

# **OPERATION SAFE SEAFOOD**

## **CALIFORNIA 2010**



**An undercover investigation of mercury-contaminated seafood and  
sushi from California grocery stores and restaurants**

**[GotMercury.org](http://GotMercury.org)**

# Got Mercury?



A Project of Turtle Island Restoration Network

## OPERATION SAFE SEAFOOD

### UNDERCOVER TOXIC FISH TESTING RESULTS CALIFORNIA 2010

#### A CALL TO ACTION

**GotMercury.org conducted a statewide fish and sushi investigation that found dangerously high mercury levels in most swordfish  
All tuna samples contaminated with mercury**

#### Executive Summary

Californians are known for their high consumption of seafood, especially sushi. Unfortunately, without knowing it, many mothers, children, and people who regularly eat fish, including celebrities, fitness buffs and weight watchers, are consuming quantities of seafood contaminated with levels of mercury that could be harmful to their health. GotMercury.org conducted an undercover investigation in California during 2010 to expose mercury concentrations in swordfish, tuna and other fish. GotMercury.org purchased fish from 41 California grocery store fish counters and sushi restaurants across the state. Seventy-eight samples of swordfish, ahi/yellowfin tuna, halibut and salmon from supermarkets and 20 samples of tuna sushi from restaurants were collected. The samples were then tested for methylmercury levels by an accredited testing laboratory.

All fish samples tested contained measurable levels of mercury, most above 0.5 parts per million (ppm) methylmercury – the upper threshold set by the state of California as acceptable for human consumption in non-commercial fish caught in inland waters.

The mercury levels of the swordfish tested averaged 1.47 ppm, well above the U.S. Food and Drug Administration's (FDA) mercury action level of 1 ppm. One swordfish sampled registered 3.06 ppm, three times the FDA action level.

The average mercury level of the ahi tuna/yellowfin tuna was 0.407 ppm, although nine tuna samples were above 0.5 the mercury level recommended by most developed nations and the limit set by the EPA's for non-commercial fish caught in rivers, streams and lakes. GotMercury.org's results clearly indicate tuna is not a low mercury fish.

Perhaps the most significant point of this sampling is that nearly one-third of the fish purchased at grocery stores contains levels of mercury the United States has deemed unsafe for consumption and more than half of the retailers did not post mercury advisory signs.

Choosing fish at the seafood counter shouldn't be a toxic gamble. High-risk groups such as women and children should take caution and not eat swordfish and severely limit tuna. People cannot assume what is being sold at the fish counter is safe to eat.

Sushi is a staple of the Californian diet, with tuna sushi being one of the most popular items on sushi restaurant menus. GotMercury.org purchased 20 fresh samples of "nigiri" style tuna sushi at ten San Francisco Bay Area and ten Los Angeles Area restaurants. The tuna sushi samples averaged 0.721 ppm in mercury levels, a level that could be harmful to pregnant women and children.

Mercury contamination of seafood is a widespread public health problem, especially for women of childbearing age, pregnant and nursing women and children. The FDA and the Environmental Protection Agency (EPA) have issued a joint health advisory about methylmercury in seafood, warning women and children to limit their consumption of tuna and to eliminate swordfish, shark and several other species of fish in their diets. However, there are no federal requirements to post the sign anywhere to communicate this information to vulnerable populations, leaving them in the dark about hidden mercury exposure.

In California, as a result of state legal actions taken to remedy this failure to warn people about mercury in commercial fish, 40 California seafood retailers agreed to post mercury-in-fish warning signs. However, these retailers represent a small fraction of seafood outlets in the state.

This alarming information gap must be filled by the state of California through legislation, regulation and responsible action by seafood purveyors.

**The time for California policy makers and fish sellers to act is now.** Failure to initiate a state wide requirement to post mercury advisory signs at places where fish is sold is keeping the public, especially women and children, at risk for dire health consequences resulting from mercury exposure.

### Key Findings

- ◆ All 98 fish samples contained detectable levels of mercury
- ◆ 81 percent of the 32 swordfish samples measured over 1 ppm mercury
- ◆ Nine of 32 swordfish samples measured over 2 ppm mercury, double the federal mercury action levels
- ◆ The average mercury level of the swordfish samples was 1.47 ppm, nearly 50 percent over the federal guidelines
- ◆ One swordfish sample contained 3.06 ppm mercury, three times the federal mercury action level
- ◆ One tuna sushi sample measured over 2 ppm mercury, double the federal mercury action level
- ◆ Endangered bluefin tuna that was on the menu in several places tested 0.699 ppm mercury
- ◆ Fifty three percent of stores did not have mercury in seafood advisory signs posted to warn customers
- ◆ None of the sushi restaurants had mercury in seafood advisory signs posted to warn customers

## **A CALL TO ACTION: POLICY RECOMMENDATIONS FOR CALIFORNIA**

To prevent unhealthy mercury exposure, women and children should be warned about the dangers of mercury in seafood sold at California retailers and restaurants. GotMercury.org's recommendations are:

1. In absence of federal leadership, California should enact legislation that requires point-of-sale mercury-in-fish warnings in grocery stores and restaurants that that sell high-mercury seafood.
2. Grocery stores and restaurants should stop selling fish high in mercury unless seafood suppliers provide proof that the fish being sold does not exceed the FDA action level of 1 part per million (ppm) mercury.
3. Women and children should not eat swordfish and severely limit their intake of tuna.
4. Restaurants, chefs, and consumers should stop serving, buying, selling and eating endangered bluefin tuna.
5. Eco-labeling of any California sourced seafood should take into account mercury levels and seafood high in mercury or other toxins should not receive sustainable certification.
6. The state should immediately commence mercury-in-fish testing and reporting of commercial fish species landed in California.
7. People concerned about mercury-in-fish can take action by signing the petition to the FDA at [www.gotmercury.org](http://www.gotmercury.org) under the Take Action tab.
8. Fish eaters should check mercury exposure from seafood by entering their weight, fish choice and serving size on the mercury-in-fish online calculator, [www.gotmercury.org](http://www.gotmercury.org) or from mobile phones at [www.gotmercury.mobi](http://www.gotmercury.mobi).

## UNDERCOVER TOXIC FISH TESTING RESULTS, CALIFORNIA 2010

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### Mercury testing media coverage and celebrity outcry

The GotMercury.org undercover testing of mercury levels through its Operation Safe Seafood program has been such a compelling public health issue that it was documented and reported by numerous media outlets in California over the year including KGO-ABC-San Francisco, NBCLA-Los Angeles, NBC-Bay Area, The Los Angeles Times, The Santa Cruz Sentinel, ESPN Radio and other California media.

The 2010 mercury-in-fish investigation in Los Angeles prompted the producer of the Academy Award winning documentary The Cove, Fisher Stevens, to reveal that eating sushi every day for years caused mercury levels in his blood to rise dangerously and cause serious health problems. His doctors took months to diagnose the symptoms as mercury poisoning.

His personal experience is part of the reason why The Cove movie includes the story of high levels of mercury in the dolphins that are being slaughtered in Japan for meat. The mercury crisis also prompted The Cove producers to partner with GotMercury.org in a free online mercury-in-fish calculator that anyone can use to estimate mercury exposure. See [www.gotmercury.org](http://www.gotmercury.org)

Other high profile individuals in the entertainment industry have also revealed they experienced mercury poisoning from fish. Richard Gelfond, the president of IMAX large-format films reported he too was sick from eating sushi and fish and that his symptoms were slow to be recognized. He has dedicated millions of dollars to exposing the mercury-in-fish problem.



The image shows a screenshot of the 'mercury calculator' website. The page has a dark blue header with the text 'mercury calculator' and 'Got Mercury? THE COVE'. Below the header, there are three input fields: 'Enter your weight' with a text box and 'lbs.' label, 'Select type of fish' with a dropdown menu showing 'Ahi Tuna (Bigeye, 0.620 ppm)', and 'Enter amount you'll eat this week' with a text box and 'oz.' label. A blue 'calculate' button is positioned below these fields. To the right, a box titled 'mercury exposure' displays 'dose:' followed by a blacked-out area, and 'of EPA limit' with '(Should be under 100%)' below it. At the bottom right, there is a small note: 'Eating multiple types of seafood? Use the advanced mode >'. The background of the page features an underwater scene with several fish swimming.

Other well-known people who went public with their experiences of mercury poisoning from eating seafood include:

- Two time Oscar winning actress Hilary Swank
- Penny Lancaster, wife of rocker Rod Stewart
- Actress Tiffani Thiessen
- Actress Daphne Zuniga
- Actor Jeremy Piven

Based on these high-profile testimonials and results from the 2010 California mercury-in-fish testing project, GotMercury.org suspects that many fish eaters may be experiencing similar health problems that are directly related to high levels of mercury in popular types of fish.

### **California's efforts to improve seafood safety under Proposition 65**

Proposition 65, known as California's Safe Drinking Water and Toxic Enforcement Act, requires retailers that sell products known to cause cancer or birth defects to notify the public about toxins present with visibly placed warning signs. In 2003, California Attorney General Bill Lockyer pursued several Prop. 65 lawsuits aimed at expanding health advisories to include a mercury-in-seafood specific warning sign that seafood sellers would be required to post.

After years of litigation, a final settlement was finally reached in August 2010. The end result of the lawsuits was a settlement by certain parties agreeing to post mercury-in-seafood warning signs in visible locations. The settling parties include:

- Andronico's Supermarket
- Benihana
- Bennigan
- Café Pescatore, San Francisco
- Charthouse
- Chili's
- Claim Jumper
- Costco
- Cozymel's, San Diego
- Duke's
- Fifth Floor, San Francisco
- Fleming's Prime Steakhouse
- Grand Café, San Francisco
- Grand Lux Café, Los Angeles
- Jake's
- Kuleto's
- Maggiano's Little Italy
- McCormick & Schmick

**WARNING!**

Nearly all fish and shellfish contain some amount of mercury and related compounds, chemicals known to the State of California to cause cancer, and birth defects or other reproductive harm. Certain fish contain higher levels than others.

**Pregnant and nursing women, women who may become pregnant, and young children should not eat the following fish:**

**SWORDFISH · SHARK · KING MACKEREL · TILEFISH**

**They should also limit their consumption of other fish, including tuna.**

Fish and shellfish are an important part of a healthy diet and a source of essential nutrients. However, the federal Food and Drug Administration (FDA) and U.S. Environmental Protection Agency (EPA) advise pregnant and nursing women, women who may become pregnant, and children to limit their weekly consumption of fish and to eat fish that are lower in mercury.

According to the FDA and EPA, fish or shellfish that tend to be lower in mercury include pollock, shrimp, and scallops. Mercury levels in tuna vary. Tuna steaks and canned albacore tuna have higher levels of mercury than canned light tuna.

The California Department of Health Services recommends that these individuals:

- Eat a variety of different types of fish;
- Eat smaller fish rather than older, larger fish;
- Begin following these guidelines one year before becoming pregnant.

For more information about the risks of mercury in fish and about the levels in various types of fish consult the following websites:  
U.S. Food and Drug Administration (FDA) [www.cfsan.fda.gov](http://www.cfsan.fda.gov)  
U.S. Environmental Protection Agency [www.epa.gov/est/fish](http://www.epa.gov/est/fish)  
or call the FDA toll-free at 1-888-SAFEFOOD (1-888-723-3366).

- Morton's of Chicago
- New Albertson's
- Olive Garden
- Outback Steakhouse
- P.F. Chang's China Bistro
- Park Place, San Francisco
- Ponzu, San Francisco
- Porterhouse, Los Angeles
- Postrio, San Francisco
- Pucci Pinetti, San Francisco
- Ralph's
- Red Lobster
- Romano's Macaroni Grill
- Roy's
- Ruth Chris Steakhouse
- Safeway
- Scala's, San Francisco
- Spenger's, Berkeley
- The Cheesecake Factory
- The Yard House
- Trader Joe's
- Whole Foods

Unfortunately, establishments who sell fish and were not included in the lawsuits are under no requirement to post mercury-in-fish warning signs. The patchwork across California of inconsistent warnings is putting the public at risk for unnecessary exposure to high mercury levels and creates an uneven playing field for retailers.

A simple remedy would be for California policy makers to initiate a comprehensive statewide mandate to ensure every consumer who eats fish is provided information about high mercury seafood.

### **The problem of mercury and how the FDA is failing the public**

Mercury is widespread and persistent in the environment worldwide. Mercury in the environment has increased primarily from anthropogenic sources such as coal-fired power plants and industrial processes. While mercury does enter the environment from natural sources such as volcanoes, mineral deposits and evaporation from soil and the oceans, the largest source of mercury is from coal-fired power plants. In 2009, scientists from Harvard University and the U.S. Geological Survey published findings that the ocean's mercury levels have risen about 30 percent over the last 20 years. To reach the ocean, mercury falls from the atmosphere or runs-off the ground into water sources that flow to the sea.

Bacteria and fungi found in most water bodies convert raw mercury in to methylmercury, a potent neurotoxin. Methylmercury accumulates in the water and is readily absorbed by plants and fish. Mercury concentrations build up through the food chain as predatory fish like swordfish, tuna and shark consume many smaller fish. Eventually the predatory fish species build up extremely high levels of mercury.

By the time swordfish, tuna and shark are eaten by humans, the mercury levels can be dangerously high. According to the EPA, the primary source of mercury exposure in humans is consumption of fish.

Scientific studies have shown that methylmercury causes neurodevelopment effects in humans, memory loss, mental retardation, learning disabilities, vision loss, heart disease and in extreme cases can even lead to death. Children exposed to mercury are particularly vulnerable to mercury toxicity since their brains are still developing. A 2009 study conducted by the School of Medicine at the University of California, Los Angeles found that the mercury levels in women's blood? (NOTE – say what type of sample, not just “in women”) increased from 2 percent in 1999-2000 to 30 percent in 2005 to 2006.<sup>1</sup> Additional studies have linked cardiovascular disease in adults and the consumption of fish high in mercury.

Other mercury-in-seafood studies published in 2010 found that:

- People who ate enough contaminated fish to raise mercury levels in their bodies to levels still considered "safe" had subtle changes to their heart rhythm that may affect their long-term health.<sup>2</sup>
- Babies exposed to mercury in the womb through a mother's consumption of contaminated seafood scored lower on skilled tests.<sup>3</sup>
- Long-term exposure to mercury may be linked to dementia and Alzheimer's disease.<sup>4</sup>

It is well established that mercury is toxic and should be avoided.

In 2004 the Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA) issued an updated joint advisory to women and children about methylmercury in seafood. The federal advisory warns women and children to limit their consumption of tuna and to eliminate four other species of fish in their diets. The joint advisory states:

1. Do not eat Shark, Swordfish, King Mackerel, or Tilefish because they contain high levels of mercury.
2. Eat up to 12 ounces (2 average meals) a week of a variety of fish and shellfish that are lower in mercury.
  - Five of the most commonly eaten fish that are low in mercury are shrimp, canned light tuna, salmon, pollock, and catfish.
  - Another commonly eaten fish, albacore ("white") tuna has more mercury than canned light tuna. So, when choosing your two meals of fish and shellfish, you may eat up to 6 ounces (one average meal) of albacore tuna per week.
3. Check local advisories about the safety of fish caught by family and friends in your local lakes, rivers, and coastal areas. If no advice is available, eat up to 6 ounces (one average meal) per week of fish you catch from local waters, but don't consume any other fish during that week.

However, the FDA does not require the advisory to be posted by fish sellers, leaving the burden of knowledge about high-mercury seafood on the consumer. Neglecting a call from medical professionals, scientists and advocates to provide greater seafood safety, the FDA shifted the responsibility to test fish for toxins to the private, profit-driven seafood industry. This self-policing policy has allowed the seafood industry to put profits before public health and has flooded the market with highly contaminated seafood. In 2007, the FDA admitted before a Congressional Committee they test less than one percent of seafood being sold in the U.S.

## **Results from the GotMercury.org Investigation**

### ***Supermarket seafood counters***

GotMercury.org randomly selected 41 grocery stores in California to purchase fresh and frozen samples of swordfish, ahi tuna/yellowfin tuna, and salmon.



Each sample was handled as directed by Micro Analytical Systems, Inc. laboratory protocol for fish sample collection. The samples were individually placed in hygienic and freezer safe plastic containers and marked with a number indicating the type of species and place of purchase.

San Francisco Bay Area supermarkets where fish samples were taken and tested:

- Mollie Stones at 2435 California Street, San Francisco, CA
- Mollie Stones at 635 Portola Drive, San Francisco, CA
- Whole Foods at 1765 California Street, San Francisco, CA
- Whole Foods at 3950 24<sup>th</sup> Street, San Francisco, CA

- Trader Joe's at 401 Bay Street, San Francisco, CA
- Safeway at 15 Marina Blvd., San Francisco, CA
- Safeway at 850 La Playa Street, San Francisco, CA
- Cala Foods at 1095 Hyde Street, San Francisco, CA
- United Market at 100 Red Hill Avenue, San Anselmo, CA
- United Market at 515 Third Street, San Rafael, CA
- Whole Foods at 340 Third Street, San Rafael, CA
- Safeway at 838 Sir Francis Drake Blvd., San Anselmo, CA
- Trader Joe's at 337 3<sup>rd</sup> Street, San Rafael, CA

Los Angeles Area supermarkets where fish samples were taken and tested:

- Whole Foods, 6550 East Pacific Coast Highway, Long Beach, CA
- Ralphs, 2250 E. Carson Street, Long Beach, CA
- Trader Joes, 8086 East Coast Highway, Newport Beach, CA
- Trader Joes, 263 S. La Brea, Los Angeles, CA
- Tusquellas Fish & Oyster Bar, 6333 West Third Street, Los Angeles, CA
- Ralphs, 260 S. La Brea Blvd., Los Angeles, CA
- Whole Foods, 6350 West 3<sup>rd</sup> Street, Los Angeles, CA
- Whole Foods, 12905 Riverside Drive, Sherman Oaks, CA

San Diego Area supermarkets where fish samples were taken and tested:

- Albertsons, 1509 E. Valley Pkwy, Escondido, CA
- Vons, 2345 E. Valley Pkwy, Escondido, CA
- Ralphs, 2417 E. Valley Pkwy, Escondido, CA
- Fresh and Easy, 425 N. Ash St., Escondido, CA
- Stater Bros. Market, 635 N. Broadway, Escondido, CA
- Jimbo's, 1633 S. Centre City, Escondido, CA
- Henry's, 13536 Poway Rd., Poway, CA
- Sprouts Farmers Market, 149 S. Las Posas Rd, San Marcos, CA
- Ralphs, 6670 Montezuma, San Diego, CA
- Vons, 6155 El Cajon Blvd, San Diego, CA
- Windmill Farms, 6386 Del Cerro Blvd, San Diego, CA
- Vons, 3550 Murphy Canyon Rd, San Diego, CA

Santa Cruz Area where samples were taken and tested:

- Safeway, 2111 Mission Street, Santa Cruz, CA
- Safeway, 2720 41<sup>st</sup> Avenue, Soquel, CA
- New Leaf Community Markets, 1101 Fair Avenue, Santa Cruz, CA
- New Leaf Community Markets, 1210 41<sup>st</sup> Avenue, Santa Cruz, CA
- Whole Foods, 1710 41<sup>st</sup> Avenue, Capitola, CA
- Traders Joe's, 3555 Clares Street #D, Capitola, CA
- Trader Joe's, 700 Front Street, Santa Cruz, CA
- Staff of Life, 1305 Water Street, Santa Cruz, CA

In each supermarket, GotMercury.org purchased one-quarter pound of swordfish and ahi tuna/yellowfin tuna if available. In the Los Angeles Area survey, GotMercury.org also purchased one-quarter pound salmon if available. GotMercury.org took note if mercury in fish

warning signs were posted. Twenty-two of the 41 stores, a full 53 percent, included in this survey did not have warning signs posted.

San Francisco Bay Area stores that did not have an advisory sign posted:

- Cala Foods, 1095 Hyde Street, San Francisco, CA
- Safeway, 850 La Playa Street, San Francisco, CA
- Trader Joes, 401 Bay Street, San Francisco, CA
- United Market, 515 Third Street, San Rafael, CA
- Trader Joes, 337 Third Street, San Rafael, CA
- Safeway, 838 Sir Francis Drake Blvd, San Anselmo, CA

Los Angeles Area stores that did not have an advisory sign posted:

- Ralphs, 2250 E. Carson Street, Long Beach, CA
- Trader Joes, 263 S. La Brea, Los Angeles, CA
- Tusquellas Fish & Oyster Bar, 6333 West Third Street, Los Angeles, CA
- Ralphs, 260 S. La Brea Blvd., Los Angeles, CA

San Diego Area stores that did not have an advisory sign posted:

- Albertsons, 1509 E. Valley Pkwy, Escondido, CA
- Vons, 2345 E. Valley Pkwy, Escondido, CA
- Ralphs, 2417 E. Valley Pkwy, Escondido, CA
- Fresh and Easy, 425 N. Ash St., Escondido, CA
- Stater Bros. Market, 635 N. Broadway, Escondido, CA
- Henry's, 13536 Poway Rd., Poway, CA
- Sprouts Farmers Market, 149 S. Las Posas Rd, San Marcos, CA
- Ralphs, 6670 Montezuma, San Diego, CA
- Vons, 6155 El Cajon Blvd, San Diego, CA
- Windmill Farms, 6386 Del Cerro Blvd, San Diego, CA
- Vons, 3550 Murphy Canyon Rd, San Diego, CA

Santa Cruz Area stores that did not have an advisory sign posted:

- Staff of Life, 1305 Water Street, Santa Cruz, CA

Recognizing fifty three percent of the retailers included in the California survey did not have mercury in seafood warning signs posted should further illustrate the clear need for legislative and/or regulatory action to mandate all fish sellers to post mercury in fish advisory signs.

**Mercury results for grocery store samples**

***SAN FRANCISCO BAY AREA***

<b>SPECIES TYPE</b>	<b>MERCURY LEVEL</b>	<b>RETAILER</b>
Swordfish	2.06 ppm	United Market, 100 Red Hill Ave., San Anselmo, CA
Swordfish	1.98 ppm	United Market, 515 Third St., San Rafael, CA
Swordfish	1.91 ppm	Whole Foods, 340 Third St., San Rafael, CA
Swordfish	1.88 ppm	Mollie Stones, 2435 California St., San Francisco, CA
Swordfish	1.34 ppm	Whole Foods, 1765 California St., San Francisco, CA
Swordfish	1.23 ppm	Trader Joes, 401 Bay St., San Francisco, CA
Swordfish	1.22 ppm	Safeway, 15 Marina Blvd., San Francisco, CA
Swordfish	1.13 ppm	Whole Foods, 3950 24 <sup>th</sup> Street, San Francisco, CA
Swordfish	1.02 ppm	Mollie Stones, 635 Portola Dr., San Francisco, CA
Ahi Tuna/Yellowfin Tuna	1.09 ppm	United Market, 515 Third St., San Rafael, CA
Ahi Tuna/Yellowfin Tuna	0.69 ppm	Whole Foods, 1765 California St., San Francisco, CA
Ahi Tuna/Yellowfin Tuna	0.62 ppm	Whole Foods, 340 Third St., San Rafael, CA
Ahi Tuna/Yellowfin Tuna	0.54 ppm	Cala Foods, 1095 Hyde St., San Francisco, CA
Ahi Tuna/Yellowfin Tuna	0.47 ppm	Safeway, 838 Sir Francis Drake Blvd., San Anselmo, CA
Ahi Tuna/Yellowfin Tuna	0.46 ppm	Safeway, 850 La Playa St., San Francisco, CA
Albacore Tuna	0.32 ppm	Trader Joes, 337 3 <sup>rd</sup> St., San Rafael, CA
Ahi Tuna/Yellowfin Tuna	0.31 ppm	Trader Joes, 337 3 <sup>rd</sup> St., San Rafael, CA
Ahi Tuna/Yellowfin Tuna	0.29 ppm	Mollie Stones, 635 Portola Dr., San Francisco, CA
Halibut	0.23 ppm	Trader Joes, 401 Bay St., San Francisco, CA
Ahi Tuna/Yellowfin Tuna	0.21 ppm	Whole Foods, 3950 24 <sup>th</sup> St., San Francisco, CA
Ahi Tuna/Yellowfin Tuna	0.21 ppm	Mollie Stones, 2435 California St., San Francisco, CA
Ahi Tuna/Yellowfin Tuna	0.04 ppm	Trader Joes, 401 Bay St. San Francisco, CA
Ahi Tuna/Yellowfin Tuna	0.01 ppm	Safeway, 15 Marina Blvd., San Francisco, CA

**LOS ANGELES AREA**

<b>SPECIES TYPE</b>	<b>MERCURY LEVEL</b>	<b>RETAILER</b>
Swordfish	3.06 ppm	Ralphs, 260 S. La Brea, Los Angeles, CA
Swordfish	2.67 ppm	Whole Foods, 6350 West 3 <sup>rd</sup> St, Los Angeles, CA
Swordfish	2.41 ppm	Ralphs, 2250 E. Carson St., Long Beach, CA
Swordfish	1.88 ppm	Tusquella Fish & Oyster Bar, 6333 West 3 <sup>rd</sup> St., Los Angeles, CA
Swordfish	1.65 ppm	Whole Foods, 12905 Riverside Drive, Sherman Oaks, CA
Swordfish	1.32 ppm	Whole Foods, 6550 East PCH, Long Beach, CA
Ahi Tuna	1.30 ppm	Ralphs, 260 La Brea Blvd., Los Angeles, CA
Ahi Tuna	0.702 ppm	Ralphs, 2250 E. Carson St., Long Beach, CA
Swordfish	0.633 ppm	Trader Joes, 263 La Brea, Los Angeles, CA
Swordfish	0.502 ppm	Trader Joes, 8086 East Coast Highway, Newport Beach, CA
Ahi Tuna	0.471 ppm	Whole Foods, 12905 Riverside Dr., Sherman Oaks, CA
Ahi Tuna	0.397 ppm	Whole Foods, 6550 East PCH, Long Beach, CA
Salmon	0.344 ppm	Whole Foods, 6350 West 3 <sup>rd</sup> St., Los Angeles, CA
Ahi Tuna	0.268 ppm	Trader Joes, 8086 East Coast Highway, Newport Beach, CA
Ahi Tuna	0.245 ppm	Whole Foods, 6350 West 3 <sup>rd</sup> St., Los Angeles, CA
Ahi Tuna	0.237 ppm	Trader Joes, 263 S. La Brea, Los Angeles, CA
Salmon	0.154 ppm	Whole Foods, 12905 Riverside Drive, Sherman Oaks, CA
Salmon	0.25 ppm	Ralphs, 2250 E. Carson St., Long Beach, CA
Salmon	0.080 ppm	Trader Joes, 8086 East Coast Highway, Newport Beach, CA
Salmon	0.076 ppm	Tusquellas Fish & Oyster Bar, 6333 West 3 <sup>rd</sup> St., Los Angeles, CA
Salmon	0.048 ppm	Trader Joes, 263 S. La Brea Blvd., Los Angeles, CA
Salmon	0.015 ppm	Ralphs, 260 S. La Brea Blvd., Los Angeles, CA
Salmon	0.010 ppm	Whole Foods, 6550 East PCH, Long Beach, CA

***San Diego Area***

<b>SPECIES TYPE</b>	<b>MERCURY LEVEL</b>	<b>RETAILER</b>
Swordfish	2.70 ppm	Sprouts Farmers Market, 149 S. Las Posas Rd, San Marcos, CA
Swordfish	2.13 ppm	Albertsons, 1509 E. Valley Pkwy, Escondido, CA
Swordfish	1.83 ppm	Windmill Farms, 6386 Del Cerro Blvd, San Diego, CA
Swordfish	1.43 ppm	Henry's, 13536 Poway Rd, Poway, CA
Swordfish	1.37 ppm	Ralphs, 2417 E. Valley Pkwy, Escondido, CA
Swordfish	1.27 ppm	Vons, 2345 E. Valley Pkwy, Escondido, CA
Swordfish	1.02 ppm	Ralphs, 6670 Montezuma, San Diego, CA
Swordfish	1.00 ppm	Stater Bros, #140, 635 N. Broadway, Escondido, CA
Tuna	0.78 ppm	Vons, 3550 Murphy Canyon Rd, San Diego, CA
Tuna	0.52 ppm	Vons, 2417 E. Valley Pkwy, Escondido, CA
Swordfish	0.46 pp	Vons, 3550 Murphy Canyon Rd, San Diego, CA
Swordfish	0.45 ppm	Vons, 6155 El Cajon Blvd, San Diego, CA
Tuna	0.42 ppm	Jimbo's, 633 S. Centre City, Escondido, CA
Tuna	0.27 ppm	Fresh & Easy, 425 N. Ash St, Escondido, CA
Tuna	0.24 ppm	Windmill Farms, 6386 Del Cerro Blvd, San Diego, CA
Tuna	0.14 ppm	Sprouts Farmers Market, 149 S. Las Posas Rd, San Marcos, CA
Tuna	0.11 ppm	Henry's, 13536 Poway Rd, Poway, CA
Tuna	0.01 ppm	Fresh & Easy, 425 N. Ash St, Escondido, CA

***Santa Cruz Area***

<b>SPECIES TYPE</b>	<b>MERCURY LEVEL</b>	<b>RETAILER</b>
Swordfish	2.47 ppm	New Leaf Community Markets, 1210 41 <sup>st</sup> Avenue, Capitola, CA
Swordfish	2.28 ppm	Whole Foods, 1710 41 <sup>st</sup> Avenue, Capitola, CA
Swordfish	2.14 ppm	New Leaf Community Markets, 1101 Fair Avenue, Santa Cruz, CA
Swordfish	0.83 ppm	Trader Joe's, 700 Front Street, Santa Cruz, CA
Ahi Tuna	0.61 ppm	New Leaf Community Markets, 1210 41 <sup>st</sup> Avenue, Capitola, CA
Ahi Tuna	0.46 ppm	Traders Joe's, 3555 Clares Street #D,

		Capitola, CA
Ahi Tuna	0.39 ppm	New Leaf Community Markets, 1101 Fair Avenue, Santa Cruz, CA
Swordfish	0.36 ppm	Traders Joe's, 3555 Clares Street #D, Capitola, CA
Ahi Tuna	0.38 ppm	Whole Foods, 1710 41 <sup>st</sup> Avenue, Capitola, CA
Ahi Tuna	0.37 ppm	Staff of Life, 1305 Water Street, Santa Cruz, CA
Ahi Tuna	0.31 ppm	Trader Joe's, 700 Front Street, Santa Cruz, CA
Yellowfin Tuna	0.27 ppm	Safeway, 2720 41 <sup>st</sup> Avenue, Soquel, CA
Yellowfin Tuna	0.21 ppm	Safeway, 2111 Mission Street, Santa Cruz, CA
Albacore Tuna	0.04 ppm	New Leaf Community Markets, 1101 Fair Avenue, Santa Cruz, CA

The mercury levels of the swordfish tested averaged 1.47 ppm. One swordfish sampled registered 3.06 ppm, three times the FDA action level.

The average mercury level of the ahi tuna/yellowfin tuna was 0.407 ppm, although nine tuna samples were above 0.5 the mercury level recommended by most developed nations and the limit set by the EPA for non-commercial fish caught in rivers, streams and lakes. It is clearly obvious that tuna is not a low mercury fish.

Perhaps the most significant point of this sampling is that nearly one-third of the fish purchased at grocery stores contains levels of mercury this the federal government has deemed unsafe for consumption and more than half of the retailers did not post mercury advisory signs.

Choosing fish at the seafood counter shouldn't be a toxic gamble. High-risk groups such as women and children should take caution and not eat swordfish and severely limit tuna consumption. People cannot assume what is being sold at the fish counter is safe to eat.

## Sushi Restaurants

GotMercury.org purchased 20 fresh samples of “nigiri” style tuna sushi at ten San Francisco Bay Area and 10 Los Angeles Area sushi restaurants. “Nigiri” style is rice covered with fish or shellfish and is served in pairs.



San Francisco Bay Area restaurants where tuna sushi samples were taken and tested:

- Yo Yo Sushi, 3958 Rivermark Plaza, Santa Clara, CA
- Michi Sushi, 2220 S. Winchester Blvd, Campbell, CA
- Blowfish Sushi, 335 Santana Row, Ste. 1010, San Jose, CA
- Robata Grill & Sushi, 591 Redwood Highway, Mill Valley, CA
- Sushi To Dai For, 816 4<sup>th</sup> Street, San Rafael, CA
- Coach Sushi, 532 Grand Ave, Oakland, CA
- Sushiko Japanese, 64 Shattuck Square, Berkeley, CA
- Tamasei Sushi, 3856 24<sup>th</sup> Street, San Francisco, CA
- Ebisu Japanese Restaurant, 1283 9<sup>th</sup> Ave, San Francisco, CA
- Zushi Puzzle, 1910 Lombard Street, San Francisco, CA

Los Angeles Area restaurants where tuna sushi samples were taken and tested:

- Bluefin, 7952 E. Coast Highway, Newport Coast, CA
- Kingyo Sushi, 21135 Newport Coast Drive, Newport Beach, CA

- Katsuya, 702 Americana Way, Glendale, CA
- Kabuki, 20940 Ventura Blvd., Woodland Hills, CA
- Sushi Roku, 8445 W. 3<sup>rd</sup> Street, Los Angeles, CA
- Midori, 11622 Ventura Blvd., Studio City, CA
- Nobu Malibu, 3835 Cross Creek Road, Malibu, CA
- Wokcano, 8408 W. 3<sup>rd</sup> Street, West Hollywood, CA
- Koi, 730 N. La Cienega Blvd., Los Angeles, CA
- Monsoon Café, 1212 3<sup>rd</sup> Street Promenade, Santa Monica, CA

Each sample was handled as directed by Micro Analytical Systems, Inc. laboratory protocol for fish sample collection. The samples were individually placed in hygienic and freezer safe plastic containers and marked with a number indicating the type of species and place of purchase. At each establishment GotMercury.org purchased one order of nigiri style tuna sushi. The mercury levels of sushi tested were an average 0.721 ppm.

A typical serving of nigiri tuna sushi is between one and two ounces. According to government guidelines for bigeye tuna (0.639 ppm), a woman weighing 140 pounds and eats a two-ounce portion of nigiri tuna sushi would be exposed to a mercury level that is 81 percent of government exposure guidelines. Most sushi meals would average more than a tiny two-ounce serving of fish. So if that same 140-pound woman ate a six-ounce portion of tuna sushi based on the average mercury levels (0.721 ppm) in the GotMercury.org investigation her mercury level soars to 300 percent above the government's reference dose.

There are several species of tuna served in sushi restaurants. "Ahi" tuna is the generic term for tuna. It can refer to yellowfin, bigeye or albacore tuna all which may vary slightly in their mercury levels.

Ordering at a sushi restaurant can be confusing. There is no set standard for the names of tuna species or even the cut of the fish. This lack of standardization can also lead to extreme variabilities in mercury levels.

Tuna served in restaurants is generally one of two different species, the bluefin tuna traditionally known as 'maguro,' which is usually fairly lean, and the yellowfin tuna, which is a fattier species. Sometimes tuna sushi is further identified on the menu based on the fat content and labeled "toro" or "akami".

Often the species of tuna is not clearly identified, and a consumer could be eating several types of tuna in one sushi meal. Many of the types of tuna at sushi restaurants are from species that are overfished and on the brink of collapse.



Bluefin tuna is the most prized of the tuna species. However, bluefin tuna is in danger of becoming extinct within 10 years due to rampant overfishing. The bluefin tuna is critically endangered. The International Commission for the Conservation of Atlantic Tunas (ICCAT) stated in an October 2009 report that Atlantic bluefin tuna stocks are declining dramatically, by 72 percent in the Eastern Atlantic, and by 82 percent in the Western Atlantic. In March 2010, the United Nations rejected a US-backed effort to impose a total ban on Atlantic Bluefin tuna fishing and trading. Bluefin tuna is also known to have higher amounts of mercury than other tuna species.

Despite a rapid crashing of the bluefin stock, four of the twenty restaurants GotMercury.org visited had bluefin listed on their menus:

- Michi Sushi, Campbell, CA
- Bluefin, Newport Coast, CA
- Sushi Roku, Hollywood, CA
- Nobu Malibu, Malibu, CA

Not a single restaurant had mercury-in-fish warning signs posted to alert customers about the dangers of mercury in seafood.

## Sushi Mercury Results

### *San Francisco Bay Area*

SPECIES TYPE	MERCURY LEVEL	RESTAURANT
Tuna	0.89 ppm	Yo Yo Sushi, 3958 Rivermark Plaza, Santa Clara, CA
Tuna	0.85 ppm	Blowfish Sushi, 355 Santana Row, Ste. 1010, San Jose, CA
Tuna-Bluefin	0.82 ppm	Michi Sushi, 2220 Winchester Blvd., Campbell, CA
Tuna	0.81 ppm	Zushi Puzzle, 1910 Lombard St., San Francisco, CA
Tuna	0.77 ppm	Robata Grill & Sushi, 591 Redwood Hwy, Mill Valley, CA
Tuna	0.75 ppm	Sushi To Dai For, 816 Fourth St., San Rafael, CA
Tuna	0.51 ppm	Coach Sushi, 23 Grand Ave., Oakland, CA
Tuna	0.47 ppm	Sushiko Japanese, 64 Shattuck Square, Berkeley, CA
Tuna	0.25 ppm	Tamasei Sushi, 3856 24 <sup>th</sup> St., San Francisco, CA
Tuna	0.16 ppm	Ebisu Japanese Restaurant, San Francisco, CA

### *Los Angeles Area*

SPECIES TYPE	MERCURY LEVEL	RESTAURANT
Tuna	2.29 ppm	Katsuya, 702 Americana Way, Glendale, CA
Tuna	1.55 ppm	Midori, 11622 Ventura Blvd., Studio City, CA
Tuna	0.931 ppm	Wokcano, 8408 W. 3 <sup>rd</sup> St., West Hollywood, CA
Tuna	0.901 ppm	Monsoon Café, 1212 3 <sup>rd</sup> St. Promenade, Santa Monica, CA
Tuna-Bluefin	0.824 ppm	Sushi Roku Hollywood, 8445 W. 3 <sup>rd</sup> St., Los Angeles, CA
Tuna	0.531 ppm	Nobu Malibu, 3835 Cross Creek Rd., Malibu, CA
Tuna-Bluefin	0.453 ppm	Bluefin, 7952 E. Coast Highway, Newport Coast, CA
Tuna	0.328 ppm	Kabuki, 20940 Ventura Blvd., Woodland Hills, CA
Tuna	0.244 ppm	Kingyo, 21135 Newport Coast Dr., Newport Beach, CA

Tuna	0.095 ppm	Koi, 730 N. La Cienega Blvd., Los Angeles, CA
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## **Conclusions**

The extremely high levels of mercury in swordfish and the variability of mercury levels in tuna are troubling. A study published in the journal Environmental Research shows that tuna, fresh, frozen and canned accounts for 37 percent of mercury in the American diet.<sup>5</sup> Diners and shoppers should be made aware of the presence of mercury in seafood through placement of warning signs in visible locations.

This simple, low cost measure will enable customers to make healthier choices when buying seafood.

A recent report published by Context Marketing showed that 60 percent of Americans cited mercury in seafood as their number one food safety issue.<sup>6</sup> It is clear the California policy makers and seafood sellers need to do more to protect people who eat fish. GotMercury.org is confident our policy recommendations would provide a safeguard in protecting people against the hazards of mercury in seafood.

GotMercury.org provides a free on line mercury calculator in English and Spanish offering people the ability to estimate mercury exposure from eating fish at [www.gotmercury.org](http://www.gotmercury.org). The mercury calculator is also available for mobile phone users at [www.gotmercury.mobi](http://www.gotmercury.mobi). These tools help take the mystery out of which seafood is safe to eat with the regard to the presence of mercury.

GotMercury.org is part of Turtle Island Restoration Network's efforts to protect the environment and the public from mercury. Because of the ubiquitous nature of mercury in our environment and because federal and state public health agencies are not doing enough to raise public awareness and protect the public from mercury, we developed gotmercury.org.

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<sup>1</sup> Dan R. Laks, Assessment of chronic mercury exposure within the U.S. population, National Health and Nutrition Examination Survey, 1999-2006, BioMetals, ahead of print, 2009. doi: 10.1007/s10534-009-9261-0

<sup>2</sup> Kozue Yaginuma-Sakuraia, Katsuyuki Muratac, Miyuki Shimadaa, Kunihiko Nakaia, Naoyuki Kurokawaa, Satomi Kameoa and Hiroshi Satoh, Intervention study on cardiac autonomic nervous effects of methylmercury from seafood, Neurotoxicology and Teratology Volume 32, Issue 2, March-April 2010, Pages 240-245

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<sup>3</sup> Lynch, ML, L-S Huang, C Cox, JJ Strain, GJ Myers, MP Bonham, CF Shamlaye, A Stokes-Riner, JMW Wallace, EM Duffy, TW Clarkson and PW Davidson. 2010. Varying coefficient function models to explore interactions between maternal nutritional status and prenatal methylmercury toxicity in the Seychelles Child Development Nutrition Study

<sup>4</sup> Joachim Mutter; Annika Curth; Johannes Naumann; Richard Deth; Harald Walach, Does Inorganic Mercury Play a Role in Alzheimer's Disease? A Systematic Review and an Integrated Molecular Mechanism. *Journal of Alzheimer's disease*, 2010 Aug

<sup>5</sup> Edward Groth III, Ranking the contributions of commercial fish and shellfish varieties to mercury exposure in the United States: Implications for risk communications, *Environmental Research*, Volume 110, Issue 3, April 2010, Pages 226-236

<sup>6</sup> <http://gotmercury.org/downloads/foodissuesreport.pdf>