



Monitoring water quality can prevent outbreaks of illnesses associated with filter feeders, such as oysters, mussels, clams and scallops. More than 88% of seafood-borne illnesses result from eating of raw shellfish.

Suzanne Paisley

Raw delicacies come with risks

The idea of eating a raw chicken breast or a slice of raw beef holds no appeal for most people, yet raw fish and shellfish are popular foods. In a recent survey of Californians, 23% of the respondents reported that they ate raw shellfish, and one-third of those reported eating raw shellfish once a month. Raw finfish is regularly served in Japanese restaurants as sashimi or sushi, and is also found in ceviche, lomi lomi and other dishes. Although monitoring of shellfish waters and proper handling and preparation of raw fish greatly reduce the chance of getting sick from these delicacies, outbreaks of illnesses associated with raw fish and shellfish do occur.

Bivalve shellfish, such as oysters, mussels, clams and scallops, filter their food from the seawater around them. Passing 2 to 3 gallons of water an hour through their siphons, they filter out not only plankton and other food but also any pathogenic viruses, bacteria and chemical contaminants that may be in the water. The list of

pathogens that can cause illnesses in people who consume raw shellfish is lengthy and includes organisms that are naturally present in aquatic environments as well as those that may be introduced from sewage pollution.

Norwalk virus, a major cause of nonbacterial intestinal illness, is probably the most common cause of shellfish poisoning. It enters coastal waters in discharges from sewage treatment plants. Norwalk virus causes nausea, vomiting, diarrhea, abdominal cramps and occasionally fever in humans. Fortunately it is a relatively mild illness, usually lasting no more than 2 days. The virus can be destroyed by thorough cooking, although steaming may not be sufficient to eliminate it.

A more serious illness is caused by *Vibrio vulnificus*, a naturally occurring marine bacterium found primarily in the Gulf of Mexico. Most healthy people are resistant to *Vibrio vulnificus* infection, but in susceptible individuals it is life-threatening, causing death in 50% of cases. Conditions that make people more susceptible include liver

disease, alcohol abuse, cancer, diabetes and AIDS.

Raw shellfish have also been associated with hepatitis A infections and with rare outbreaks of cholera and typhoid.

Parasitic worms in raw or undercooked finfish can also make people sick. The herring worm, *Anisakis simplex*, and the codworm, *Pseudoterranova decipiens*, are parasitic nematodes that infect fish and the marine mammals that feed on them. Humans are not suitable hosts for them, but they can cause severe gastric upset lasting as long as 7 to 10 days. Salmon may carry tapeworm larvae, which can infect humans and require medical treatment.

The Food and Drug Administration recommends specific freezing processes to kill any parasites in fish to be served raw or undercooked. Most states are adopting these recommendations from the 1995 Food Code into state regulations (FDA 1995). Proper freezing is the only way to minimize hazards from parasites in raw fish. —T.S.