



AQUACULTURE
ACCOUNTABILITY
PROJECT

Beneath the Surface

The food safety and allergen risks hidden in farmed fish and shrimp, and what institutions can do about them

Fish and shrimp are widely seen as the light, healthy options on the menu, escaping the scrutiny applied to beef and pork. But most of the sea animal products that reach U.S. plates come from aquaculture operations that are often plagued by disease and dependent on antibiotics, with barely any inspection at the border. This guide dives into the food safety implications for those who source and serve food for universities, businesses, events, and other institutions.

WHAT THIS GUIDE COVERS

- 1 Crowded conditions turn farms into pathogen reservoirs
- 2 Routine drug use drives antibiotic resistance
- 3 Neither border inspection nor certification closes the gap
- 4 Shrimp and fish are major allergens, and hard to manage
- 5 Switching to wild-caught does not resolve these risks
- What institutions can do



Waste, parasites, and disease cause high mortality rates on salmon farms, as photographed at this Scottish farm purporting to sell "premium" salmon



Waste-filled shrimp ponds breed disease and pollute nearby waters along coastal areas in India and Indonesia.

1 Crowded conditions turn farms into pathogen reservoirs

Today's fish and shrimp farms are industrial operations built for maximum output. Animals are raised in crowded underwater pens or ponds thick with waste and uneaten feed, conditions that make disease constant. Shrimp ponds accumulate sludge on the floor,¹ while salmon net pens holding hundreds of thousands of fish flush waste straight into surrounding water.²

Outbreaks are routine. White spot syndrome virus can wipe out a shrimp pond within 7 to 10 days, and disease and parasites drove salmon mortality past **30 percent** nationally in Scotland in 2023.³ The same conditions favor bacteria that cause illness in people, and those bacteria survive harvest, processing, freezing, and thawing.

Bacterial contamination routinely reaches store shelves. A 2023 study found *Vibrio* species, which can cause severe gastrointestinal distress, in **60 percent** of retail shrimp sampled in Northern California.⁵ *Listeria monocytogenes* survives cold storage and smoking; one cluster tied to smoked and ready-to-eat salmon caused **10 deaths across Europe**.⁶

260,000

Estimated U.S. illnesses caused by sea animal products annually⁴

2 Routine drug use drives antibiotic resistance

The main defense against disease on crowded farms is antibiotics. By 2030, aquaculture is projected to have **the highest antimicrobial use intensity of any food animal sector**, and an estimated **96 percent** of the antibiotics approved for it fall into classes the World Health Organization (WHO) designates important or critically important for human medicine.⁷

WHO ranks antimicrobial resistance among the top ten global public health threats facing humanity.⁸ Residues and resistant bacteria reach U.S. shelves: a Baton Rouge study found nitrofurantoin, an antibiotic prohibited in seafood sold here, in **70 percent** of retail farmed shrimp samples.⁹



Drugs are used to fight high mortality on shrimp farms. (Photo: Seb Alex / We Animals)

96%

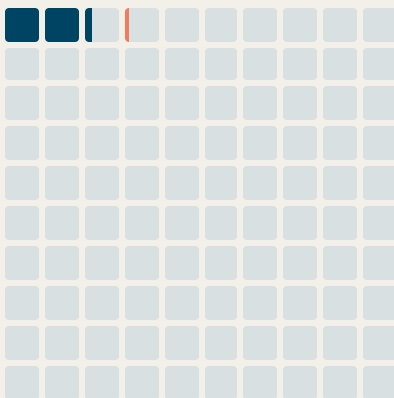
of antibiotics approved for aquaculture are in classes WHO calls important for human medicine

70%

of retail farmed shrimp samples in one Baton Rouge study contained nitrofurantoin

3 Neither border inspection nor certification closes the gap

EVERY 100 SHIPMENTS



2.2% inspected for food safety

0.1% or 1 in 1,000, tested for drug residues

The Food and Drug Administration (FDA) inspects roughly **2.2 percent** of incoming seafood shipments for food safety and tests only approximately **0.1 percent** for drug residues.¹⁰ Even at that rate, it regularly finds prohibited antibiotics, meaning the large majority of contaminated product enters undetected.

Certifications are not a safeguard: the most common ones, Best Aquaculture Practices (BAP) and the Aquaculture Stewardship Council (ASC), are funded by fees from the companies they certify, neither requires annual independent audits of every site, and BAP permits antibiotic use with only vague veterinary oversight.^{11,12}

A "sustainable seafood" seal amounts to more of a marketing claim than a food safety assurance.

4 Shrimp and fish are major allergens, and hard ones to manage

Crustacean shellfish and finned fish are two of the nine major food allergens under U.S. law.¹³ Shellfish is the most commonly reported food allergy among U.S. adults, affecting an estimated 2.9 percent; roughly half of food-allergic adults report at least one severe reaction.¹⁴ It frequently persists for life and often develops in adulthood.

Shrimp is also among the hardest allergens to control at volume, moving through multiple stations and repeatedly handled, cooked, cooled, reheated, and plated. Removing it and farmed salmon eliminates a category of cross-contact risk and widens the number of diners who can eat from the main line.

1 in 35

U.S. adults reports a shellfish allergy—the most common adult food allergy¹⁴

At a **600-person** facility, that is roughly **17 diners**.

5 Switching to wild-caught does not resolve these risks

Buyers who learn about conditions on fish farms often reach for wild-caught instead. On food safety grounds, the substitution does not hold up. For example, *Vibrio* occurs naturally in coastal marine waters, and wild-caught shellfish are a leading source of human vibriosis in the U.S.¹⁵ National retail surveying has also found antibiotic-resistant bacteria in **both farmed and wild-caught** products.¹⁶

Further, buyers often cannot verify what they are getting. A meta-analysis of 35 U.S. studies found 39.1 percent of samples mislabeled and 26.2 percent substituted;¹⁷ a Seattle DNA study found 32.3 percent of salmon sold as wild-caught in sushi restaurants was farmed Atlantic.¹⁸

39.1%

of U.S. seafood samples mislabeled

26.2%

substituted with another species

32.3%

of "wild-caught" salmon in Seattle sushi restaurants was farmed Atlantic

What institutions can do

1

Remove farmed salmon and shrimp from menus

Neither is a staple; plant-based proteins fill their place in tacos, bowls, and stir-fries.

2

Reduce reliance on sea animal products overall

Since wild-caught carries comparable risks, lowering total volume is what actually reduces exposure.

3

Stop treating certification logos as food safety assurance

Relying on them risks overstating a program's credentials to diners and administrators.

We're here to support you, whether you're exploring a policy change or more plant-based options.

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