

ACCIDENT ALERT

Cold water can kill – Immersion suits can save lives

A health and safety message from the WCB



In a recent accident, three fishermen died when their trawler overturned. One worker survived and was rescued after three hours in the cold waters off B.C.'s coast. The accident is under investigation, but we do know that the survivor was able to put on his immersion suit and avoid the deadly effects of cold water.

Drowning is the number one cause of death in B.C.'s fishing industry. In B.C., from 1976 to 2002, an average of five fish harvesters drowned each year. These deaths occurred when a fishing vessel capsized or sank, when crew members fell overboard, or when they were dragged or knocked into the water by equipment or gear.

Drowning in cold waters

One reason so many people drown is the cold temperature of our waters. Accident investigations have shown that a person's physical fitness or ability to swim in warm water will not save him or her from drowning in cold water. Hypothermia, where your body's core cools, can be a factor but that takes time — usually more than 30 minutes. The killing factor is often that first shock of cold water on the body. Cold water is defined as water below 25°C but the greatest effects occur below 15°C. Our waters are usually below 15°C.

Cold shock occurs as soon as you enter the water. It can result in drowning in just a few minutes if the person panics when unable to get air into their lungs and hold their breath. After as little as five minutes in cold water, a person can lose their muscle coordination, be unable to swim or grab a lifeline, and drown. Most people don't realize that drowning can occur so quickly in cold water.

The key is to stay out of the water, or if you must abandon ship, to keep the cold water away from your body by wearing an immersion suit.

Wear an immersion suit if you abandon ship

Sometimes crew members in the water cannot reach the life raft when they abandon ship. An immersion suit acts like a personal life raft that encloses all but your eyes and nose. It keeps your body heat inside and prevents cold water from seeping in. An immersion suit will keep you afloat and presents a large target for rescuers to see as most of your body is near the surface of the water.



Practise putting on your immersion suit and inflating it manually. In an emergency, when you must abandon ship, you may have little time and the vessel may be rolling or listing. If you are able to put on your immersion suit quickly, it may save your life. Keep it well maintained so that no water can seep in and the whistle and light are working.

Make sure you have an approved immersion suit. Some of the newer immersion suits are more flexible and allow more movement. You can put on the suit and continue to work with lines and other emergency tasks.

Other suits – often called floater, survival, or anti-exposure suits – can keep out cold air and provide buoyancy, but they are not designed to completely keep out water. Cold water may seep in through the seams and the zipper and gradually cool your body.

Stay out of the water

Over 35 percent of drownings in the fishing industry occur when a crew member falls or jumps overboard or is dragged or knocked into the water. Prevent crew members from entering the water accidentally:

- Keep work areas free of slipping or tripping hazards
- Install hand rails and guard rails where practical.
- Wear safety harnesses when practical.

Make sure there is a ladder or other means to climb back on board quickly in case someone does fall overboard. Practise emergency drills for rescuing a person overboard.

Related "Hazard Alert" Bulletins

- **HA04-02 Quick death follows cold water immersion**
<http://publications.healthandsafetycentre.org/s/posters.asp?ReportID=33034>
- **HA02-17 Two crew members die after vessel abandoned**
<http://publications.healthandsafetycentre.org/s/posters.asp?ReportID=31813>
- **HA02-04 Two crab fishers die of hypothermia**
<http://publications.healthandsafetycentre.org/s/posters.asp?ReportID=31318>
- **HA00-15 PFDs must be worn to save lives**
<http://publications.healthandsafetycentre.org/s/posters.asp?ReportID=31337>

- **HA95-05 Immersion suits can help you survive**
<http://publications.healthandsafetycentre.org/s/posters.asp?ReportID=31468>
- **Fish Harvesting Alert: 66 Fatalities 1991-2003**
<http://publications.healthandsafetycentre.org/s/posters.asp?ReportID=31819>
- **Fish Harvesting Alert: Vessels Capsizing and Lives Lost**
<http://publications.healthandsafetycentre.org/s/posters.asp?ReportID=33047>

Online Resources

Cold Water Immersion (PDF 270 KB) from the WCB of BC
http://www.worksafebc.com/publications/health_and_safety_information/bulletins/worksafe/assets/pdf/ws0401.pdf

Cold water can kill (PDF 189 KB) from WorkSafe magazine, February 2004
http://www.worksafebc.com/publications/newsletters/worksafe_magazine/Assets/PDF/current/art1.pdf

Small Fishing Vessel Safety Manual: Immersion suits from Transport Canada, March 2003
<http://www.tc.gc.ca/MarineSafety/TP/Tp10038/64-lse-immersion-suits.htm>

Survival in cold waters (PDF 10 MB) from Transport Canada, January 2003
<http://www.tc.gc.ca/MarineSafety/TP/Tp13822/TP13822E.pdf>

Supporting regulation and policies

- Occupational Health and Safety Regulation, Section 24.97, Crewmember overboard
<http://regulation.healthandsafetycentre.org/s/Part24.asp#SectionNumber:24.97>

(1) Every fishing vessel must carry, for each crewmember, one immersion suit meeting standards acceptable to the Board.

(2) The master of a vessel must ensure that there is suitable equipment on board and that procedures have been developed which will enable the prompt recovery of a crewmember overboard.

- Prevention Policy R24.97-1, Immersion suits
<http://regulation.healthandsafetycentre.org/s/Policies-Part24.asp#SectionNumber:R24.97-1>

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