

# Fish Hazards and Controls: More than a Fish Story

**W**hen you buy that salmon steak for grilling or that red snapper filet for baking, the Food and Drug Administration’s “Fish and Fishery Products Hazards and Controls Guidance” probably doesn’t spring to mind.

But this document—popularly known as the “Hazards Guide”—plays a key role in keeping American consumers safe from contaminated seafood.

The Hazards Guide is a roadmap for commercial fishermen and processors to follow to ensure that consumers don’t become ill from parasites, pathogens (bacteria, viruses, fungi), or natural toxins (poisonous substances produced by living organisms) in the seafood they eat.

In April 2011, FDA released the fourth edition of the Hazards Guide and posted on the FDA website an introductory video to the Guide ([www.fda.gov/Food/GuidanceComplianceRegulatoryInformation/GuidanceDocuments/Seafood/FishandFisheriesProductsHazardsandControlsGuide/default.htm](http://www.fda.gov/Food/GuidanceComplianceRegulatoryInformation/GuidanceDocuments/Seafood/FishandFisheriesProductsHazardsandControlsGuide/default.htm)) for the seafood industry.

## Science Supports Safety

The Hazards Guide gives fishermen and seafood processors the latest scientific information on contaminants that can be present in their products and where they need controls to eliminate them.

For example, research conducted by FDA gave the agency new insights on



what was needed to control scombrototoxin in the processing of tuna and mahi-mahi.

Scombrototoxin is one of the most common causes of fish-related “food poisoning” in the U.S.

A primary component of scombrototoxin is histamine, which is formed by certain bacteria that naturally exist on the gills and inside live, saltwater fish. The histamine-forming bacteria continue to grow on dead fish, particularly if the fish are not rapidly chilled and kept chilled. The bacteria don’t harm the live fish, says Robert Samuels, a consumer safety officer in FDA’s Division of Seafood Safety. “But once a fish dies, it is vulnerable to a bacterial onslaught. When you consume certain species of fish, such as tuna and mahi-mahi, that have

not been chilled properly, you could consume an overwhelming amount of histamine and your body may react violently.”

This “scombrototoxin poisoning” causes symptoms such as tingling or burning around the mouth, itchy skin, a rash or hives, a drop in blood pressure, dizziness, nausea, vomiting, diarrhea, heart palpitations, and difficulty breathing.

How the fish are handled onboard the fishing boat affects the formation of histamine, says Samuels. “Natural marine flora (like the bacteria that produce histamine) have the best opportunity to go to town on the fish before they get hit with ice on the boats or face other inhibitory or destructive treatments at a processing plant.”

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FDA researchers conducted studies at sea in the warm waters of Hawaii and Granada that were conducive to the growth of histamine. “They took controlled temperature tanks on board so they could subject the fish to different environments and controls to see what conditions were conducive to or prevented histamine formation,” says Samuels. “These expeditions gave us better information related to controls at sea and the new guide reflects these controls.”

## Seafood Consumption

Fish is a big part of the American diet. Americans consumed 15.8 pounds of fish per person in 2009, according to the National Oceanic and Atmospheric Administration’s National Marine Fisheries Service. And U.S. consumers spent an estimated \$75.5 billion for seafood in 2009.

Imports made up 84 percent of the seafood eaten in the U.S. in 2009, according to the fisheries service. The new Hazards Guide reflects the large volume of imports, adding 40 more species of fish than contained in the previous guide issued 10 years ago.

“Some of the additions to the new guide are based on foreign species that are commercially harvested and processed in other countries” says Spring Randolph, a consumer safety officer in FDA’s Division of Seafood Safety. “FDA has attempted to create a reference that is applicable to both domestic and foreign products.”

## Guidance Interprets the Law


Guidance documents represent FDA’s current thinking on a topic—the agency’s interpretation of a policy or regulation (a federal law) to assist industry in following the regulation. The Hazards Guide, for example, interprets FDA’s 1997 regulation, “Procedures for the Safe and Sanitary Processing and Importing of Fish and Fishery Products.”

A food processor can use alternative approaches to the ones provided in a guide if the approach satisfies the requirements of the applicable statutes and regulations. And a processor must show, scientifically, that the approach is adequate.


Guidance documents often give details that relate to the design, pro-

duction, labeling, promotion, manufacturing, and testing of regulated products.

The Hazards Guide covers such specifics as alternative temperature controls during transit, and what packaging materials are acceptable to prevent the bacteria *Clostridium botulinum* and its toxin from forming in fresh fish. This bacterium produces the toxin that causes botulism, a muscle-paralyzing illness that can result in death.

By giving fishermen and seafood processors FDA’s latest thinking on what hazards may occur with fish products and how to prevent them, the Hazards Guide sets the table for seafood that is truly good, not just good tasting. 

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