

Why Farmed Salmon Are a Toxic ‘Junk Food’

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✓ Fact Checked

March 14, 2023

STORY AT-A-GLANCE

- › Salmon farming is a disaster both for the environment and for human health, and tests show farmed salmon is about five times more toxic than any other food tested
- › In animal feeding studies, mice fed farmed salmon developed obesity and diabetes — effects researchers believe are related to toxic exposures
- › Besides pesticides and antibiotics used in fish farming, the most significant source of toxic exposure is the dry pellet feed, which contains dioxins, PCBs and other toxic pollutants
- › PCB concentrations in farmed salmon are, on average, eight times higher than in wild salmon
- › Farmed salmon also does not have the nutritional profile of wild salmon, containing more than 3.02 times more omega-6 fat than wild salmon, which further skews rather than corrects most people’s omega-3 to omega-6 ratio

If you’re aware of the health benefits of animal-based omega-3 fats and the fact that salmon is a great source, you may be shocked to discover that farmed salmon has more in common with junk food than health food. This is the grim reality revealed in Nicolas Daniel’s documentary “Fillet-Oh-Fish,” which includes exclusive footage from fish farms and factories across the globe.

Among the experts featured is Kurt Oddekalv, a respected Norwegian environmental activist who claims salmon farming is an unmitigated disaster, both from an

environmental and human health perspective. Below the salmon farms dotted across the Norwegian fjords is a layer of waste some 15 meters (49.2 feet) deep, teeming with bacteria, drugs and toxic pesticides, and since the farms are located in open water, this pollution is in no way contained.

Farmed salmon also pose a more direct toxic threat to your health. Fish has always been considered a health food, but food testing reveals that today's farmed salmon is one of the most toxic foods in the world. As noted by the producers of the film, "through intensive farming and global pollution, the flesh of the fish we eat has turned into a deadly chemical cocktail."¹

In a global assessment of farmed salmon published in the January 2004 issue of Science,² 13 persistent organic pollutants were found. Farmed salmon also does not have the nutritional profile of wild salmon, containing far higher amounts of omega-6, which can have deleterious health ramifications, seeing how most people are deficient in omega-3 while getting far more omega-6 than they need.

Salmon Farming Is Not a Green Solution

More than half of the fish Americans eat now comes from fish farms.³ Aquaculture promotes itself as a sustainable solution to overfishing, but in reality, fish farms cause more problems than they solve. For starters, it takes 1.5 to 8 kilograms of wild fish to produce just 1 kilogram of farmed salmon, so the aquaculture industry is actually contributing heavily to the depletion of wild fish stocks rather than saving it.⁴

A salmon farm can hold upward of 2 million salmon in a relatively small amount of space. As with land-based factory farms where animals are kept in crowded conditions, fish farms are plagued with diseases that spread rapidly among the stressed fish.

According to Oddekalv, sea lice, pancreas disease⁵ and infectious salmon anemia virus have spread all across Norway, yet consumers have not been informed of these fish pandemics, and sale of diseased fish continues unabated.

A number of dangerous pesticides are used to stave off disease-causing pests, one of which is known to have neurotoxic effects. Workers who apply the pesticide must wear full protective clothing, yet these chemicals are dumped right into open water.

The pesticides used have also been shown to affect fish DNA, causing genetic mutations. Disturbing examples of deformed cod are shown, and estimates suggest about half of all farmed cod are deformed in this fashion. What's worse, female cod that escape from farms are known to mate with wild cod, spreading the genetic mutations and deformities into the wild population.

Nutritional Content of Farmed Fish Is Different From Wild

Farmed salmon suffer less visible but equally disturbing mutations. The flesh of the farmed salmon is oddly brittle and breaks apart when bent – a highly abnormal feature. The nutritional content is also wildly abnormal. Wild salmon contain about 5 to 7% fat, whereas the farmed variety can contain anywhere from 14.5 to 34%. For a visual demonstration of this difference in fat content, check out the video above.

The elevated fat content is a direct result of the processed high-fat feed that farmed salmon are given. But farmed salmon don't just contain more fat overall; the real tragedy is the radically skewed ratios of omega-3 to omega-6 fats.⁶ A 6-ounce fillet of wild Atlantic salmon contains about 3,934 milligrams (mg) of omega-3 and 374 mg of omega-6.⁷

A 6-ounce fillet of farmed salmon from the Atlantic contains just a bit more omega-3 – 4,252 mg – but an astounding 1,132 mg of omega-6;⁸ more than 3.02 times more than wild salmon.

While you need both omega-3 and omega-6 fats, the ratio between the two is important and should ideally be about 1-to-1. The standard American diet is already heavily skewed toward omega-6, thanks to the prevalence of processed foods, and with farmed salmon, that unhealthy imbalance is further magnified rather than corrected.

The Fish Site explains what farmed Atlantic fish eat⁹ and shows quite clearly in where these excess omega-6 fats are coming from. In 2019, 75% of Norwegian fish feed was derived from land-based plant products not naturally available in the ocean. According to The Fish Site:

Name. "Soya protein concentrate, which is protein isolated from soya beans, used to be the largest individual ingredient and was responsible for 19 percent of feed in 2016. At the same time the use of soya in feed has dropped slightly since 2012 in favour of several other sources of plant-based protein, such as wheat, maize and broad beans.

Marine sources of protein accounted for a total of 14.5 percent of feed ingredients and marine oils for 10.4 percent."

A study in Research Gate¹⁰ gets even more specific, listing ingredients by name. The first nine are: soy protein concentrate, sunflower expeller, wheat gluten, fava beans, pea protein, maize gluten, horse beans, rapeseed oil and wheat. These are all ingredients that no wild salmon has ever encountered and is about as far from a species-appropriate diet as you can get.

Farmed Salmon Are 5 Times More Toxic Than Other Food Tested

Farmed salmon also contain far higher levels of contaminants than wild, in part because of their elevated fat content. Many toxins readily accumulate in fat, which means even when raised in similarly contaminated conditions, farmed salmon will absorb more toxins than the wild fish. Shockingly, research reveals the most significant source of toxic exposure is not actually the pesticides or the antibiotics given to farmed salmon, but the dry pellet feed.

Pollutants found in the feed include dioxins, PCBs, chlorinated pesticides and a number of other drugs and chemicals. When consumed by the salmon, these toxins accumulate in the fat. One study,¹¹ which tested 700 salmon samples collected from around the

world, found PCB concentrations in farmed salmon are, on average, eight times higher than in wild salmon.

According to the authors, “Risk analysis indicates that consumption of farmed Atlantic salmon may pose health risks that detract from the beneficial effects of fish consumption.”

Another group of scientists concluded that¹² “Consumption of farmed salmon at relatively low frequencies results in elevated exposure to dioxins and dioxin-like compounds with commensurate elevation in estimates of health risk.” Toxicology researcher Jerome Ruzzin has also tested a number of different food groups sold in Norway for toxins, confirming that farmed salmon contain the greatest amount of toxins of them all, and by a large margin.

Overall, farmed salmon are five times more toxic than any other food tested. In animal feeding studies, mice fed farmed salmon grew obese, with thick layers of fat around their internal organs. They also developed diabetes. Ruzzin notes that a theory gaining traction is that rising rates of obesity are related to the increasing number of toxins and pollutants we’re exposed to through our environment and food. In light of his own findings, Ruzzin has stopped eating farmed salmon.

What Makes the Fish Feed so Toxic?

To investigate why the fish feed is so toxic, the film visits a Norwegian fish pellet plant. Here, we find out that the main ingredient is eel, used for their high protein and fat content, and other fatty fish from the Baltic Sea. That’s where the problem begins, as the Baltic is highly polluted. Some of the fish have toxic levels of pollutants, which then simply get incorporated into the feed pellets.

In Sweden, fish mongers are required to warn patrons about the potential toxicity of Baltic fish. According to government recommendations, you should not eat fatty fish like herring more than once a week, and if you’re pregnant, fish from the Baltic should be avoided altogether. Swedish Greenpeace activist Jan Isakson reveals some of the

sources of all this pollution. Just outside of Stockholm, there's a massive paper mill on the bank of the Baltic that generates toxic dioxins.

Nine other industrialized countries surrounding the Baltic Sea also dump their toxic waste into this closed body of water. Dioxins bind to fat, which is why herring, eel and salmon end up accumulating higher amounts than other fish. So, as a result of being deemed unfit for human consumption, some of these fatty fish are now primarily used as fish food. Alas, in the end, these toxins wind up on our plates anyway whenever we eat farmed fish, especially farmed salmon.

One of the Best Kept Secrets of the Fish Industry

Some of the toxicity also stems from the manufacturing process of the pellets. The fatty fish are first cooked, resulting in two separate products: protein meal and oil. While the oil has high levels of dioxins and PCBs, the protein powder also adds to the toxicity of the end product. To this protein powder, an "antioxidant" called ethoxyquin is added. According to the filmmaker, this is one of the best kept secrets of the fish food industry – and one of the most toxic.

Ethoxyquin was developed as a pesticide by Monsanto in the 1950s. Its use is strictly regulated on fruits, vegetables and in meat, but not in fish, because it was never intended for such use.

Fish feed manufacturers never informed health authorities that they were using the chemical as a means to prevent the fats from oxidizing and going rancid, and so its presence in farmed fish was never addressed. Disturbingly, testing reveals farmed fish can contain levels of ethoxyquin that are up to 20 times higher than the level allowed in fruits, vegetables and meats.

What's more, the effects of this chemical on human health have never been established. The one and only study ever done on ethoxyquin and human health was a thesis by Victoria Bohne, a former researcher in Norway who made a number of disturbing discoveries, including the fact that ethoxyquin can cross the blood brain barrier and may

have carcinogenic effects. Bohne was pressured to leave her research job after attempts were made to falsify and downplay her findings.

Others have linked the secret use of ethoxyquin in Norwegian fish farming and the lack of scientific investigation into its effects to the Norwegian minister of fisheries and coastal affairs, Lisbeth Berg-Hansen, who also happens to be a major shareholder in a commercial salmon farm, and has held many high-ranking positions within the fishing industry.

Are You Eating Fish or Fish Waste?

Fish can be one of the healthiest foods you can eat, but in the industrial age you have to be really mindful of your choices. If you needed another reason to avoid processed foods, watch this film to the end, where it describes how fish waste has become a “highly valued commodity” used in processed foods. At less than 15 cents per kilo (2.2 pounds), fish heads and tails, and what little meat is left over after filleting, are a real profit maker.

Virtually nothing actually goes to waste anymore. Fish waste is washed and ground into a pulp, which is then used in prepared meals and pet food. Since food manufacturers are not required to tell you their products contain fish pulp rather than actual fish fillet meat, this product offers a high profit margin for food manufacturers.

One tipoff: if the product’s list of ingredients includes fish without specifying that it’s made with actual fillet of fish, it usually means they used fish waste pulp.

Fish fraud is also commonplace. Investigations have shown that 1 in 3 fish labels is false or misleading. Typically, an inexpensive fish is mislabeled as a more expensive one. Some farmed fish are also passed off as wild. Since traceability is more complex in the processed food industry, due to the mixing of ingredients, that’s where most of the fish fraud occurs. It’s somewhat more difficult to pass off fillets of fish as another species, although that also occurs.

Healthy Seafood Options

It's become quite clear that fish farms are not a viable solution to overfishing. If anything, they're making matters worse, destroying the marine ecosystem at a far more rapid clip to boot. So, what's the answer? Unfortunately, the vast majority of fish – even when wild caught – are frequently too contaminated to eat on a frequent basis. Most major waterways in the world are contaminated with mercury, heavy metals and chemicals such as dioxins, PCBs and agricultural chemicals.

This is why, as a general rule, I no longer recommend eating fish on a regular basis. There are exceptions, however. One is authentic [wild-caught Alaskan sockeye salmon](#); the nutritional benefits of which I believe still outweigh any potential contamination. The risk of sockeye accumulating high amounts of mercury and other toxins is reduced because of its short life cycle, which is only about three years.

Additionally, bioaccumulation of toxins is also reduced by the fact that it doesn't feed on other, already contaminated, fish.

Alaskan salmon (not to be confused with Atlantic salmon) is not allowed to be farmed, and is therefore always wild-caught. My favorite brand is Vital Choice Wild Seafood and Organics, which offers a nice variety of high-quality salmon products that test high for omega-3 fats and low for contaminants.

Canned salmon labeled "Alaskan salmon" is a less expensive alternative to salmon fillets. Remember that wild salmon is quite lean, so the fat marks – those white stripes you see in the meat – are on the thin side. If a fish is pale pink with wide fat marks, the salmon is likely farmed. Avoid Atlantic salmon, as salmon bearing this label are almost always farmed.

Another exception is smaller fish with short life cycles, which also tend to be better alternatives in terms of fat content, such as sardines and anchovies. With their low contamination risk and higher nutritional value, they are a win-win alternative. As a general rule, the closer to the bottom of the food chain the fish is, the less contamination it will accumulate.

Just make sure they're not from the Baltic Sea, which is exceptionally polluted. Other good choices include herring and fish roe (caviar), which are full of important phospholipids that nourish your mitochondrial membranes.

Sources and References

- ¹ [Fillet-Oh-Fish](#)
- ^{2, 11} [Science 2004 Jan 9;303\(5655\):226-9](#)
- ³ [Live Science September 8, 2009](#)
- ⁴ [Overfishing.org](#)
- ⁵ [Merck Pancreas Disease](#)
- ⁶ [Global Seafood Alliance. January 30, 2017](#)
- ⁷ [My Food Data. Wild Atlantic Salmon Cooked](#)
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- ⁹ [The Fish Site. September 3, 2019](#)
- ¹⁰ [Research Gate. Norwegian Salmon Feed](#)
- ¹² [Environmental Health Perspectives 2005 May;113\(5\):552-6](#)