

# Don't take a deadly plunge

Sudden and unexpected cold-water immersion can kill you in three minutes. Learn how to protect yourself.

By Heather Prime

**P**eople tend to think that if they fall into cold water, they have a good half hour before hypothermia kicks in. But sudden and unexpected immersion in cold water below 15°C can result in death in as little as three minutes.

Lakes and rivers in B.C. are usually at temperatures similar to the ocean (below 15°C) and may even be colder in winter. This means anyone who works on, near, or over the water is at risk of drowning year-round. The killing factor is often the first shock of cold water on the body. In fact, cold shock and swimming failure cause more drowning fatalities in B.C. than hypothermia.

## How cold water can kill

A person's physical fitness or ability to swim will not save him or her from drowning in cold water. People have died in as little as 1 m (3 ft.) of water – they could have literally stood up and walked out if not for the effects of cold.

To understand how cold water can be so deadly, you need to know how your body responds to sudden and unexpected cold-water immersion. Imagine this:

### Stage 1: Cold shock

Upon entering the water, you gasp involuntarily and risk breathing in water. As little as a half a cup of water in the lungs can cause drowning. Your heart rate and blood pressure suddenly increase, putting you at risk for a heart attack. Problems with breathing may cause you to panic, reducing your chance for survival.

### Stage 2: Swimming failure

You've been in the water for five to 30 minutes and your hands are so cold you can't hold onto anything. You can't pull yourself out of the water, and swimming is becoming more difficult (or even impossible) as your breathing and muscles are affected by the cold which causes your limbs to lose coordination.

### Stage 3: Hypothermia

Hypothermia, the cooling of your body's core, usually takes at least 30 minutes to set in. It affects your brain, heart, and other internal organs. As your body temperature decreases, so does your will to survive. Eventually you'll lose consciousness, drown, or experience heart failure.

### Stage 4: Post-rescue collapse

A sudden drop in blood pressure, lungs damaged from the water you inhaled, and a heart so cold it can't pump blood effectively – these are all serious risks even after you're rescued. Up to 20 percent of all survivors die during rescue or shortly after.

## Gearing up to live

To stay safe, anyone working on the water where there's a risk of falling overboard or drowning must wear a personal flotation device (PFD), life jacket, or immersion suit at all times. There are no second chances.

A flotation device, life jacket, or immersion suit will hold your head above water, help maintain your body temperature, and give rescuers time to react. Immersion suits also provide a large, bright target for rescuers to see. Commercial fishing vessels are required to carry immersion suits for each crewmember, and it's good policy for all vessels and anyone working on or near cold water to carry them. If it's possible to don an immersion suit quickly, all crewmembers should do so before abandoning ship. This will be easier if suits are stowed in an accessible location and crewmembers have practised putting them on and inflating them manually.

## Training and other safe work practices

A vessel's master must ensure that suitable flotation devices are on board and that crewmembers are trained to:

- Get back on board quickly if they fall in the water
- Recover someone who has fallen overboard
- Perform first aid on someone who may be suffering from near-drowning or hypothermia
- Abandon ship and enter life rafts safely

Safe work practices mean avoiding immersion by:

- Installing guard rails on fishing vessels where practical. For example, salmon trollers could set up rails along the sides because fishing occurs at the stern.
- Holding onto the rail while drawing water with a pail. Many people have fallen overboard while drawing water or urinating over the rail when the vessel was under way.
- Keeping work areas free of slipping or tripping hazards.
- Using fall-arrest equipment when working over the side of a vessel or on a bridge.



The features on an immersion suit vary according to the model, but they all keep the water out, provide insulation, and keep the body afloat.

## For more information

Visit the online Health and Safety Centre at WorkSafeBC.com, where you'll find the following resources and much more under the Commercial Fishing section:

- Cold Water Immersion  
[www.worksafebc.com/publications/health\\_and\\_safety/bulletins/worksafe/assets/pdf/ws0401.pdf](http://www.worksafebc.com/publications/health_and_safety/bulletins/worksafe/assets/pdf/ws0401.pdf)
- Immersion Suits  
[www.worksafebc.com/publications/health\\_and\\_safety/bulletins/worksafe/assets/pdf/ws0406.pdf](http://www.worksafebc.com/publications/health_and_safety/bulletins/worksafe/assets/pdf/ws0406.pdf)

## Quiz yourself

1. Cold shock and swimming failure are more deadly than hypothermia.  
a) True b) False
2. Cold water is defined as water below 25°C. B.C.'s waters are usually below:  
a) 25°C b) 20°C c) 15°C
3. A strong swimmer is more likely to survive cold water immersion.  
a) True b) False
4. When working on or near water, you must wear:  
a) A PFD  
b) A life jacket  
c) An immersion suit  
d) Any one of the above
5. You can prevent crewmembers falling into the water by:  
a) Installing guard rails  
b) Removing tripping hazards  
c) Ensuring fall-arrest equipment is used when appropriate  
d) All of the above

Answers: 1. a, 2. c, 3. b, 4. d, 5. d