If you've ever gotten sick from eating tuna, it's sort of like food poisoning but isn't really. If you've ever had an allergic reaction to tuna, it's sort of like an allergy but isn't really.

If (if?) you are hopelessly confused at this point, let's open up the can and look at what's going on.

The science of "poisoning by tuna" is rather interesting, and, although the chemical for the toxin that is responsible has an obscure name, scombrototoxin (1), you know it by its more common alias—histamine, which is formed in certain decaying fish, especially those with dark meat.

Scombrototoxin poisoning is different from "typical" food poisoning, for example, that from eating undercooked hamburger. The histamine that forms on the tuna survives cooking, freezing or canning. So, whether a fish that has formed scombrototoxin is cooked or served raw - you're cooked either way.
The histamine that makes you sick is formed when tuna is not properly refrigerated after it's caught. During that time, unless the fish is kept cold bacteria, especially *Klebsiella pneumoniae* go to work. At temperatures between 75ºF and 90ºF, the bacteria flourish, and the bugs carry out a biochemical reaction catalyzed by a bacterial enzyme called histidine decarboxylase. The enzyme converts the amino acid histidine to histamine (see the diagram below.) Once formed, histamine is stable to heat. This is why it doesn't matter if you eat your tuna raw or incinerated.

**Symptoms of scombrotxin poisoning include tingling or burning in or around the mouth or throat, rash or hives on the upper body, drop in blood pressure, headache, dizziness, itching of the skin, nausea, vomiting, diarrhea, asthmatic-like constriction of the air passage, heart palpitation, and respiratory distress. Symptoms usually occur within a few minutes to a few hours of consumption and last from 12 hours to a few days.**

Source: [*FDA Food Guidance Regulation, Chapter 7*](#)
For a strange sounding condition, scombroid poisoning, which is now usually called histamine poisoning (3,4), is not at all uncommon. It has been estimated that 40 percent [6] of all seafood-related food poisoning is due to histamine poisoning. So, what can you do? Unfortunately, not much. Although bad fish will sometimes have an unpleasant odor, there is no way to taste or smell histamine in fish [7]. Your health depends on what does or does not happen after the fish is caught.

Fortunately, histamine poisoning is treatable and usually self-limiting (5). Sometimes is quite mild and thus, probably underreported. Even when it is not so mild, the condition is rarely fatal. So, even though you won't enjoy the experience all that much, at least you won't be sleeping with the fishes.

Notes:

(1) The technical term for illness due from decaying fish is scombroid food poisoning. Scombroid refers to a group of dozens of species of fish, including tuna, mackerel, sardines, and swordfish. The term is derived from scombros, which is Greek for the mackerel or tuna.

(2) Tuna and other scombroid fish have high levels of histidine in their flesh. This is why they are susceptible to bacterial histamine formation if not chilled.

(3) Although histamine from decaying fish will cause illness, this may not be the whole story. Other biogenic amines (also formed by decomposition of histidine) may also play a part.

(4) Unsurprisingly, histamine poisoning is treated with an antihistamine. Intravenous Benadryl is commonly used.

(5) Asthmatics are more susceptible to serious symptoms than the general population.