

#4

ABOUT THE COLD CHAIN

INFORMATION SHEETS

for fishers, vendors
and consumers



WHY

Keeping fish cold reduces the activity of the enzymes and bacteria that cause fish to spoil.

Making sure that all steps of the cold chain are followed will allow you to maintain the quality and freshness of your fish for longer, and, probably, sell your fish at a higher price.

This information sheet will give you some information about what the cold chain is, and how to maintain it easily.



WHAT

The cold chain is a list of steps that should be taken to keep a fish cold from the time it is caught, to the time it is sold

Keeping the fish cold (close to 0°C for fresh fish, and -18°C for frozen fish) during each of these steps is called 'maintaining the cold chain'. Not doing so increases the risk of your fish spoiling and the potential for your customers to suffer food poisoning. These steps, during which fish must be kept cold, include:

- Live fish on deck
- Fish iced down on board
- Fish unloaded at the wharf
- Fish transported to the vendor
- Fish displayed at the market
- Fish sold to the customer



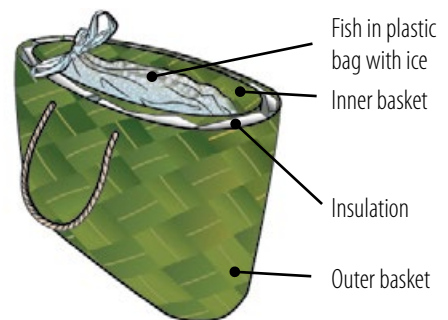
HOW

Fish can be kept cool by:

- Packing them in crushed or chipped ice (ideally the same volume of ice as there will be fish)
- Submerging them in chilled seawater (a mixture of ice and seawater)
- Freezing them
- Keeping them wet and shaded

If an onboard refrigerator is not available, an ice box containing ice or chilled seawater will also work to keep your fish cool.

If you cannot afford an ice box, a double coconut basket can be used instead.



At every step of the cold chain, **one person** should be made responsible for making sure the cold chain is maintained (i.e. that fresh fish are kept at close to 0°C, and frozen fish at -18°C).





CLEAN

Even if fish are kept cold, they can still be contaminated by bacteria and dirt.

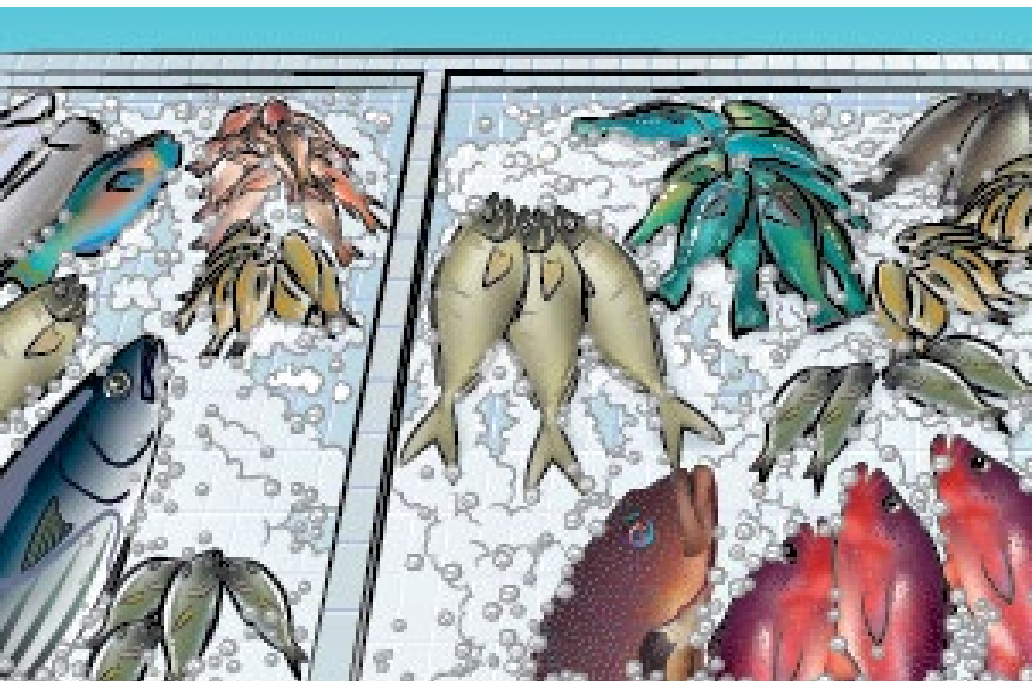
Bacteria and dirt can be found:

- On the fish, and in their gut
- In the surrounding area
- On equipment
- On people

During each stage of the cold chain, remember to:

- Use clean water to wash the fish
- Use clean ice to cool the fish
- Use clean containers to store the fish

- Keep the fish covered as much as possible
- Not allow raw fish to come into contact with cooked fish
- Keep the work area and surfaces clean
- Keep yourself clean
- Wash your hands and equipment thoroughly and regularly
- Not handle fish if you are unwell
- Keep animals and insects away
- Keep any garbage well away from the fish
- Never place the fish directly on the ground



QUICK

Bacteria grow quickly, so make sure to move the fish quickly, even when maintaining the cold chain. The less time a fish spends traveling, being stored, or displayed, the better.

Here is a table to help you choose the freshest, healthiest fish:

	Very good	Good	Moderate	Not good	Spoiled
Gills	Bright red	Red	Pink	Brown	Dark brown
Smell	Like the sea	None	Fishy	Stale	Rotten
Looks	Shiny colours	Dull colours	Grey	Dark	Bruised, very dark
Flesh firmness	Firm, springy	Firm, springy	Leaves dent	Soft	Very soft
Eyes	Clear	Clear with a little blood	Cloudy with a little blood	Cloudy and sunken	Very cloudy and sunken
Colour	Very bright	Bright	Faded	Dull	Brown spots



CHECKLIST

If you maintain the cold chain, keep your fish clean, and move quickly, your fish will be fresh and safe to eat.