Microplastics Are in Our Seafood: Here’s How to Protect Yourself

7 MIN READ

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Tiny plastic particles are showing up in our seafood. Here are the steps you can take to reduce exposure while still getting vital nutrients.

Seafood is a go-to source of heart-healthy protein, packed with omega-3s, vitamin D, and nutrients that support brain and immune health. But a growing body of research reveals a less visible issue lurking beneath the surface of our seafood plates: microplastics.

A sweeping 2025 review in ***Marine Pollution Bulletin*** exposes how tiny plastic particles, microplastics (measuring < 5 mm) and nanoplastics (<0.1 µm), have become nearly unavoidable contaminants in marine life worldwide. For anyone focused on longevity, understanding this invisible pollution is key to eating well without compromising safety.

What Are Microplastics and How Do They Get Into Seafood?

Microplastics originate from the breakdown of larger plastic waste, like bottles, packaging, and synthetic fibers, as well as microbeads found in personal care products. These particles enter oceans and waterways, where fish, shrimp, shellfish, and other marine animals ingest them, mistaking them for food or absorbing them directly from water. Over time, microplastics accumulate in their organs and tissues.

One recent Oregon study tested 182 seafood samples and found microplastics in **99% of them**. Almost every fish and shrimp examined (black rockfish, lingcod, Chinook salmon, Pacific herring, Pacific lamprey, and pink shrimp) carried plastic particles. Shrimp and other filter feeders, which consume large volumes of surface water where microplastics concentrate, showed the highest contamination. Even larger fish fillets, like salmon and lingcod, contained these particles, although mostly in their guts and gills.

The most common type of microplastics detected were synthetic microfibers shed from clothing during washing, accounting for over 80% of debris in some samples. According to a **Stanford Report**, an estimated 10 to 40 million metric tons of microplastics enter the environment annually, a figure projected to double by 2040.

In short: if you eat seafood, or even drink tap water or breathe air, you are likely **ingesting microplastics**.

Why This Matters for Health

The idea of consuming microscopic plastic fragments is understandably unsettling, especially if we're trying to prioritize cardiovascular and digestive health. Although direct evidence of harm in humans remains under study, the early signs raise important red flags.

Microplastics can carry toxic chemicals such as BPA, phthalates, and PFAS, which have been linked to hormone disruption, cancer, and developmental issues. Laboratory studies show these substances can leach from plastics and cause inflammation or cellular damage. Worryingly, microplastics themselves have been found in human blood, placentas, brain tissue, and even heart muscle. **One study** found that people with microplastics in their heart tissue were twice as likely to experience heart attacks or strokes later on, a critical concern for aging hearts.

Gut health may also be at risk. Microplastics could irritate the intestinal lining or disrupt beneficial gut bacteria, with some experts suggesting links to higher **colon cancer rates**. Chronic microplastic ingestion might contribute to systemic inflammation and oxidative stress, underlying factors in arthritis, dementia, and other health conditions.

Desiree LaBeaud, MD, a pediatric infectious diseases physician at Stanford Medicine who co-founded the university's interdisciplinary Plastics and Health Working Group, **put it bluntly**: "We're born pre-polluted." Microplastics are embedded in every corner of our environment and bodies, and their long-term health consequences cannot be ignored. But this is not a call to ditch seafood. It's a reminder that our bodies are strong and information is freedom.

9 Ways to Decrease Microplastic Exposure from Seafood

Despite the risks, experts strongly caution against abandoning seafood altogether. Fish and shellfish provide vital nutrients for brain, heart, and immune function that are especially important in later life. Instead, the challenge is to minimize microplastic exposure while still reaping these benefits.

Here are practical tips for safer seafood consumption:

1. **Buying Whole, Local Fish When Possible:**
   Choose whole, local fish directly from trusted fishers or markets that wild fish, flash frozen on boats because research shows these can have **a lower plastic load**. This approach may reduce additional microplastic contamination introduced during retail processing and plastic packaging.
2. **Buy Wild Fish, Not Farmed**:

When comparing farmed (aquaculture) fish and wild-caught fish, researchers find that aquaculture practices may lead to **higher microplastic contamination** in farmed fish compared to wild fish. Farmed fish can ingest microplastics from their controlled environment, through contaminated feed and water in fish farms, at greater rates than their wild counterparts.

3. **Rinse and Clean Thoroughly:**
   Since retail processing can introduce microplastics, **rinsing seafood** before cooking, especially shellfish and fillets, can help wash away surface plastics and reduce ingestion.

4. **Limit Consumption of Small Shellfish with Digestive Tracts Intact:**
   Research finds that microplastic contamination in shellfish (like mussels, oysters, clams), which are often eaten whole by humans. Because we consume these animals entirely (and they are filter feeders that can concentrate microparticles), our exposure to microplastics from shellfish can be significant, on the order of **thousands of particles per year** for a regular shellfish eater. Always remove digestive tracts and peel shells before eating to reduce microplastic intake.

5. **Diversify your protein**:
   Incorporate plant-based proteins and lean poultry alongside seafood to avoid excessive exposure from any one source. When choosing seafood, opt for trusted fisheries with cleaner practices if possible.

6. **Boost your dietary fiber**:
   High-fiber diets may **help trap microplastics in the gut** and escort them out before they enter the bloodstream. Aim for 30 grams of fiber daily from fruits, vegetables, whole grains, beans, and nuts, foods that support both digestive and heart health.

7. **Fry Fish:**
   Preliminary research suggests that **frying fish may decrease the plastic load**, though the plastics appear to migrate into the cooking oil (another reason not to reuse frying oil). Noting here, too, that this cooking method can also add unhealthy fats to your meal, depending on the type of oil you use.

8. **Reduce plastic use at home**
   Since much microplastic pollution originates **from human activity**, simple lifestyle changes, like washing synthetic clothes less frequently and in cold water, using microfiber-catching laundry filters, and swapping plastic food containers for glass or steel, can lower your plastic footprint.
9. **Support Packaging Innovations:**
   Favor retailers or brands that use eco-friendly, non-plastic packaging options. Advocacy for alternatives like beeswax wraps or starch-based materials can help reduce plastic contamination in seafood supply chains.

For now, the best approach for super agers is a balanced diet rich in seafood, fruits, vegetables, and fiber, combined with mindful choices to reduce contamination risks.

The Smartest Seafood Picks: Fish With the Least (and Most) Microplastics

Not all seafood carries the same microplastic load. Multiple studies, from Oregon to Australia to Europe, show consistent patterns across species, and the findings are clear enough to guide your next trip to the fish counter.

Lower-contamination fish choices:

- **Wild salmon:** Chinook salmon had the **lowest microplastic concentrations** of all species tested in a 2024 Portland State University / Oregon State University study. A separate **Saudi Arabian analysis of canned seafood** found zero detectable

microplastics in canned salmon, the only product to come back clean. And a **University of Toronto lab study** found no evidence of microplastics migrating into rainbow trout fillets, even after two weeks of heavy exposure.

- **Deep-water whitefish like cod, haddock, and trout:** These fish feed in deeper waters where microplastic concentrations are lower than the ocean's surface. A **review in *Ecotoxicology and Environmental Safety*** confirmed that lower-trophic organisms (filter feeders, small surface fish) carry significantly more microplastics than larger predatory fish. Since these species are sold as fillets with guts removed, the primary site of microplastic accumulation never reaches your plate.
- **Larger predatory fish** that feed on other fish rather than filtering surface water (though balance this against mercury considerations for species like swordfish and shark)

Higher-contamination fish species to eat mindfully:

- **Shellfish (mussels, oysters, clams):** Filter feeders consumed whole, digestive tract included. A **University of Exeter / University of Queensland study** found oysters contained about 0.1 mg of plastic per gram of tissue, and the **top European shellfish consumers** may ingest up to 11,000 microplastic particles per year from bivalves alone.
- **Small pelagic fish (sardines, anchovies, herring):** They feed near the ocean's surface where floating microplastics concentrate. Studies across multiple regions have found microplastics in the **vast majority of sardines and anchovies tested**, primarily in their digestive tracts. The same **Exeter study** found a single serving of sardines could expose you to roughly 30 milligrams of plastic, the weight of a grain of rice.
- **Shrimp and prawns:** The **Oregon study** found pink shrimp carried the highest particle concentrations of all species tested, a single shrimp weighing less than 5 grams contained up to 36 particles.
- **Canned seafood in sauces or oils:** A **2024 University of Porto study** found every

type of canned seafood tested was contaminated, with octopus in tomato sauce and tuna in olive oil showing the highest levels. A **2025 German retail study** confirmed that canned fish had the highest particle counts of all product types. Acidic sauces accelerate plastic breakdown from can linings, and oily liquids absorb particles from packaging.

The takeaway isn't to eliminate any single species. It's to diversify. Think of it as a rotation: wild salmon one night, cod or trout another, shellfish occasionally rather than daily. When you do eat shellfish, remove digestive tracts and peel shells to reduce your exposure. And whenever possible, buy fresh over canned, the packaging itself introduces additional contamination.

One important note for context: a **2025 review from Heriot-Watt University** found that seafood contributes roughly 1 to 10 microplastic particles per day, comparable to salt, honey, or chicken, and far less than bottled water (10 to 100 particles) or indoor air (100 to 1,000 particles). The point isn't to fear your fish. It's to make informed choices that let you keep enjoying its powerful nutritional benefits.

The Cleanest Fish

We know what you're thinking: what about mercury and forever chemicals? Good news. The fish with the lowest microplastics also tend to carry the lowest mercury and PFAS loads. Here are the smartest picks across *all* contaminant categories and why.

- **Wild Pacific Salmon** (Chinook, Sockeye) The triple-crown winner. Lowest microplastics of all species tested in a **2024 Oregon coast study**, near-zero mercury (0.022 ppm per **FDA monitoring data**), and PFAS levels below 1 ng/g in a **2024 Dartmouth analysis** of seven popular species. Why so clean? Salmon are mid-level predators; high enough to avoid the filter-feeding that traps microplastics, low enough to dodge the mercury that accumulates in apex predators like swordfish. Their guts are

removed before you eat them, which eliminates the primary site where plastics collect.

- **Farmed Rainbow Trout** The sleeper pick. A **University of Toronto lab study** fed trout hundreds of thousands of microplastic particles and found *zero* in the fillets; the fish excreted them within 24 hours. Mercury is very low (0.071 ppm). And farmed fish actually carry *lower* PFAS than wild-caught, according to a **2025 global meta-analysis**, because controlled environments limit exposure to contaminated waterways. Bonus: 900 mg of omega-3s per serving and a "Best Choice" sustainability rating from the Monterey Bay Aquarium.
- **Cod and Haddock** Deep-water fish that feed near the ocean floor, where microplastic concentrations are lower than at the surface. Guts removed before sale. Mercury stays comfortably within the **EPA/FDA "Best Choices" range**, and PFAS tested below 1 ng/g in the Dartmouth study. Not as omega-3-rich as salmon (150 mg per serving), but an excellent lean protein with a clean contaminant profile across the board.
- **One more thing worth knowing:** A December 2025 study in ***Science*** found that legacy PFAS levels in marine fish have dropped 40–72% globally since international phase-outs began. The chemical picture is actually getting better.

*Tip: Buying skin-off fillets further reduces PFAS exposure, according to **USGS research**. And wild-caught generally beats farmed for PCBs, while farmed beats wild for PFAS, so rotating between both is a reasonable strategy.*

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