

FREQUENTLY ASKED QUESTIONS ABOUT NORWEGIAN SALMON

All the following information is based on **fundamental principles** within Norwegian aquaculture: a **transparent, regulated and controlled** activity by an industry who's full attention is on producing safe and healthy seafood products. The consumer can obtain information at any time:

- You can find more information about Norwegian salmon and salmon farming here : www.salmonfacts.com / www.toutsurlesaumon.fr
- All tests on Norwegian farmed salmon are done according to EU and Norwegian regulations, and made public on the NIFES (National Institute of Nutrition and Seafood Research) website: www.nifes.no/en/

Regarding the Norwegian food safety system

Norway has a scientific approach to food safety. Norwegian regulations are fully harmonized with EU regulations. ESA (EFTAs Surveillance Authority), is monitoring compliance with rules for EFTA countries, enabling participation in the European internal market.

The scientific food safety system is based on four principles:

1. **Providing knowledge:** only scientific reports are used.
2. **Risk assessment:** risk assessments are carried out by independent scientific institutions (European Food Safety Authority www.efsa.europa.eu, The Norwegian Scientific Committee for food safety, www.english.vkm.no or other institutions appointed by the Norwegian Government).
3. **Risk management:** the Norwegian Food Safety Authority is the competent authority on food safety in Norway. Risk management can be implemented by new legislation (f. ex. Maximum limits or give warnings to the public).
4. **Controls:** There are controls on all levels of the food producing chain. The monitoring programme, as required by European Union legislation (Directive 96/23) is one of the official controls of aquaculture production. The results of these controls, and any other official controls are publicly available on www.nifes.no/en/

Regarding consumption recommendations

- According to the Norwegian health authorities, regarding seafood products, "It is recommended to eat **two or three fish-based meals per week**, half of which should be fatty fish".
- On December 15, 2014, the Norwegian Scientific Committee for Food Safety published a new recommendation on the 'risks and benefits' of including fish in the diet:
 - It recommends eating fish at least twice a week.
 - Women of child-bearing age and pregnant women are recommended to eat fatty fish, rich in Omega-3. There is no specific counter-recommendation regarding consumption by pregnant women.
 - It is possible to eat up to 1 kg of fish per week without risks of PCB or dioxin contamination.
 - Farmed fish contain fewer environmental pollutants than wild fish.
- **The French Agency for Food, Environmental and Occupational Health & Safety (ANSES) recommends eating fish at least twice a week, combining one Omega-3-rich fish, such as salmon, mackerel or herring, with one lean fish** (source : www.anses.fr/en/content/summary-agencys-recommendations-fish-and-fishery-products).



- The study published jointly by FAO and the WHO in 2010, on the benefits and risks of fish consumption, points out that moderate consumption of fatty fish (1-2 servings of 100g per week) is essential to our health. It also concludes that, regardless the specie of fish, the health benefits outweigh the risks for up to 7 servings of 100g per week (source: www.fao.org/food/food-safety-quality/a-z-index/benefits-fish/en/)

Regarding antibiotics

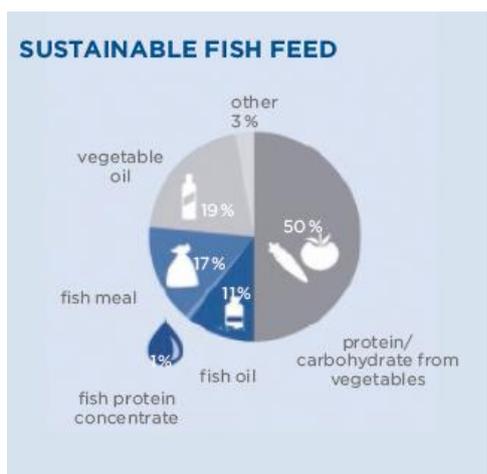
No medication or antibiotics are administered preventively or as a growth promoter in salmon feed. There is no antibiotic residue in Norwegian farmed salmon

- During the last 20 years, the national and international authorities have not found antibiotics in Norwegian farmed salmon.
- It is prohibited to administer antibiotics without veterinary authorization.
- Only between 0.5% and 1% of salmon are treated with antibiotics.
- This has been made possible by vaccinating salmon, introduced in the 1990s, which has reduced antibiotic use by 99%. Over the same period, salmon production has risen from 50,000 metric tons to 1.23 million metric tons.
- Treated salmon must be **placed in quarantine** before the salmon is allowed to be sold. The intention behind the quarantine is to give time for the organism to clear out all residues of the medicine, before being sold.

Regarding fish feed

The diet of Norwegian farmed salmon is rich in proteins, lipids, carbohydrates, vitamins, minerals and antioxidants.

- It consists essentially of natural products, obtained from agriculture (about 70% plant-based products) and fishing (about 30% fish meal and fish oil sourced from regulated fishing).



This feed is produced following sustainable development principles

- To best preserve marine resources, vegetable oils have been progressively introduced into salmon food, while ensuring that the salmon remain healthy and keep their nutritional benefits (colza oil, soya flour, sunflower flour, maize gluten, field beans and wheat gluten).

This diet contains no antibiotics, no GMOs and no terrestrial animal meal.

Norwegian regulations covering the feed

- International standards applied by Norway govern the way fish feed are used in aquaculture. They are issued by various organizations, including WHO and OIE (World Organization of Animal Health).
- Norway goes further and also has specific regulations to meet the requirements of the Norway Food Safety Authority.



Regarding Persistent Organic Pollutants (POP)

Presence of POP (persistent organic pollutants) reduced by 2/3 in 10 years and 13-times lower than the limits set by the EU

- POP levels - including dioxins and PCBs - in Norwegian salmon are 13-times lower than the limit set by the EU (at 0.5 ng TEQ/kg for a limit value of 6.5 ng TEQ/kg - source: NIFES).
- The Norwegian authorities control the entire supply chain to ensure compliance with the EU limits. The results of various tests are public and accessible on the NIFES (National Institute of Nutrition and Seafood Research) [website](#). **NIFES carries out over twelve thousand tests a year on Norwegian salmon, and POP levels in Norwegian farmed salmon have never exceeded the European limit values.**
- NIFES has confirmed that the POP levels in Norwegian farmed salmon have continued to drop, and have fallen by two-thirds since 2004.
- This significant fall is due to the gradual replacement of marine resources in fish feed by plant raw materials.

Heavy metals at levels 30-times lower than the limits set by the EU

- **Traces of mercury and heavy metals are found in all fish, farmed or wild**, as these elements are found in seas and rivers.
- Concentrations measured by NIFES in Norwegian salmon farms in 2012 were between 0.007 and 0.045 mg/kg, while the limit set by the European authorities is 0.5 mg/kg.

Undesirable substances in wild, organic and conventional salmon

The content of dioxin and dioxin-like PCBs, mercury and some other undesirable compounds are found in all fish and are higher in wild salmon than in farmed salmon. This is because the feed of wild salmon are other fish species, while there is a lot of plant-based products in farmed salmon feed.

- **Organic salmon feed consists of a higher levels of marine raw materials than conventional salmon, and will consequently therefore have a somewhat higher level of these undesirable substances than conventional farmed salmon.**
- **It is important to underline that the traces found in both wild salmon, organic salmon and conventional farmed salmon, are far below the limits stated by the EU-legislation.**

Regarding ethoxyquin

- **Commission Regulation (EC) No. 2316/98 authorizes the use of antioxidants such as ethoxyquin (EQ) in animal feed.** Their maximum limit, alone or in combination with other antioxidants, is set at 150 mg/kg per feedstuff.
- Ethoxyquin is used to prevent spontaneous combustion of fish meal during maritime transport.
- **Ethoxyquin levels in fish feed are controlled by NIFES, mandated by the Norwegian Food Safety Authority (Mattilsynet).** Over the last ten years, average values have fallen significantly, because producers of feed for fish have reduced the proportion of fish meal.
- There are no upper limits for ethoxyquin in fish meat but the Acceptable Daily Intake (ADI) is 0.005 mg per kilo body weight per day (source: WHO).
- **Tests conducted in Norway show that a large portion of the salmon (300 g) contributes less than 15% of the of the ADI.**
- In 2016, the EFSA, after being invited to re-assess the safety of ethoxyquin used in animal feed, was unable to reach a conclusion about the safety of this antioxidant, due to gaps in the data.
- The Norwegian authorities are monitoring the situation carefully, while awaiting conclusive results as soon as possible, in order to adapt the legislation accordingly.



Regarding salmon lice (*Lepeophtheirus salmonis*)

Salmon lice presents no danger to human health

- The salmon louse is a natural parasite in the marine environment.
- It only affects salmonids and live in the skin mucous of these fish (salmon, trout, char, etc.).
- It harms the well-being of the fish, but presents no health risk for the consumer.

Combatting salmon lice, a challenge for Norwegian aquaculture

- The Norwegian authorities demand a very low level of lice in the pens, to protect not only farmed fish but also wild salmon. Norway actually has the largest stock of wild salmon in the world.
- Farms carry out weekly counts. The results are published on the site: www.lusedata.no
- The rate varies with the season and temperature (there are fewer in cold periods).
- Combatting salmon lice is one of the most important challenges in aquaculture today. The whole sector is investing an enormous amount in R&D to find natural or technological solutions to combat the salmon louse.

Treatments against the salmon lice

- The most-used methods are preventive measures, such as:
 - Introducing 'cleaner fish' into pools (ballan wrasse, *Labrus bergylta*). This fish eats sea lice and reduces their number naturally.
 - Fitting 'skirts' around pens, to prevent lice entering.
 - Only as a last resort, and always by veterinary prescription, veterinary medicines, such as diflubenzuron are administered. If this is used, the treated salmon are put in quarantine. They are only returned to the circuit after confirmation the fish no longer have any residue of the treatment.
- **In the 12,000 tests carried out every year by the NIFES, no diflubenzuron residue above the limits set by the EU has ever been detected in Norwegian salmon farming :**
www.nifes.no/en/norwegian-farmed-fish-is-safe-food/

Regarding the welfare of salmon

Norwegian aquaculture is highly regulated in order to maintain animal well-being

- Norway was the first country to legislate on this issue (prevention of cruelty to animals) in 1974; the legislation was modified in 2003.
- Under national legislation, violence against animals can result in sentences of up to three years in prison.
- Animals must be handled carefully and the unique characteristics of each species respected. This means paying particular attention to animals' natural needs and actively combatting risks of disease, injury and pain.
- The fish farming industry in Norway is responsible for protecting fish health.
- The Norway Food Safety Authority is responsible for overseeing the health and well-being of fish.
- Many studies conducted on fish health since the 1990s have made it possible to develop effective vaccines and thus, over the last 20 years, achieve a 99% reduction in the use of antibiotics and in salmon farms.
- The farms and pens are designed so that the fish have plenty of space to swim and live under natural conditions for the species: 2.5% fish and 97.5% water.
- These pools are wide (from 60 m to 160 m) and deep (40 m to 50 m).



Regarding escaped salmon

Sometimes, salmon can 'escape' from fish farms. Producers have set the target of 'zero escapes'.

- Salmon 'escapes' usually occur during storms.
- If an escape occurs, 'fish pursutes' are organized whenever possible into coastal zones to recapture the salmon.
- This is a challenge for the Norwegian industry, since escaped salmon can have both an environmental and economic impact.
- Considerable efforts are made to reduce these escapes.
- Due to these efforts, we have been a very significant fall in these escapes:
 - In 1998, the percentage of escaped salmon rose to 0.46% of total production.
 - This figure fell to 0.01% in 2012.
 - The 'zero escape' target is now the goal for all Norwegian producers, to reach such a low level of escapes that it will have no effect on wild salmon.

