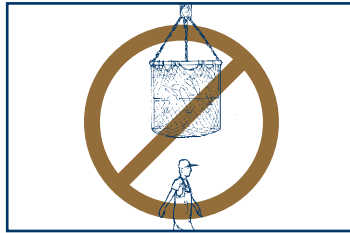
- ☞ No materials, objects or goods shall be stored or placed in a manner that may result in one of the following consequences:
 - obstructing or encroaching on corridors, passage ways or exits;
 - impeding the safe operation of the materials handling equipment;
 - obstructing access to electrical equipment and distribution panels;
 - obstructing access to or the use and operation of firefighting equipment;
 - interfering with the operation of fixed fire protection equipment;
 - obstructing or impeding the smooth operation of ports;
 - constituting a hazard for the safety or health of employees.

- Keep the centre of gravity of the boat as low as possible.
- Tools and equipment (including hatches) shall be stored and well stowed.



Loading and unloading the boat

- All materials, goods and things shall be stored and placed in such a manner that the maximum safe load-carrying capacity of the deck or other support structures is not exceeded.
- Keep away from cargo that is suspended or in movement.
- Cargo shall be stored in holds and other designated places.
- Loading and unloading zones shall have proper lighting (see Chapter 15).

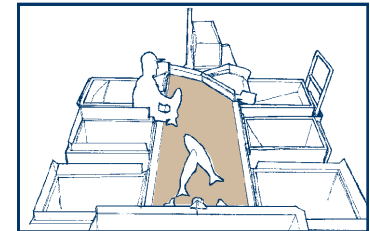


9. Handling of catches

Risks	Means of prevention
Musculoskeletal problems	<ul style="list-style-type: none"> Adapt the work stations. Use mechanical aids. Lighten loads. Take breaks. Take turns performing tasks. Stop working when the boat lacks sufficient stability.

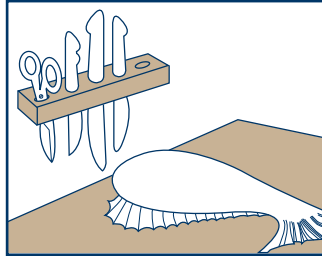
Receiving of catches

- Work stations shall be arranged in such a way as to reduce accident risks for the crew:
 - Make sure that work tables are adapted to the height of workers.
 - Arrange catches in such a way that members do not have to bend or stretch their upper limbs and trunk.
 - Adapt work stations to the type of fishing.
- Vertical separations of box nets must not inhibit access to work areas located along the **bulwark**.



Sorting and eviscerating of catches

- Work should be organized in such a way as to allow crew members to take regular breaks. A system for having crew members take turns performing various tasks should also be implemented.
- The height of the sorting tables shall be adapted to the height of workers so that they do not have to bend over.
- Knives shall be sharpened regularly and shall be put away when not in use.
- Crew members who use eviscerating machines must have received appropriate training.



Storage of catches

- Catches shall be stored in the hold as soon as possible to keep the work space clear and to maintain the vessel's stability.
- Once the catches having been stored, the decks that serve as work and traffic areas shall be carefully cleaned.

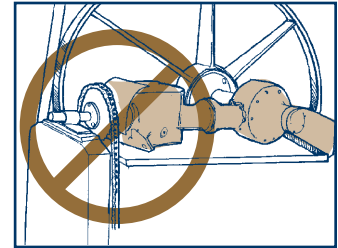
10. Tools, machinery and gear

Risks	Means of prevention
Getting caught in or being drawn into fishing gear	<ul style="list-style-type: none"> Protect danger zones. Stay clear of the line of pull of a cable.
Collision injuries	<ul style="list-style-type: none"> Train workers and adopt safe work methods. Do not stand under a suspended load or in a place where a suspended object may swing. Keep traffic areas clear and dry to prevent slipping.

Protective devices on machinery

(Regulation respecting occupational health and safety, [ROHS], Division XXI)

- Belts and other moving parts that can cause injury must be equipped with a safety device (ROHS, section 182).
- When a protective device is installed on a machine, it prevents the use or operation of the machine unless the protective device is properly in place.



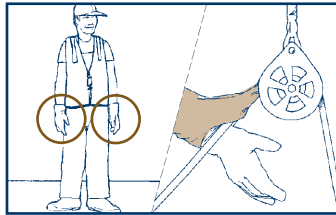
- When a material handling apparatus is used under circumstances in which the operator risks being struck by a falling object or by a load in motion, the employer shall equip the apparatus with a protective device whose design, construction and resistance will prevent, under all foreseeable circumstances, the object or the load from penetrating the space occupied by the operator.

Hand tools

- Tools shall be handled carefully and only used for the purpose for which they were designed.
- Damaged or dangerous tools must not be used.
- Tools that are not in use shall be stored on a rack, in a box or in a tool locker.

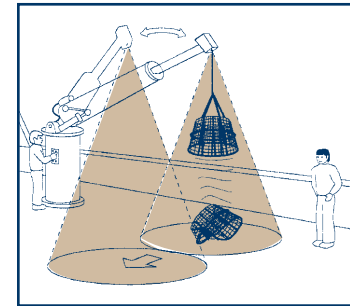
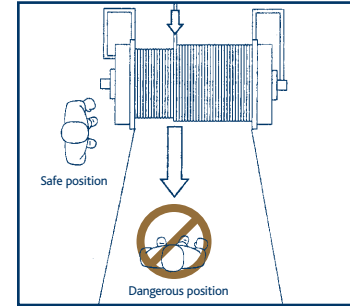
Workshop and workbench machines (fixed location)

- No person shall use a workshop machine unless he has the proper authorization and has received the necessary training.
- Loose-fitting clothing must not be worn when working with a machine.
- Machines that are in operation shall never be left unattended; they shall always be turned off when not in use.



Winches and hoisting apparatuses

- A worker must never stand in the line of pull of a cable.
- Winches and hoisting apparatuses shall be equipped with a brake system.
- If the winches and hoisting apparatuses are not equipped with a fail-safe lever, the winchman shall remain at the operating controls at all times.
- Hoisting apparatuses shall be properly stowed away to prevent them from moving when the vessel is at sea.
- Loads that are being raised or lowered must never pass over or remain suspended over workers.
- Winchmen shall have good visibility. When such is not the case, a signalman must be posted at a place from where he can see the work area, while being in full view of the winchman.
- Before crew members leave the work area, loads shall be lowered to the deck, winches shall be stopped and the power supply shall be switched off.
- Cargo booms shall be equipped with chains between the mast and the boom and between the boom and the upper block.

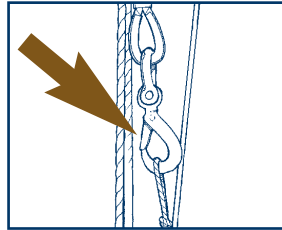


Use of slings

- To be safe, **slings** shall be of sufficient length. In addition, they must be sufficiently tight to prevent the load or a portion thereof from coming unhooked.
- Loads shall be raised or lowered uniformly, without surges or sudden jerks.

Hooks and shackles

- Hooks used to lift loads as well as those attached to **slings** shall be equipped with a **safety clip**, except where these hooks are specifically designed for the safe lifting of certain loads (ROHS, section 255.8).
- Shackle** screw pins shall be greased well at all times.



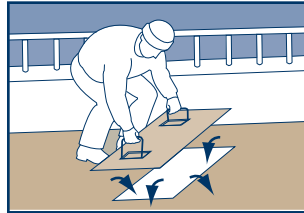
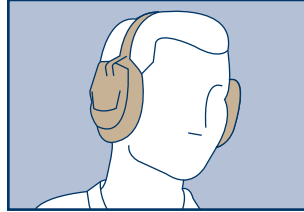
11. Machine room

Risks	Means of prevention
Asphyxiation	<ul style="list-style-type: none"> Make lines air-tight. Ventilate the room or wear a respiratory protection device.
Leak of pressurized fluids	<ul style="list-style-type: none"> Wear individual protection equipment. Check the condition of lines and see to their maintenance.
Fire Burns	<ul style="list-style-type: none"> Check the state of the engine and electrical cables regularly and see to their maintenance. Do not smoke. Put oily rags in a non-flammable container. Insulate hot parts by means of a jacket made of open-work fabric.
Overly high noise level	<ul style="list-style-type: none"> Install noise reduction enclosures.

General measures

- In the machine room, all work shall be done by qualified persons.
- All machines shall be locked out before removing protective guards for maintenance and repair.
- The machine room shall be sound-proofed.
- A machine's moving parts shall be equipped with protectors or other permanent safety devices such as railings or enclosures.

- When repair or maintenance work is being done on a machine, the protectors or other permanent safety devices shall not be removed until the machine has stopped. The machine may only be turned back on when the protectors and other permanent safety devices have been put back in place.
- Valves, collectors and accessories shall be attached in such a way as to prevent vibrations and risks of breaking.
- All work areas shall be properly lit.
- Hearing protection shall be worn.
- It is important to ventilate the machine room and other enclosed areas properly.
- A water level detector shall be installed in the hold and in the engine room, and be connected to an alarm system.
- Following a repair or maintenance work, all spare parts, replaced parts and tools should be inspected, inventoried and stored in a safe place.



Internal combustion engines

- Internal combustion engines and air compressors shall be maintained in good working order and inspected regularly according to the manufacturer's instructions.
- No ignition source (for example a portable electric flashlight or an open flame) must be brought near an open engine crankcase until such time as it has cooled off and all of the gases have been removed by the ventilation system.

- The origin of a fuel leak shall be pinpointed as quickly as possible and the flow stopped. Fuel must not be allowed to accumulate in the bilges.
- Motor and transmission oil levels shall be checked regularly.

Propulsion system

- The machine shall be stopped before crew members carry out, on elements of the propulsion system or by using these elements, any work that might entail a danger:
 - the control lever or starting system shall be locked out;
 - the turning gear or an appropriate brake shall be activated;
 - a warning shall be placed on the starting system.

Hydraulic systems

- Appropriate equipment and containers shall be used when working on systems that contain oil and, in particular, boiling oil, to avoid burns and risks of fire.
- Individual protection equipment shall be worn to avoid being injured by pressurized fluids when repairs are being done on hydraulic systems.

12. Electricity

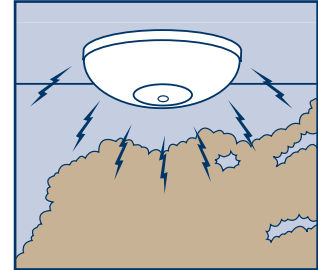
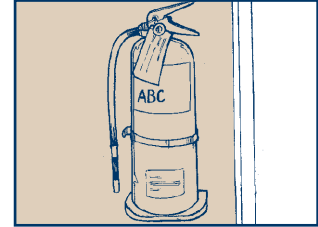
Risks	Means of prevention
Electrocution	<ul style="list-style-type: none"> • Use compliant electrical equipment and accessories.
Fire	<ul style="list-style-type: none"> • Have a compliant electrical system.

- Any defect in the equipment, electrical system and electrical conductors shall be reported to the person in charge immediately.
- Every control device shall be so designed and located as to permit quick and safe operation at all times.
- The path of access to every electrical switch, control device or meter shall be free from obstruction.
- Control switches for all electrically operated machinery shall be clearly marked to indicate the switch positions.
- The distribution and switching systems shall always be protected against water infiltration, whether associated with run-off or splashing.
- Circuits shall have fuse-type or switch-type circuit-breakers making it possible to limit the current to the rated characteristics of the wiring or the system.
- Switches and circuit-breakers shall be lockable.

13. Fire

Risks	Means of prevention
Burns Asphyxiation Shipwreck	<ul style="list-style-type: none"> • Install heat and smoke detectors. • Establish a fire control plan.

- A fire control plan (see Appendix I) shall be established. It shall specify the location of extinguishers, fire hoses, survival gear, the first-aid kit and emergency exits. A crew member shall be designated as person in charge of emergency measures.
- Smoke detectors shall be installed in the crew's **living quarters** and heat detectors shall be installed in the machine room. Heat and smoke detector batteries shall be replaced once a year.
- A heat detector, connected to an alarm system, shall be installed above the kitchen or near the smoke pipe. Engine exhaust lines and the smoke pipe shall be covered with a metal or perforated fire stop.
- To permit the exhaust of inflammable gases, the fan of the machine room shall be turned on at least five minutes before the boat starts up.



14. Hazardous materials

Risks	Means of prevention
Poisoning, explosion	<ul style="list-style-type: none"> • Limit to a minimum the presence of hazardous materials on board.
Exposure to radiation from radar and radio antennas	<ul style="list-style-type: none"> • Stay away from radio and radar antennas when in operation.

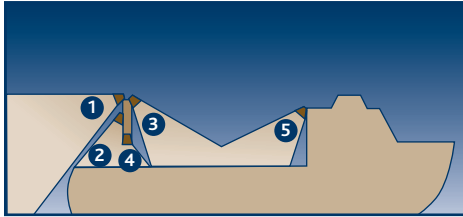
- No person shall use a hazardous substance for any purpose in a workplace where it is reasonably practicable to substitute therefor a substance that is not a hazardous substance or one entailing fewer risks.
- Every container for a hazardous substance that is used in a workplace shall be so designed and constructed that it protects the employees from any safety or health hazard created by the hazardous substance.
- A ventilation system shall be used to control the concentration of an airborne hazardous substance.
- Batteries shall be securely attached and well maintained. They shall be stored in well-ventilated areas affording easy access.
- A carbon monoxide detector shall be installed in the **living quarters** and in the machine room.
- A propane detector shall be installed in those places where this fuel is used.
- No person shall be near radio or radar antennas when they are in operation.

Controlling the risks associated with hazardous materials entails respecting the rules related to the Workplace Hazardous Materials Information System (WHMIS). Some of these rules, which come from the *Regulation respecting information on controlled products* (RICP), are described in the following paragraphs.

- No employer may allow the use, handling or storage of a controlled product in a workplace unless the product carries a label and a material safety data sheet which meet the requirements of the *Act respecting occupational health and safety* and the *Regulation respecting information on controlled products* and unless the worker has received the training and information required to carry out safely the work entrusted to him (AOHS, section 62.1).
- Where a hazardous substance is stored, handled or used in a workplace, signs shall be posted in conspicuous locations warning every person granted access to the workplace of the presence of the hazardous substance and of all precautions to be taken to prevent or reduce any health hazard.
- A hazardous material container which is stored, handled or used on board a vessel shall bear a label which clearly discloses the name of the substance and its hazardous properties (WHMIS).
- Where a controlled product is received from a supplier and an employer places the controlled product on a ship in a container, other than the container in which it was received from the supplier, the employer shall apply to the container a supplier label or a workplace label that discloses the appropriate information.
- The information sheet of a hazardous material which is stored, handled or used on board a vessel shall be put at the disposal of employees in their workplace.

15. Lighting

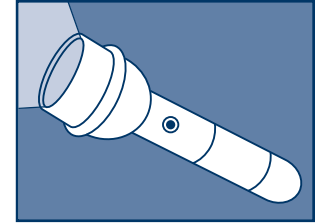
Risks	Means of prevention
Falls	• Provide adequate lighting.



1. Searchlight lighting up the sea at the back of the vessel
2. Searchlights lighting up the back of the fishing deck
3. Searchlights lighting up the centre-back of the fishing deck
4. Local lighting of the door station
5. Searchlights lighting up the centre-front of the fishing deck

- Defective lighting equipment shall be repaired as soon as possible.
- Searchlights shall be arranged in such a way as to not dazzle fishermen, the winchman or the crew members assigned to the wheelhouse.
- To avoid glare, it is preferable to install several medium power searchlights rather than two or three very powerful searchlights.
- The wheelhouse shall be kept in darkness at night to permit the correct reading of radar and sonic depth finder monitors and to be able to distinguish the navigational lights of vessels in the sector.
- A low intensity red light may be installed near the floor to permit safe traffic in the wheelhouse.

- The minimum lighting shall be 250 lux for the entire deck and 400 lux for work stations requiring greater manual dexterity or entailing a greater risk of accidents (**mending of nets, baiting**, sorting and evisceration of catches, winch operations, trawl door station, etc.).
- Work stations at the tween deck require a lighting of 250 lux.
- The lighting of stairways and ladders and that of **alleyways** shall be 50 lux.
- In the galley and relaxation areas, lighting shall be 250 lux.
- The sea shall be illuminated on the side on which the fishing gear is deployed or hauled in to be able to monitor the operations properly.
- Provision shall be made for the use of portable lighting equipment, notably flashlights, in the event of a power failure. This equipment shall be inspected regularly and replaced if necessary.

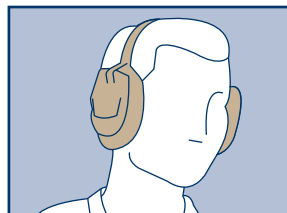


16. Noise

Risks	Means of prevention
Hearing problems	<ul style="list-style-type: none"> • Reduce noise levels. • Wear hearing protection.

👉 No worker may be exposed to the continuous noise levels prescribed hereinafter during a time period longer than that indicated in the opposite table (ROHS, division 15).

👉 The employer shall post a notice at the entrance to the machine room and require that every employee entering the room wear ear protectors when the machines are in operation if the noise level exceeds the established limits (ROHS, section 138).



👉 No employee shall be exposed to a level of sound in crew quarters that exceeds 75 dB.

Sound level (in dBA, corrected dBA ou dBA equivalent)

Duration exposure* permitted (hours/day)

85	16
86	13.9
87	12.1
88	10.6
89	9.2
90	8
91	7
92	6
93	5.3
94	4.6
95	4
96	3.5
97	3
98	2.6
99	2.3
100	2
101	1.75
102	1.5
103	1.3
104	1.2
105	1
106	0.9
107	0.8
108	0.7
109	0.6
110	0.5
111	0.45
112	0.4
113	0.35
114	0.3
115	0.25
>115	0

* This includes any continuous exposure or number of short term exposures during a worker's work period.

17. Living quarters

Risks	Means of prevention
Food poisoning	<ul style="list-style-type: none"> • Make sure that the quarters are kept clean and well maintained. • Make sure that food and beverages are stored properly and are fit for consumption.
Musculoskeletal disorders	<ul style="list-style-type: none"> • Use a work method making it possible to adopt ergonomic positions. • Do not bend your back when lifting heavy weights.
Cuts	<ul style="list-style-type: none"> • Handle knives carefully and wear protective gloves.

Layout arrangements

- ✎ Every ship other than a day ship shall provide every person working on the vessel with a separate bed or bunk that is not part of a unit that is more than double-tiered. At least one shelf and a locker fitted with a locking device shall be provided for each employee.
- ✎ Every ship, other than a day ship, shall be provided with at least one suitably equipped water closet.
- ✎ A shower for every 10 employees or portion of that number shall be provided on every ship other than a day ship.
- ✎ Every employer shall provide for each sanitary accommodation wash-basins fitted with taps and supplied with hot and cold water.

Hygiene measures

- ✎ In each personal service room and in the galley, the temperature, measured one metre above the deck in the centre of the room or galley, shall be maintained at a level of not less than 18°C.
- ✎ The deck and lower 150 mm of any partition or bulkhead that is in contact with the deck in a galley or sanitary accommodation shall be water-tight and impervious to moisture.
- ✎ In each personal service room and the galley, the decks, partitions and bulkheads shall be so constructed that they can be easily washed and maintained in a sanitary condition.
- ✎ All cleaning and sweeping that may cause dusty or unsanitary conditions shall be carried out in a manner that will prevent the contamination of the air by dust or other substances injurious to health.
- ✎ Each personal service room shall be cleaned at least once every day that it is used. Cabins, the galley and each personal service room reserved for the crew, as well as all relaxation accessories (mattresses, pillows, sheets, pillow cases, blankets and bed covers) shall be kept in a clean and sanitary condition.
- ✎ Storing material in a personal service room is prohibited, unless there is a closet with a door provided for this purpose.
- ✎ There shall be a sufficient water supply on each day vessel to provide each employee with at least 22.7 litres of water. This volume must be increased on other vessels according to the number of sinks and showers required.
- ✎ When a portable hygienic container is used to keep a reserve supply of drinking water, the following provisions shall apply: the container shall be fitted with a tight-fitting lid, it shall only be used to store a reserve supply of drinking water and it shall not be stored in a washroom.

- 🦋 Foods that require refrigeration to prevent them from becoming hazardous to health shall be maintained at a temperature of 4°C or lower. Foods that require freezing to prevent them from becoming hazardous to health shall be maintained at a temperature of -11°C or lower.
- 🦋 It is forbidden to eat, prepare or store foods in a place where there is a hazardous material liable to contaminate food, dishes or utensils, in a personal care room where there is a toilet, an urinal or a shower or in any other place where food risks being contaminated.
- 🦋 Garbage shall be kept in leak-proof, non-absorptive, easily-cleaned containers with tight-fitting covers.

Galley and storage of foodstuffs

- 🦋 All cuts, even minor, shall be reported immediately to the first-aid officer and treated to prevent any risk of infection.
- 🦋 All crew members working in the galley or in another place where food is handled should be informed of the appropriate safety and hygiene measures.
- 🦋 An air exhaust system should be located above cooking appliances. The hoods and filters of these systems shall be cleaned frequently and the greasy deposits, eliminated.
- 🦋 Stoves shall be attached securely to prevent them from moving.
- 🦋 Stove fuel tanks shall be equipped with a shutoff valve and shall not be located directly above the stoves.
- 🦋 Stoves shall be equipped with rails and topped with an anti-skid surface to prevent pots and pans from moving and accidental spills of their content on a crew member.
- 🦋 A fire extinguisher shall be in the galley, near the entrance if possible.

18. Rescue equipment

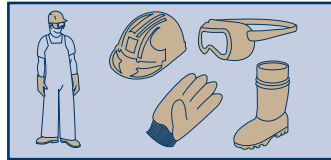
Rescue equipment (life raft, VHF-ASN radio, radio-direction beacon (RLS), lifejacket, etc.) shall be accessible and shall meet Transport Canada requirements.

19. Individual protection equipment

Risks	Means of prevention
Being struck by an object Rubbing, friction, abrasion, pressure Clothing caught in gear Fall to a lower level Fall at the same level Fall overboard Exposure to caustic, harmful, allergenic substances Exposure to ultraviolet rays Noise	<ul style="list-style-type: none"> Wear protection equipment when these hazards cannot be eliminated at the source.

General measures

- The employer shall evaluate the risks to which his workers could be exposed and provide them with the necessary individual protection equipment if the hazard cannot be controlled at the source.



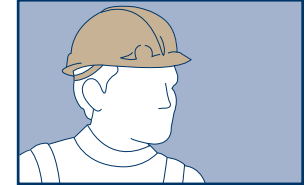
- The employer shall make sure that workers use individual protection equipment when this precaution can prevent possible injuries or reduce the seriousness thereof.
- Individual protection equipment shall be supplied by the employer. He shall make sure that such equipment is in good condition and well maintained.
- The employer shall provide raincoats of a colour that contrasts with the work environment. Fluorescent orange is recommended.
- The employer shall not allow his workers to work bare-chested. Long-sleeved clothing should be favoured.

- The wearing of a lifejacket is mandatory for every person working over the water if no other safety measure can provide effective protection (ROHS, section 355).



Protective headwear

- Where a head injury hazard is present in a workplace, protective headwear shall be used. During cold weather, a winter liner may be inserted into the helmet.

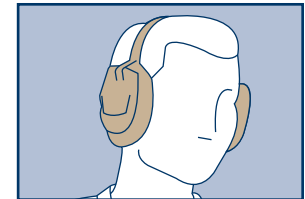


Eye and face protection

- When there is a risk of injuries to the eyes, the face, the ears or the front of the neck in the workplace, the employer shall provide an eye or face protector that complies with the applicable standards (glasses, face protection).
- For all hot work or work requiring the use of a welding or similar process, the wearing of a welder's helmet is mandatory and safety rules shall be followed.

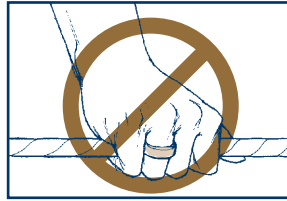
Hearing protection

- All crew members exposed to high noise levels shall use hearing protection.

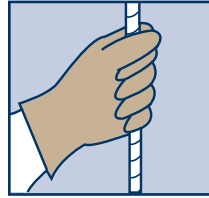


Protecting hands

- ✎ The wearing of jewelry, such as rings and chains, is prohibited for workers on deck.



- ✎ Workers who handle steel cables, ropes or rigging or objects or substances that can cause hand injuries shall wear appropriate gloves.



Protective footwear

- ✎ On board, workers can sustain foot injuries in several ways: by slipping on a wet surface, as the result of a heavy object falling, etc.
- ✎ The employer shall provide individual protection equipment adapted to these situations.
- ✎ The wearing of sandals shall be prohibited during work.

Respiratory protection

- ✎ Impurities and other contaminants in the air shall be eliminated at the source.
- ✎ When it is not possible to eliminate impurities in the air at the source, the employer shall provide free of charge to workers the respiratory protection equipment stipulated in the *Guide des appareils de protection respiratoire utilisés au Québec* and make sure that workers wear this equipment (ROHS, section 45).
- ✎ The equipment shall be chosen, adjusted, used and maintained in accordance with the standard entitled Selection, Use and Care of Respirators, CSA Z94.4-93 (ROHS, section 45).

Part B
Safety Related to Specific Fishing Methods

Partie B

Safety Related to Specific Fishing Methods

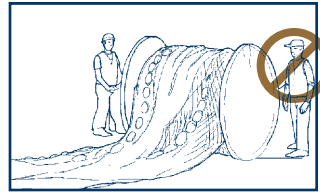
A brief presentation of the fishing methods appears in Appendix V.

1. Trawling and dredging

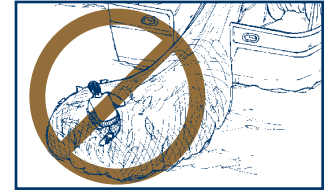
Risks	Means of prevention
Being drawn in by the gear, the warps or the drum Being hit or crushed by the cable, the gear or the codend of the trawl net Being struck by the gypsy Being drawn in by the net drum	<ul style="list-style-type: none"> • Cease activities if the sea is agitated. • Raise the trawl or the dragnet frequently. • Lay out the deck safely. • Install protective guards on moving parts. • Train workers. • Adjust the height of the railing.
Swinging of a load Falling overboard	

Deploying and heaving in the trawl or the dredge

- Crew members shall stay clear of the winch and the **trawl** until the latter is in the water or until the **codend** of the trawl net is on board, on the deck.
- When crew members secure the **trawl doors** to the **davits** or unhook them, they must stay clear of pinch points.

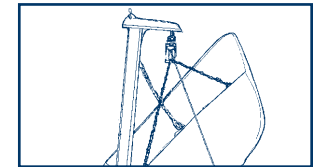


- Crew members must stay clear of trawl doors during their adjustment.
- Crew members must never stand in front of the net drum while it is turning.
- No one must go on to the **codend** while it is still in the water.

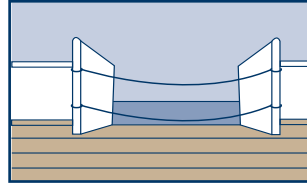


Securing the area and equipment

- Crew members who work at the stern and who are not protected by a railing must wear a safety harness attached to a lifeline.
- Never stand in the line of pull of the cable.
- Never stand near the **warps** when the **trawl** is being put out or towed in.
- Never have the warps pass over the deck surface, through the box net or in maneuvering areas.
- A second winch control shall be installed at the back of the vessel or steps shall be taken to make sure that the winchman can see the crew members clearly.
- **Trawl doors** shall be immobilized and held in place by attaching them to the **davits** or to part of the vessel structure when the doors are not in use.



- ☞ Stern ramps shall be roped off or guarded when not used for trawling.



Receiving of catches

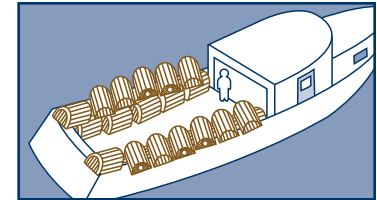
- ☞ No crew member shall stand directly under the **codend** when it is full.
- ☞ Boxes for shrimp and for fish shall be secured to prevent them from sliding.
- ☞ The trawler shall be equipped with sorting tables.

2. Trap fishing

Risks	Means of prevention
<ul style="list-style-type: none"> • Falling from heights, at the same level or overboard • Loss of vessel stability, capsizing • Getting caught in or being drawn in by shifting traps shifting on the deck • Getting caught in or being drawn into fishing gear • Excessive effort • Musculoskeletal disorders • Fingers being bitten by prey 	<ul style="list-style-type: none"> • Install railings alongside the loading area. • Limit the height of piles of traps. • Store ropes, buoy ropes, etc. • Deploy traps or store them in a predetermined order. • Install lighting devices. • Follow work steps. • Use hoisting equipment. • Work in teams. • Clear and clean the deck. • Train crew members. • Be attentive to the task at hand. • Wear work gloves.

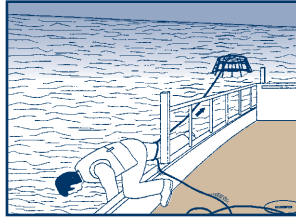
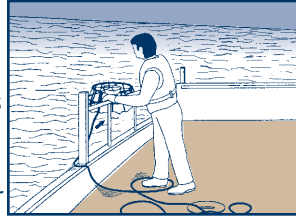
Bringing traps on board from the wharf

- ☞ Traps shall be stored safely away from walkways and shall be well secured.
- ☞ The vessel's stability must not be compromised by the trap loading method or by the number of traps loaded.



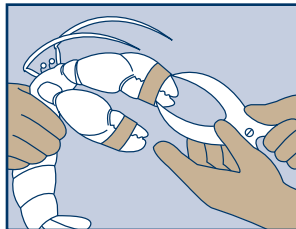
Deployment and hauling in of traps

- The equipment used shall not obstruct the work area.
- Beware of bights.
- Crew members shall always have a sharp knife on hand.
- Hoisting devices such as articulated booms shall have hydraulic cylinders fitted with retention valves.
- No crew member shall stand directly under a cage raised by an articulated boom.
- The worker operating the articulated boom shall have good visibility of the crew and shall remain at the controls at all times to stop the articulated boom in the event of an emergency.
- The worker must never leave the controls of the articulated boom when a load is suspended in the air.
- Adequate storage space shall be provided for **buoy ropes**.



Removing catches from traps

- Crab fishing vessels shall be equipped with sorting tables and hoisting devices for cages.
- Crew members shall always wear gloves when handling catches.



3. Gillnetting

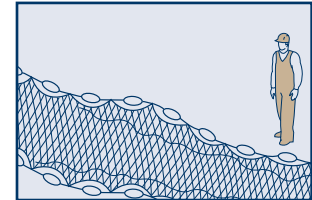
Risks	Means of prevention
<ul style="list-style-type: none"> • Loss of vessel stability, capsizing • Getting caught by or being drawn into fishing gear • Musculoskeletal problems • Chilblains 	<ul style="list-style-type: none"> • Respect navigation safety rules. • Arrange the workstation ergonomically. • Wear appropriate clothing that is adjusted. • Make sure that there is a proper railing. • Plan for frequent rest periods, out of the cold.

Bringing nets on board from the wharf

- Nets must never be stored on top of the wheelhouse.

Casting and hauling in of nets

- Gloves must be worn to protect hands when the nets are being cast.
- Workers must stay away from the net when it is being cast.
- Work areas on the deck and pontoons must be arranged in such a way as to prevent workers from coming into contact with moving parts such as drums and rollers.

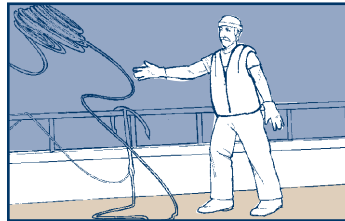


4. Longlining

Risks	Means of prevention
Being drawn in by anchors or snoods Being drawn in by a hoisting apparatus Being crushed between a line hauler and a cable Injuries caused by hooks Injuries caused by catches	<ul style="list-style-type: none"> • Respect navigation safety rules. • Train and drill crew members. • Arrange workstations well. • Have lighting adapted to the work. • Keep the deck well organized. • Place catches in the holds as they are brought aboard.

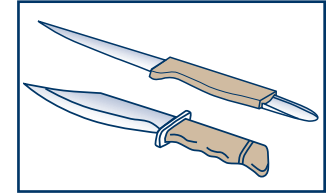
Casting and hauling in longlines

- ✎ The speed of the equipment must be adjusted to prevent crew members from being caught by hooks or other equipment.
- ✎ An equipment control station must be located on deck near the work area.
- ✎ At each workstation, workers shall have access to a knife capable of cutting the longline in case a worker is drawn in.
- ✎ Workers must stay clear when the anchor and the buoy lines are being cast.
- ✎ During rough sea conditions, crew members must stay behind the railing or wear a safety harness attached to a lifeline.



Handling of catches

- ✎ Workers shall have hoisting systems to lift big fish on board.
- ✎ All hooks shall be removed from catches before they are stored.
- ✎ A sharp knife shall be provided at each workstation.



Appendix I

Emergency measures – Fighting fires

Basic elements

The steps in fighting a fire are indicated below:

1. **LOCATE** the fire and determine its size.
2. **INFORM** the captain who will sound the general alarm, issue a distress call and activate the DSC emergency system on VHF radio.
3. **BRING THE FIRE UNDER CONTROL** (Turn off the electricity, shut off the fuel supply).
4. **EXTINGUISH** the fire (determine the class of fire and use the appropriate extinguisher).

In order to be able to put out a fire, you must first determine the type of fire you are dealing with. Some types of extinguishers are effective against wood and paper fires, but ineffective against electrical fires.

In general, a fire will continue to burn for as long as heat, air and fuel are present. This is known as the fire triangle. To extinguish a fire, it is necessary to eliminate one of these elements. The heat can be eliminated by cooling off the fire with water and the oxygen can be eliminated by smothering the fire with foam or carbon dioxide.

It is important to take into account the class of fire that may occur when deciding on the location and type of extinguisher that will be used.

Classes of fires



The fires that are liable to occur on a boat may fall under four different classes:

Class A: solid combustible materials (wood, paper, clothing)

Class B: flammable liquids (flammable gases)

Class C: electrical origin

Class D: combustion of metals (like those of distress flares)

Here are the different ways to fight a fire according to the class to which it belongs:

Class A fires

Water is probably the best agent to fight fires involving solid combustible materials. Water will cool off and extinguish the fire. Foam or dry chemicals may also be used to smother the fire, thereby breaking the fire chain.

Class B fires

To fight a fire of this class, it is first necessary to cut off the fuel supply. It is the vapors that burn, and not the fuel. The best way to extinguish this type of fire is to smother it. Water must never be used, for it could allow the fire to spread.

There are three main types of extinguishing agents:

- 🔧 powders (chemical products used to stop the molecular reaction of the fire) continue to be the most widely used extinguishing agent to fight Class B fires;
- 🔧 certain gases, such as compressed carbon dioxide cut the flow of oxygen to the fire. Other types of extinguishing elements rely on a sodium bicarbonate or potassium bicarbonate base, which releases carbon dioxide upon contact with the fire;
- 🔧 foam extinguishers have an aqueous foaming agent which creates a barrier between the oxygen and the fire.

Class C fires

The best way to fight a fire of an electrical origin is to cut off the power supply. The fire will then become a Class A or B fire and can be put out with the appropriate extinguishing agent. Fires of an electrical origin may also be fought using halon, which breaks the fire chain, or CO₂, which has the advantage of not leaving behind any residues. When the latter is sprayed, it spreads quickly and leads to a major drop in temperature, which solidifies the extinguishing agent in the form of carbon dioxide snow. The latter cools and smothers the flames. Its cooling capacity is about equal to three times that of water in ice form. It goes directly from a solid to a gaseous state without passing through a liquid state.

Dry chemicals can also extinguish a fire of electrical origin, but they are extremely corrosive and can cause damage. Water must never be used to put out this type of fire.

Class D fires

There is no extinguishing agent that can put out a fire of this class. The best course of action is likely to throw the distress flares overboard.

Characteristics of extinguishers

The condition of firefighting equipment (extinguishers, alarms, detectors, hoses) must be checked once a month. Extinguishers must be placed outside but near areas where there is a fire hazard. Carbon dioxide extinguishers must be weighed every year. Dry chemical extinguishers should periodically be turned upside down and shaken.

Category	Application	Disadvantage
Carbon dioxide (CO ₂)	<ul style="list-style-type: none"> • is particularly recommended for fires of electrical origin and does not cause damages • smothers the flames and disperses everywhere since it is a gas 	<ul style="list-style-type: none"> • is not at all effective against fires that produce embers (wood, paper, cardboard, barbecue, etc.)
Pressurized water	<ul style="list-style-type: none"> • is of general use • cools off the fire, which is very effective 	<ul style="list-style-type: none"> • does not disperse everywhere like CO₂ does
Powder	<ul style="list-style-type: none"> • is very effective for putting out fires • among the fire extinguishers sold for use in cars and found in some underground parking lots 	<ul style="list-style-type: none"> • is produced in very large quantity and spreads everywhere • may damage electrical and electronic equipment

Appendix II

Emergency measures – Abandon ship

Rescue station

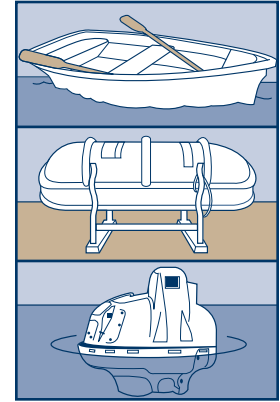
When abandoning ship, it is important to notably:

- make known to crew members, by sounding the general alarm, that they must gather at the muster stations and make sure that they are aware of the order to abandon ship;
- make sure that all crew members are present at the muster stations;
- see to it that crew members prepare to perform the tasks described on the muster list;
- make sure that crew members are dressed appropriately to mitigate the shock caused by the cold if they are required to jump into the water;
- make sure that crew members have correctly donned their lifejackets;
- launch, if possible, at least one rescue boat after having made the necessary preparations;
- make sure that the motor of the rescue boat is in good working order.

Life raft

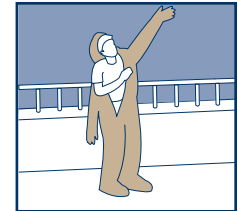
- The launch area must be kept clear of obstacles.
- Two crew members should grab on to the container at the ends and toss it over the lee side of the vessel.

- Any person boarding a watercraft must remain seated and hold on tight as the watercraft is being launched. He must keep his hands inside the gunwale to avoid being crushed against the side of the boat.
- Crew members must make sure that their fingers are not caught in the sling during the release of the slip hook.
- After launching, pull the painter until it is fully withdrawn and the raft inflates.
- If the raft over-inflates, you will hear the sound of air escaping.
- If the raft inflates upside down, it must be made upright before boarding.



Evacuation

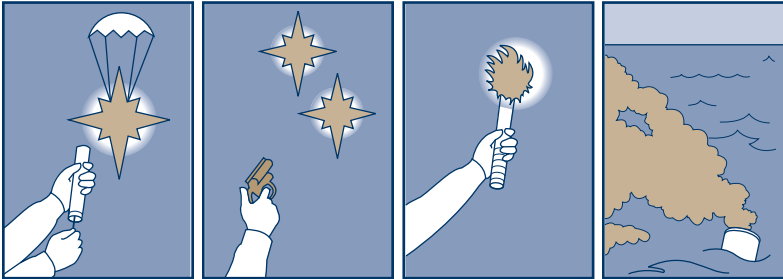
- Crew members must don their immersion suit before entering the water.



- Before entering the water, make sure that your lifejacket is attached properly. Then pull down the collar with both hands, cross your arms, grab your shoulders and jump feet first.
- Inflate the lifejacket (where necessary) once you are in the water and not before.

Distress flares

- A parachute flare is easily seen from the surface or the air, and burns for at least 40 seconds.
- A “multi-star” flare is also easily seen from the surface or the air. It burns for four to five seconds. If a single star shell is used, two shells should be carried for every flare. The hand-held flare is less easily seen from the surface. When using this flare, do not look at it directly, and hold it downwind and well clear of the vessel.
- A smoke flare is used as a day distress signal only.



Parachute flare

Multi-star flare

Hand-held flare

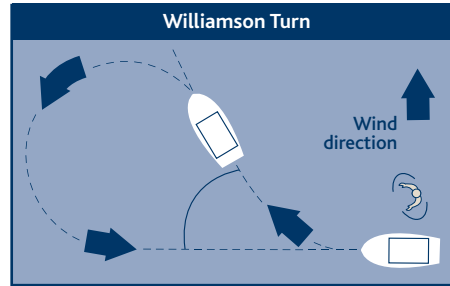
Smoke flare

Appendix III

Emergency measures – Man overboard

If someone falls overboard, take the following steps immediately:

1. Sound the alarm.
2. Assign someone to constantly keep the person in the water in sight.
3. Throw a buoyant object to assist the person and mark his position using a buoy system.
4. Start the *Williamson Turn*.
5. Go to the person's rescue by maneuvering the boat carefully.
6. Bring the person back on board. Be careful when pulling the person in. Indeed, rescuers have often been pulled into the water by the person in distress.



Hypothermia

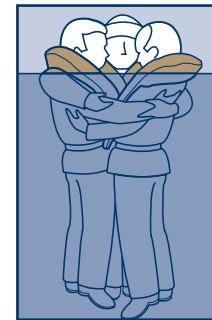
Without a lifejacket, the person in the water devotes most of his energy to swimming and loses heat quickly. He then risks developing hypothermia. Statistics show that the survival chances of a person increase 10.5 times if he is wearing a lifejacket.

Hypothermia (abnormally low internal body temperature) is the greatest danger for anyone in the water. As the body temperature drops, body functions slow down, which can quickly lead to death. In the water, the human body loses heat 32 times faster than on land.

The body loses heat most quickly from the head and neck, the sides of the chest, and the groin region. That is why these body parts must be protected.

The heat escape lessening position protects critical body areas and slows down the loss of heat. This position should be adopted if you are alone in the water.

If two or more persons are in the water together, they should huddle together.



Stages leading to death

Four stages lead to the death of a person following immersion in water (drowning can occur during any of these stages):

1. Cold shock: rise in the heart rate and the blood pressure and difficulty breathing (drowning occurs within 3 to 5 minutes after immersion).
2. Swimming failure effects: heat loss, fatigue in extremities and loss of coordination (drowning occurs within 3 to 30 minutes after immersion).
3. Hypothermia: drop in body temperature and loss of consciousness (drowning occurs 30 minutes after immersion).
4. Post-rescue collapse (death can occur several hours after the rescue).

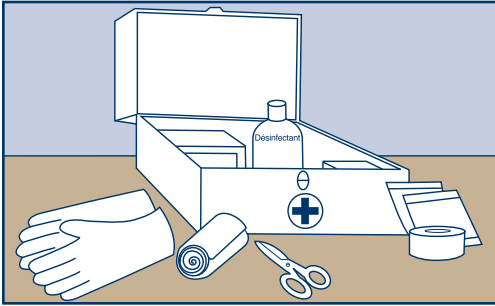
Estimated survival time of an adult after immersion

Water temperature	Unconsciousness	Survival time
From 21°C to 27°C	From 3 to 12 hours	3 hours and more
From 16°C to 21°C	From 2 to 7 hours	From 2 to 40 hours
From 10°C to 16°C	From 1 to 2 hours	From 1 to 6 hours
From 4°C to 10°C	From 30 to 60 minutes	From 1 to 3 hours
From 0°C to 4°C	From 15 to 30 minutes	From 30 to 90 minutes
Less than 0°C	Less than 15 minutes	From 15 to 45 minutes (or less than 15 minutes)

Appendix IV

Requirements related to the first-aid kit

All vessels must have a first-aid kit on board. The employer must provide a first-aid kit containing all of the items appearing in the following table. Items taken from the kit must be replaced as soon as possible.



There are five types of first-aid kits:

- A.** for a vessel with 2 to 5 employees;
- B.** for a vessel with 6 to 19 employees;
- C.** for a vessel with 20 to 49 employees;
- D.** for a vessel with 50 employees or more;
- E.** for a detached work place*.

* According to the *Canada Labour Code* (Transport Canada, 1987).

Items	Quantity according to the type of first-aid kit				
	A	B	C	D	E
60 ml bottle of antiseptic wound solution or a 10-pack of antiseptic swabs	1	2	3	6	1
Disposable cotton swabs (Pack of 10)	1	2	4	8	–
Disposable, waterproof vomit bag	1	2	2	4	–
Adhesive bandage straps	12	100	200	400	6
2.5 cm x 4.5 m lengths of bandage gauze	2	6	8	12	–
Folded, 100 cm triangular bandages and 2 pins	2	4	6	8	1
Container –first aid kit	1	1	1	1	1
Sterile dressing compresses, about 7.5 cm x 12 cm	2	4	8	12	–
Sterile dressing gauze, about 7.5 cm x 7.5 cm	4	8	12	18	2
Splinter forceps	1	1	1	1	–
Current First Aid Manual (English)	1	1	1	1	–
Current First Aid Manual (French)	1	1	1	1	–
Eye pad with shield or tape	1	1	2	4	1
First Aid Record	1	1	1	1	1
Pair of 10 cm scissors	–	1	1	1	–
Roll of surgical adhesive tape, 1.2 cm x 4.6 m	1	1	2	3	–
30 ml bottle of antipuritic lotion or a 10-pack of antipuritic swabs	1	1	1	2	–
Elastic bandage, 7.5 cm x 5 m	–	–	1	2	–
Pocket-size emergency blanket	–	–	–	–	1
10 cm x 10 cm sterile burn dressing	1	1	1	2	–
Container of hand cleanser or packet of cleaning towelettes	1	1	1	1	–
Splint with padding	–	1	1	1	–
Stretcher	–	–	1	1	–

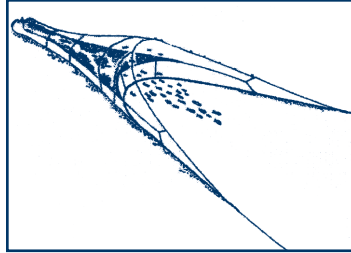
Appendix V

Description of fishing methods

Trawling

Trawls are fishing gear in the form of large funnel-shaped bags of nets dragged behind a boat known as a trawler. The use of this gear, whether it be bottom-trawls, mid-water trawls or surface trawls, yields good quality catches provided that the following factors are taken into account:

- 🦞 the duration and speed of trawling;
- 🦞 the speed at which the **trawl** is raised.

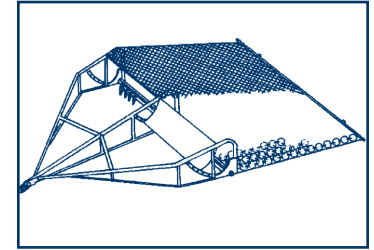


The nets must always be cleaned and all fish stuck in the net must be removed. Catches must be washed carefully if there is mud mixed in with them.

If the duration and the speed of trawling are excessive, the fish will be crushed at the bottom of the bag and will die from asphyxiation. In addition, their abdominal wall risks bursting. The content of their stomachs could be deposited on other catches, promoting the decomposition of the fish and the softening of their meat. Finally, dragging the trawl along the sea floor raises the mud which mixes in with the catches.

Dredging

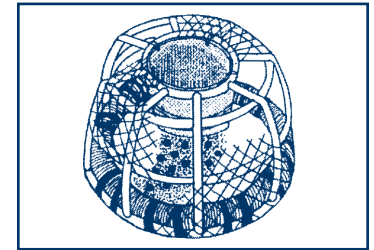
Dredging is practiced in both coastal and midshore waters. A bag made of wire mesh is attached to a metal structure fitted with teeth. When the dredge is pulled along the sea floor, shellfish are detached by the teeth and collected in the bag. Depending on the vessel's power, the gear may include one or more bags. After a period of time (approximately 30 minutes), the gear is raised by its bottom section, brought aboard and emptied. This fishing method is mainly used to catch scallops.



Use of traps

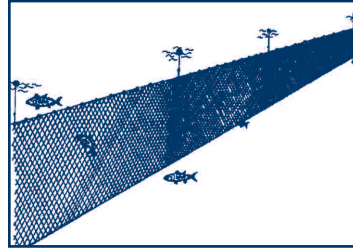
A lobster trap is a trap made of wood or wire mesh. Its shape and its size vary according to the region (truncated cylinder, trapezoidal, rectangular in shape).

The most commonly used crab trap is cone-shaped and is covered with a polyethylene mesh. It has a metal structure.



Gillnetting

Gillnets are rectangular fine mesh nets. They have floats on the upperline (headrope) and weights on the ground-line, which keep the nets straight. Gillnets may be used near the surface and may even be used to fish smelt under ice.



The floats make it possible to quickly locate the gear, whereas the weights hold the net on the sea floor. The depth of the water in which the nets are cast and the size of the mesh openings determine the size and the species of fish that will be caught.

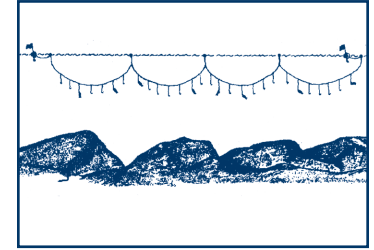
This gear offers the advantage of allowing small fish to swim free, while only trapping fish that are of suitable size. Fish become caught in the mesh by their gills and die from asphyxiation.

The number of nets, weather conditions and equipment problems can increase the time between when the net is deployed and when it is raised. However, nets are generally raised once or twice a day.

If the fish spend too much time in the water after dying, they risk being attacked by crabs and sand fleas. Bacteria could penetrate their meat. Moreover, the enzymes present in their stomach risk destroying their sides. The effect of this would be to soften their meat and reduce the conservation time.

Longlining

As its name indicates, this line is long. Moreover, numerous short lines, known as snoods, are attached to it at regular intervals. Snoods are fitted with hooks of the appropriate size for the species sought. The longline is first baited then deployed using an anchor. The line is lowered to the appropriate depth according to the species being fished. The longline is then pulled by the boat. Buoy floats attached to the ends of the longline help to pinpoint its location.



If the lines are raised regularly and if the intervals between the time when the line is deployed and when it is raised are respected, the longline offers the advantage of ensuring that fish are alive when they arrive on board.

Glossary

Alleyway: passage along the length of a boat used for traffic.

Anchor roller: mobile roller located at the head of the bow, intended to guide the mooring chain.

Baiting: action of placing bait on gear to attract fish.

Bulwark: part of the hull above the deck forming a railing.

Buoy rope: cable attached to an anchor.

Cargo boom: simple hoisting device comprising a block, and (or) a hoist, at the top of a pole (mast) held by cables, either vertically or in an inclined position and used to move weights.

Codend: rear-most part of the trawl, generally cylindrical in shape, where fish accumulate.

Davit: adjustable fitting that is small or large in size used for hoisting or lowering loads, ladders, anchors or boats.

Gangway: passage situated on each side of the deck of a boat.

Gunwale: longitudinal structural element.

Living quarters: room used for the needs of crew members, other than for work.

Mending of nets: repairing of fishing nets.

Moored alongside: when two boats are stationed side-by-side.

Pin: metal element used to assemble two parts each having a hole in them.

Port: opening made in the bulwark of a vessel.

Safety clip: spring or gravity activated mechanism that closes a hook opening and prevents the load or the lifting accessory from accidentally sliding off the hook.

Shackle: open ring made of metal, which is generally U-shaped, closed by a shackle pin.

Sling: rope used to fasten and handle goods during handling operations.

Stopper: rope, generally small in size, used to securely attach something to a given object.

Trawl: funnel-shaped net attached to the back of a vessel and which is dragged along the sea floor or is used to fish just below the surface.

Trawl door: separate element of a string of nets, placed between the warp and the trawl, which keeps the trawl open as it is being pulled.

Warp: steel cable used to pull the trawl.

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