United States Department of Agriculture

Economic Research Service

Seafood Safety and Trade

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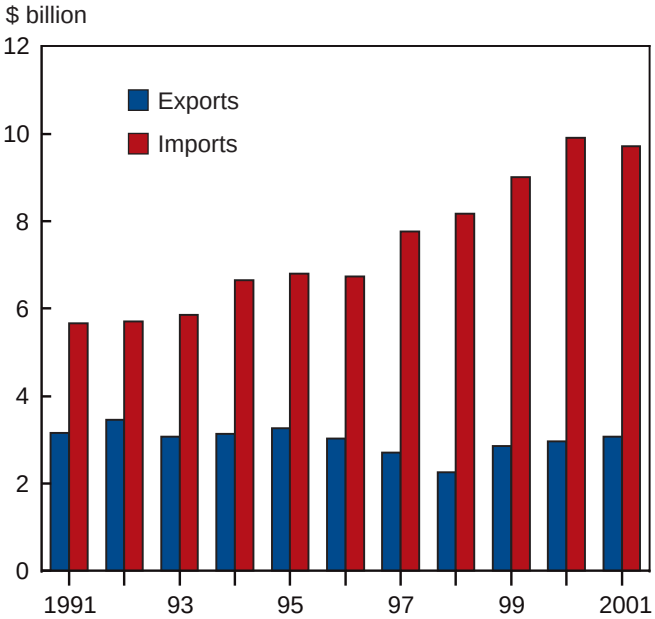
Issue: The safety of seafood trade is increasingly important to the United States for several reasons. U.S. per capita fish consumption has increased over 50 percent since 1980. More than three-fourths of total U.S. fish consumption comes from imports. Although there is no evidence that imported food is necessarily riskier, a number of the countries exporting seafood to the U.S. have poorer internal control systems and/or are in tropical areas where toxin and bacteria hazards are higher. Seafood safety and trade issues are complex due to the diversity of harvest methods, production areas, markets, and seafood species involved.

Background: The United States is a major producer and exporter of fish and fishery products. In 2001, the United States imported roughly $6.8 billion more in edible seafood than it exported, sourcing from a large number of countries.

Value of U.S. exports and imports of edible seafood, 1991-2001



Source: National Marine Fisheries Service, 2002.

In general, seafood trade with the United States is less restricted than trade in other agricultural products, with the vast majority of seafood products entering tariff free.

Seafood is processed into a wide range of products and is consumed in many forms (e.g., smoked, canned, salted, dried, frozen, and raw). While thorough cooking destroys most harmful pathogens, seafood safety hazards remain. For example, raw oysters and clams have been linked to illness from *Vibrio vulnificus* and other pathogens.

A National Academy of Sciences report indicates that most seafood sold in the United States is unlikely to cause illness. U.S. Centers for Disease Control and Prevention reports that 6.8 percent of the 2,751 foodborne disease outbreaks reported during 1993-97 were attributed to consumption of seafood.

In addition to pathogens, other kinds of contamination can affect both farm-raised and wild-caught seafood. Countries vary in their use of vaccines, feed additives, and antibiotics for farm-raised fish and shellfish, and residues from these production inputs sometimes cause food safety concerns. Wild-caught seafood may be affected by other kinds of contamination such as histamines.

Hazard analysis and critical control point (HACCP) systems have been implemented increasingly by private industry for seafood, sometimes voluntarily and sometimes as mandated by Federal governments. Investment in new technologies and equipment and in identity preservation systems is also improving seafood safety.

The U.S. Food and Drug Administration (FDA) detains and inspects samples of imported seafood at the port of entry, refuses adulterated shipments, inspects the facilities of foreign processors who wish to export to the United States, and inspects the facilities of seafood importers in the United States. This study analyzed FDA detention data for seafood products imported from 130 countries in 2001.

Findings: ***Salmonella is a potential target for risk reduction***. FDA detention data showed that *Salmonella* was the most common contaminant of fish and fishery products. Of the 6,405 violations, 83.6 percent were for adulteration (as opposed to misbranding), and *Salmonella* accounted for 34 percent of all adulteration violations. Adulteration deals with safety, packaging integrity, or sanitation problems.

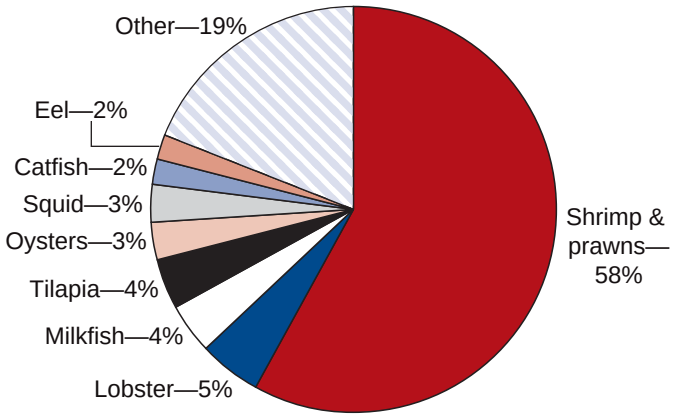
Most Salmonella contamination problems in seafood are for shrimp. Almost one-quarter of all detentions, and more than half of the violations for *Salmonella*, were for shrimp and prawns (farm raised and wild caught), which was expected because shrimp is by far the largest seafood import item. Therefore, risk reduction efforts could be focused here. With over one-quarter of shrimp production from aquaculture, research is needed to determine if improved sanitation during production could lessen the occurrence and extent of *Salmonella* contamination. This diligence will not solve all the problems because—unlike meat and poultry, where *Salmonella* may be a naturally occurring bacterium in the animals' digestive tracts—*Salmonella* contamination in shrimp is often due to cross-contamination later during processing.

According to seafood experts, shrimp will continue to be produced primarily by developing nations and to dominate seafood trade from developing nations to developed nations for the foreseeable future. Some research has found that less developed countries often have difficulty meeting the required quality and safety standards because of a lack of sufficient funds to invest in quality control measures, adequately trained staff, and expensive equipment.

International seafood markets will continue to expand and may become increasingly segmented. Continued growth in international seafood markets may increase market segmentation. According to Wessells and Wallström, wealthy countries demand seafood products with food safety ensured, while less wealthy countries consume seafood products with fewer safety assurances. The degree of food safety could become, to some extent, a source of product differentiation.

International disputes over seafood safety have affected trade opportunities for producers, exporters, and importers. Although some of these incidents have resulted in relatively short-term interruptions of trade and minor economic impacts, medium- to long-term costs could continue to accrue from continued market diversions (i.e., lost market share), loss of momentum in the sector, decreased prices, and reduced capacity due to temporary or permanent plant closures. However, food safety problems are relatively minor when considering the magnitude of trade. For example, detention rates in terms of value were low, with an average of 0.46 detention per $1 million of imports.

Share of FDA violations for *Salmonella*, by seafood product, 2001



Source: ERS calculations using 2001 FDA Import Detention Reports.

Information Sources:

For full text, see Allshouse, J., J. Buzby, D. Harvey, and D. Zorn. "International Trade and Seafood Safety," chapter 7 in *International Trade and Food Safety: Economic Theory and Case Studies*. J. Buzby (ed.). USDA, Econ. Res. Serv., AER-828, Nov. 2003. www.ers.usda.gov/publications/aer828/

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Wessells, C.R., and P. Wallström. "New Dimensions in World Fisheries: Implications for U.S. and E.C. Trade in Seafood," chapter 21 in *Agricultural Trade Conflicts and GATT: New Dimension in North American-European Agricultural Trade Relations*, G. Anania, C. Carter, and A. McCalla (eds.). Boulder: Westview Press, 1994.