

Properly chilling fish will prevent spoilage bacteria from multiplying and help ensure that your catch stays in top quality condition throughout the fishing trip.

If you, the fisherman, are selling to a fish processor (any wholesaler), they must rely on you to assure that these fish are properly handled.



The U.S. FDA regulation covering the control of seafood food safety hazards requires

that processors have controls for fish species that have the potential to form histamine. Cooling controls should be monitored and documented on the fishing vessel to assure that specific temperature "targets" are met. Work with your buyer to determine the best way to meet and document these safety guidelines. FDA offers guidance that outlines options that you can use to meet the time and temperature targets for safety. If you do not meet these goals, you may not be able to sell what you have caught.

Whether you are involved in catching and storing fish as a charter boat operator or commercial harvester, you are the first and *best* defense against formation of histamine and other biogenic amines. You are a critical part of the "chain" that keeps seafood safe.

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March, 2004

ICE YOUR FISH

Prevent Scombrototoxin Poisoning



Sea Grant
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What is scombrototoxin poisoning?

Scombrototoxin poisoning, also called histamine or scombroid poisoning, occurs when people eat fish that have been carelessly handled and permitted to build up biogenic amines such as histamine, cadaverine, and putrescine as a consequence of bacterial spoilage. It is one of the three most common causes of food borne illnesses associated with the consumption of seafood in the United States. Symptoms include flushing of the face and neck, a tingling sensation of the tongue, vomiting and/or diarrhea. The illness occurs very quickly, is usually short-lived and very uncomfortable. It takes a very small amount of the amines, quantities measured in **parts per million**, to cause illness.

What causes scombrototoxin poisoning?

Biogenic amines, including histamine, can be formed in the fish anytime during harvest, preparation and storage if conditions allow it. Biogenic amines may begin to develop after the fish dies on a hook or in a net,

and will increase if the fish is left in the water too long after death or if it is not adequately chilled immediately after they are brought on board. In the case of histamine formation, such abuse allows a compound, called histidine, that is naturally occurring in all fish species, to be changed to histamine by bacteria present in the gills and gut. However, histidine that is readily available as free histidine is present in greater amounts in certain fish species thus increasing the likelihood that histamine will form quickly during improper handling and storage. Once histamine is formed it **does not** go away and no amount of washing or cooking will remove or destroy it. Likewise, freezing will not reduce or destroy histamine after it has formed. **Prevention** is the only way to assure that histamine is not in the fish in the first place.

What species of fish present a risk of becoming unsafe?

The types of fish listed below are identified by FDA as being most likely to cause scombrototoxin poisoning.

Amberjack	Bluefish	Bonito
Escolar	Herring	Jacks
Mackerels	Mahi Mahi	Marlin
Shad	Tunas	Wahoo

What can you do to prevent formation of biogenic amines?

Rapid cooling is key. Fish should be rapidly retrieved from the water, and packed in ice, ice slush, chilled seawater, refrigerated seawater or chilled brine as quickly as possible using good handling procedures.



Formation of biogenic amines is drastically reduced by cooling fish to 40°F (internal) as quickly as possible. Remember that larger fish take longer to cool than smaller fish. Evisceration (removal of the guts) of larger fish is a good way to help remove the bacteria that cause formation of biogenic amines. And ensuring that the gut cavity is packed with ice or is filled with cooling media allows quicker chilling of that critical part of the fish. Evisceration must be done carefully so that the guts do not contaminate the meat or other fish. Even if a fish smells good, histamine could still be present and cause illness if the fish has not been chilled rapidly and kept cold enough.