

Retail Seafood Cross-Contamination

Cross-Contamination

Cross-contamination is the transfer of illness-causing bacteria and viruses to cooked "ready-to-eat" seafoods. These seafoods include cooked crabmeat, cooked shrimp, smoked seafoods, and surimi-based simulated seafood products. Cross-contamination can occur from:

- Raw seafood to cooked seafood
- Equipment or utensils to cooked seafood
- Seafood handlers to cooked seafood
- The environment to cooked seafood

Illness Causing Bacteria and Viruses

Seafoods, like other foods, may contain illness-causing bacteria and viruses. These microorganisms come from the marine environment, water pollution, or contamination (see table on page 2). Contamination may be from seafood handlers, equipment or the environment.

Illness-causing bacteria and viruses are usually not a problem in raw seafoods. Normal cooking to an internal temperature of 140°F kills them. Bacteria and viruses can cause illness when they are present in seafoods consumed without cooking, or in cooked seafoods. Prevent cross-contamination through good sanitation, personal hygiene, and seafood handling practices.

Raw Seafood

1. Store cooked seafood on racks or shelves above raw seafood in refrigerated storage rooms. This prevents raw seafood liquids from dripping on cooked products. Do not store cases of raw or cooked seafoods on the floor.
2. Ideally, unpackaged raw and cooked seafoods should be in separate display cases. Alternatively, display raw and cooked seafoods in separate sections of the case. Physically separate the two sections.

Another acceptable solution is to store cooked seafoods at the front of the case and raw seafoods at the back. This prevents raw products from passing over and possibly dripping on cooked products. Physically separate raw and cooked seafood.

Equipment and Utensils

1. Store cooked seafoods in sanitary containers and not in containers used for raw seafoods.
2. Process seafood using sanitary knives and cutting boards. Clean and sanitize knives and boards between processing raw and cooked products, and between processing seafood and meat or poultry.
3. Empty seafood display cases daily and remove old ice. Clean and sanitize display cases and drains before adding fresh ice and restocking.
4. Display seafood on clean sanitary ice. Place seafood in pans, trays, bowls, or on plastic sheets rather than directly on the ice. Display containers should allow liquids to drain.
5. Handle seafood in the display case with sanitary utensils or single-use sanitary materials. Use separate utensils for each raw and cooked product.

6. Place spiked price tags in garnish or ice, but not in seafood.
7. Store utensils in a sanitizing solution or inside the refrigerated display case at 29-32°F to minimize bacterial growth.
8. Keep the surface of the scale sanitary. Protect the scale by placing seafood on single-use paper or plastic material. Clean and sanitize scale if any food comes in contact with the surface.
9. Clean up spills with single-service towels. Do not use cleaning cloths or sponges which may contain unwanted bacteria.

Seafood Handlers

1. Wear a clean apron or coat. Clothing can spread unwanted bacteria to seafoods. Do not use apron or coat to clean or dry hands or utensils.
2. Wear a hair net or hat to keep hair from falling onto and contaminating seafoods. Hair contains millions of bacteria.
3. Always work with clean hands. Avoid touching your face, nose or clothing. Wash and sanitize hands between handling raw and cooked seafoods, between handling food and money, and whenever they touch anything other than sea food. Dry your hands with single-use paper towels.
4. Do not handle seafood if you have unprotected cuts or sores. Cuts and sores often contain illness-causing bacteria.
5. Handle raw and cooked seafoods with sanitary gloves. Do not handle raw and cooked products with the same gloves. Wash and sanitize your gloves every time they touch anything other than seafood.
6. Sneeze and cough into a tissue and away from seafood. Never chew gum, smoke, eat or drink while handling seafood.
7. Remove watches, rings and jewelry. Jewelry carries un-wanted bacteria.
8. Inform your supervisor if you are ill.

The Environment

1. Insects and flies carry illness causing bacteria. Keep insects and flies away from seafood.
2. Store garbage and processing wastes in sealed containers away from display areas.

Sources of Potential Illness Causing Microorganisms in Seafood

1. Microorganisms Naturally Present in Aquatic Environments

Microorganism	Illness	Seafoods Involved
<i>Aeromonas hydrophila</i>	Gastroenteritis	Raw oysters
<i>Clostridium botulinum</i>	Botulism	Smoked, salted and fermented seafoods
<i>Plesiomonas shigelloides</i>	Gastroenteritis	Raw and under cooked oysters, salt mackerel
<i>Vibrio hollisae</i>	Gastroenteritis	Raw seafoods
<i>Vibrio mimicus</i>	Gastroenteritis	Raw oysters, boiled crayfish
<i>Vibrio parahaemolyticus</i>	Gastroenteritis	Raw oysters, contaminated cooked seafood
<i>Vibrio vulnificus</i>	Septicemia	Raw oysters

2. Microorganisms From Sewage Pollution of Aquatic Environments

Microorganism	Illness	Seafoods Involved
Pathogenic <i>Escherichia coli</i>	Gastroenteritis	Contaminated cooked crabmeat
<i>Salmonella typhi</i>	Typhoid fever	Raw oysters
<i>Vibrio cholerae</i> O1	Cholera	Raw oysters, contaminated cooked crab
<i>Vibrio cholerae</i> non-O1	Gastroenteritis	Raw oysters
Hepatitis A virus	Infectious hepatitis	Raw shellfish
Norwalk virus	Gastroenteritis	Raw and steamed shellfish

3. Microorganisms From Seafood Handlers, Equipment, and the Environment

Microorganism	Illness	Seafoods Involved
<i>Clostridium perfringens</i>	Gastroenteritis	Cooked seafood held below 140°F
<i>Listeria monocytogenes</i>	Septicemia	Possibly shellfish and raw fish
<i>Salmonella</i>	Gastroenteritis	Contaminated cooked seafood held at 40-140°F
<i>Shigella</i>	Gastroenteritis	Contaminated cooked seafood held at 40-140°F
<i>Staphylococcus aureus</i>	Gastroenteritis	Contaminated cooked seafood held at 40-140°F

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