TUNA MELTDOWN

How Green Groups and the Federal Government Put America's Poorest Children at Risk

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REVISED AND UPDATED

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INTRODUCTION

Canned tuna is the cheapest and most readily available source of omega-3 fatty acids in the United States. And these omega-3s are essential to the healthy neurological development of children *in utero*.[1] Between 2000 and 2006, hundreds of thousands of children born to women in low-income U.S. households were denied the benefits of omega-3 fatty acids due to complicated and inaccurate federal fish consumption guidelines, and because of irresponsible public-health messages promoted by environmental advocacy groups.

Consumption of omega-3-rich fish is also known to lower risks of cardiac, cardiovascular, and eye diseases.[2] And pregnancy diets rich in omega-3 fatty acids are clearly linked to a decrease in pre-term births.[3] But the scientific consensus about the health benefits of eating fish has taken a back seat to activist warnings and sensationalistic journalism about trace levels of mercury which have never been shown to be harmful.

The published, peer-reviewed scientific literature does not contain a single medically documented case of mercury poisoning related to the consumption of commercially sold fish (including tuna) in the United States. Similarly, there have not been any reports in the United States of fetal mercury toxicity linked to fish consumption. While there have been rare reports of extreme mercury-poisoning incidents in other countries (Japan and Iraq), nothing similar has been reported in the United States. These cases involved levels of exposure around 100 times greater than what Americans typically encounter from the food they eat.

By steering consumers away from the fish counter and the canned tuna aisle, **overblown warnings about trace mercury levels have directly and negatively impacted public health, especially the neurological development of children born to low-income mothers.**

Using demographic data obtained from published federal government sources (including the U.S. Census Bureau and the Centers for Disease Control and Prevention) and consumer spending information from ACNielsen (the most respected and accurate analyst of consumer behavior), **this report offers the first quantitative measurement of that impact.**

On December 12, 2008 *The Washington Post* reported that the Food and Drug Administration supported abandoning its nearly five-year-old seafood advisory. An FDA report circulating throughout the federal government, said the *Post*, "argued that nutrients in fish, including omega-3 fatty acids, selenium and other minerals could boost

a child's IQ by three points. The greatest benefits, the FDA report said, would come from eating more than 12 ounces of fish a week, which is the current limit advised for pregnant women, women of childbearing age, nursing mothers and young children."[4]

The available scientific evidence now demonstrates that the federal government's seafood advisory causes real harm instead of preventing it. Any effort to reverse that faulty advice should be met with great enthusiasm, especially by Americans who care deeply about public health in our nation's disadvantaged communities.

THE BOTTOM LINE

For many low-income families, canned tuna is the only consistently affordable source of dietary omega-3 fatty acids. But the panic over trace mercury levels has resulted in a decline in the number of low-income households buying canned tuna, harming the health of millions of vulnerable Americans. The data in this report reflect that reality.

Approximately 4.4 million U.S. households earning $30,000 or less completely eliminated their purchases of canned tuna between 2000 and 2006. During those years, women in those households gave birth to nearly 260,000 children.

While alarmist campaigns and government warnings have continued to frighten pregnant women away from canned tuna, science has evolved to show that a greater danger lurks in *not* eating generous amounts of fish during pregnancy. A study appearing in the March 2008 *American Journal of Epidemiology* demonstrated that children of women who consumed the most low-mercury, omega-3-rich fish while pregnant—specifically canned tuna—scored the highest on intelligence and motor-skills tests.[5] And a 2007 study published in *The Lancet*, a leading British medical journal, concluded that avoiding dietary omega-3s during pregnancy has a measurable detrimental health effect: **Children whose mothers eat no fish during pregnancy are 29 percent more likely to have abnormally low IQs.**[6]

This groundbreaking research in *The Lancet* was funded by the United States government and led by a noted National Institutes of Health researcher. Its research team found "no evidence to lend support to the warnings of the U.S. advisory that pregnant women should limit their seafood consumption."[7] The lead researcher later explained that "compliance with the advisory was associated with harm [to children], specifically with regard to verbal development."[8]

> "By steering consumers away from the fish counter and the canned tuna aisle, overblown warnings about trace mercury levels have harmed the neurological development of children born to low-income mothers. Green groups and the federal government share the blame.

GOVERNMENT MISINFORMATION

Mass-communication campaigns from environmental advocacy groups have contributed significantly to the U.S. decline in canned-tuna purchasing. But the federal government's seafood advisories bear equal responsibility. The government's failure to properly cope with pressure from these special interests became clear in 2004, when the Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA) released their current co-authored seafood consumption advisory.

The EPA included a 1,000-percent safety cushion during the formulation of its methylmercury "Reference Dose"[9]—the maximum level of continuous lifetime exposure believed to be without risk of harm.[10] Likewise, the FDA acknowledges that its "Action Level" for mercury in commercially available fish was designed to limit consumers' exposure "to levels 10 times lower than the lowest levels associated with adverse effects"[11] (another ten-fold safety factor).

The FDA/EPA consumption advisory specifically recommends that expectant mothers should consume no more than 12 ounces (just two cans) of tuna per week. But the *Lancet* and *American Journal of Epidemiology* studies observed that realizing the health benefits of omega-3 fatty acids requires the consumption of *more* than the government advisory permits. Neither federal government agency has taken steps to amend its guidelines to reflect current science.

Unfortunately, the joint EPA/FDA seafood advisory serves to validate environmental campaigns that, for reasons which vary from fighting coal-fired power plants to saving sea turtles, recklessly exploit groundless consumer concerns about seafood and health.

The EPA Reference Dose is particularly problematic, since its scientific basis depends almost entirely[12] on a single study, conducted in Denmark's Faroe Islands, whose participants were exposed to mercury by eating whale meat—not fish.[13] Unlike fish, whale meat is typically contaminated with a wide variety of pollutants.[14] And whale meat is not a part of the American diet.

In 2004 the lead Faroe researcher acknowledged in the *Boston Herald* that "fish consumption does not harm Faroese children ... the fish consumption most likely is beneficial to their health."[15]

One subset of the studied population ate fish and other typical seafood, but not whale meat. No neurological deficiency was measured in these consumers. In fact, their scores on intelligence tests were above the Faroese average.[16] This underscores the flawed basis for the EPA's methylmercury Reference Dose.

Similarly, a thirteen-year study conducted in the Seychelles Islands (in the Indian Ocean) has continually found no negative health effects from exposure to mercury through heavy fish consumption.[17] On average, people in the Seychelles eat between 12 and 14 fish meals every week, and mercury levels measured in the island natives are *higher* than those measured in the United States.[18] But they suffer no ill effects from mercury, and they receive a significant health benefit from making fish a large part of their diet.

CALIFORNIA'S MERCURY CRUSADE

In May 2006 a California Superior Court judge struck down a frivolous lawsuit brought by the state Attorney General. The suit's goal—using Proposition 65, California's "right-to-know" toxics law covering man-made chemicals—was to force seafood companies to add restrictive mercury warning labels to tuna cans. But Judge Robert Dondero ruled against the government's position on every issue argued before him.[19] And although California's government appealed that decision,[20] the state Court of Appeals upheld it in March 2009.

The 2009 Appeals Court decision hinged on the fact that the tiny mercury traces in canned tuna occur naturally—despite repeated claims by environmental activist groups that mercury in ocean fish originates with coal-burning power plants. Signs or labels warning about man-made contaminants don't apply to mercury in canned tuna, and the court ruled that they're unnecessary.

This verdict remains a powerful reminder of just how ridiculous the health "hazard" claims against canned tuna really are—especially in the face of demonstrable benefits to lower-income Americans.

Health warnings on canned tuna, Dondero concluded in his 2006 ruling, "could have adverse health consequences"[21] for the public, since seafood warnings tend to drive consumers toward less healthy food choices. And besides, he added, mercury in deep ocean fish like tuna "is a natural part of the product's environment."[22] (California's Proposition 65 law has an exception for chemicals that are "naturally occurring,"[23] a phrase which describes the tiny traces of mercury in tuna perfectly.)

The original case really boiled down to the question of how much of this naturally occurring mercury might constitute a health hazard worth warning consumers about. The harm threshold recommended by the California Attorney General, as presented by former EPA toxicologist Dr. Deborah Rice, was so low that it would require warnings on—in the judge's words—"all servings of fish and shellfish literally larger than a grain of rice."[24]

In his ruling, Judge Dondero dismissed Rice's testimony as "misleading," "unreliable," and "biased."[25] Considering that there is no documented evidence in the United States of real mercury-related harm or illness caused by ordinary fish consumption, following her lead could have produced a ludicrous outcome.

Dondero acknowledged the health considerations of low-income Californians and their unborn children in his decision, noting the conclusion of former U.S. Health and Human Services Secretary Dr. Louis Sullivan, who testified that "consumption of canned tuna, which is a low-cost, low-calorie food, is vital to American health ... especially among the poor."[26]

The omega-3 fatty acids in canned tuna have been scientifically linked with good cardiovascular health, improved brain function, and even protection against strokes and some cancers.[27, 28] And while omega-3s are available in other more expensive seafood options, these are seldom available to poverty-level Californians living on limited budgets.

> "4.4 million U.S. households earning $30,000 or less stopped buying canned tuna between 2000 and 2006. During those years, nearly 260,000 children were born in those households. Canned tuna was the only source of omega-3 fatty acids their mothers could afford to buy.

The EPA has never acknowledged that heavy reliance on dietary whale meat makes the Faroe Islands population a poor model for citizens of the United States, nor has it taken any steps to include the encouraging Seychelles findings in its risk assessment. It's as though, in the absence of demonstrable harm, the experiences of the Seychelles Islanders are simply easier to ignore.

As a result, the federal government's seafood consumption advisory is hyper-precautionary and alarmist, far out of touch with the scientific mainstream. As National Institutes of Health researcher Dr. Joseph Hibbeln told WebMD News in 2007, it "apparently causes the harm that it was intended to prevent."[29] He added in an interview with *New Scientist* that only when pregnant women eat *more* than the government-recommended amount of fish do "their children do the best."[30]

As one step toward safeguarding the health of America's most vulnerable populations—especially children in the most underprivileged households—the FDA and EPA should bring their advisory in line with the scientific consensus about well-documented health benefits of omega-3 fatty acids in seafood, including canned tuna.

Activist groups should also avoid making canned tuna the focus of seafood-oriented campaigns. It is no longer possible to deny the negative public-health consequences for socioeconomically disadvantaged American children whose mothers swear off the only source of omega-3 fatty acids that fits within their household budgets.

In addition, the Food and Drug Administration should work harder to communicate with American women about the health benefits of eating more fish than they currently do. According to FDA research presented at the 2008 annual meeting of the International Association for Food Protection, no segment of the American female population eats more than one-quarter of the government-recommended amount of fish.[31]

A LIGHT AT THE END OF THE TUNNEL?

In December 2008 the Environmental Working Group (EWG, a Washington-based activist organization) "leaked" online a working draft of a new commercial seafood "risk assessment" from the Food and Drug Administration.[32] Predictably, EWG chose to release a copy of the FDA draft that was littered with negative comments from an Environmental Protection Agency official.[33] The organization then worked with *The Washington Post* to publicize EPA's (and its own) complaints about what amounted to a new FDA approach on seafood consumption advice.[34]

FDA released an updated draft of that same report in early January 2009, and announced a 90-day period for the public to comment.[35] The Sea Turtle Restoration Project (another activist group, with a "Got Mercury?" website) quickly moved to deluge the federal government with hundreds of cookie-cutter criticisms and grumbling form-letter reactions.[36]

What was so objectionable in this FDA report? For the first time, the agency addressed potential risks from mercury traces in fish *along with the health benefits* from eating seafood. The message was clear from the draft's very title, which began: "A Report of Quantitative Risk *and Benefit* Assessment of Consumption of Commercial Fish"[37] [emphasis added].

Harvard's Emily Oken explained the agency's change of heart to the *Los Angeles Times*: "The FDA/EPA guidelines were considering the risks of mercury primarily as a contaminant but did not consider the benefits of the nutrients of fish, which may offset the risks of mercury. Because at that time, there had not been any studies that looked at the overall effect of fish during pregnancy."[38]

Nothing in the report suggested that FDA was ready to rescind its 2004 seafood advisory. Still, one thing is clear: FDA now understands that it's time to consider whether over-reaching government advice brings unintended consequences along with it.

METHODOLOGY

Using data from the ACNielsen Homescan project—the most accurate survey of consumer habits[39]—we found that nearly 4.4 million low-income households (where household income was $30,000 or less) stopped buying canned tuna between 1999 and 2006.

The Nielsen data show that in 1999, 80 percent of low-income American households were buying canned tuna. By 2006, that number had dropped to 69 percent. This is a decline of 8,029,156 households; when adjusted for demographic shifts (families at this income level made up a significantly smaller portion of the American population in 2006 as compared with 1999), that number is 4,386,654.

We assumed that unlike those living in households in higher income brackets, most low-income Americans can't afford to replace canned tuna with more expensive sources of omega-3 fatty acids.

This idea is supported by further data from ACNielsen, which show that other types of seafood purchases did not replace tuna. (There was a 3-million-household decline in overall seafood purchases among low-income Americans during the same period.) Other non-seafood-based sources of omega-3 fatty acids, such as flaxseed oil, are much more expensive and not widely available.

We calculated the number of children born to mothers in those households during the same period of time.

The U.S. Census Bureau makes demographic data publicly available that provides population numbers by gender and household income.[40] We examined data representing women living in households where income was $30,000 or less.

Using data from 2005 as an example, 40,087,000 women between the ages of 15 and 49 lived in those households.[41]

Determining how many children were born to those women requires "fertility rate" data from the Centers for Disease Control and Prevention (CDC), which is sorted both by household income (in increments of $2,500) and by the age of the mother (ages 15-24, 25-34, 35-44, and 45-49).[42, 43]

Using 2005 again as an example, the fertility rate for women 15-24 years of age in low-income households was 71.3—meaning that 71.3 out of every 1,000 women in this category gave birth.[44] So there were 889,610 babies born to the 12,477,000 women in this demographic group.

Repeating this calculation for the women in all demographic groups, we find that 2,328,279 babies were born. Taking into account the infant mortality rates for these women (also available from the CDC; in 2005 the rate was 6.72 deaths per 1,000 births[45]), the final number of "live births" among women living in low-income households was 2,312,633.

Once we had calculated the demographic data, we determined how many of these children were born into households that had stopped buying canned tuna.

> "The federal government's seafood advisory is alarmist and far out of touch with the scientific mainstream. As National Institutes of Health researcher Dr. Joseph Hibbeln told WebMD News in 2007, it "causes the harm that it was intended to prevent."

Data provided by ACNielsen show a 1.875 percent decline (770,000 households) in the number of low-income households purchasing canned tuna in 2005. Combining the demographic data and the consumer data, it emerges that 43,359 children were born into low-income households that had stopped buying canned tuna.

These calculations, applied over each of the years 2000-2006, show us that women in U.S. households earning a total of $30,000 or less gave birth to **256,670 children** who were denied the health benefits of omega-3 fatty acids because of a decision to stop buying canned tuna.

A peer-reviewed 2007 study published in the *The Lancet* has established that each of these children was 29 percent more likely (compared with children whose mothers did eat canned tuna) to have abnormally low IQs.[46]

MERCURY SCARE TIMELINE

Why did nearly 4.5 million of America's poorest households stop buying canned tuna between 2000 and 2006? What changed during these years?

A timeline of major "mercury scare" episodes during this period illustrates how the scientific consensus about the health benefits of eating fish fell off the public's radar. There is plenty of blame to go around. Environmental advocacy groups, the mass media, and the federal government all play roles in this story, and understanding what went wrong (and how best to fix it) requires an earnest look back at how these players interacted to steer vulnerable Americans in the wrong direction.

The ultimate result—poor children being denied the health benefits of maternal fish intake during pregnancy—did not come about overnight. As environmental groups portrayed trace levels of mercury in fish as an emergency public health issue, government ambivalence gave them license to be more aggressive in their efforts to court public opinion. What began as a fragmented effort to put mercury on the national agenda gradually became a concerted and loud campaign directly targeting consumers. The Food and Drug Administration's 2001 consumer seafood advisory was the first major turning point in that process.

As in previous years, environmentalists had been pressuring the Department of Health and Human Services to bring mercury levels in fish to public attention. One major motivation for this was to raise public ire over mercury-emitting coal-fired power plants, a cause that had gained limited momentum in the 1990s. The FDA reached its breaking point on the mercury issue in 2001.

Up to that point the seafood-mercury issue had been the subject of a mild but hardly newsworthy scientific debate. Rather than opting for an extended and balanced review of the science, however, the FDA rushed ahead with a **Consumer Advisory in January 2001**.[47] The result was a premature and unbalanced set of guidelines that set a precedent for the flawed consumer advisory as it exists today.

Despite the existence of contradictory scientific studies and a set of *nutrition* guidelines that called for the public to eat more fish, FDA's 2001 advisory applied a

mercury-tinted skull and crossbones to fish. The advisory also opened the floodgates for the fish panic that followed. Apocalyptic green group campaigns about "dangers" from mercury in fish received instant validation—and a public platform from national news outlets such as **ABC's *20/20***.[48] The public perception of seafood safety has yet to recover. **Lower-income families (who may be disadvantaged both in terms of education levels and access to competent healthcare advice) have been hardest hit by the resulting misconceptions.**

The inclusion of a brief "do not eat" fish list in the 2001 advisory was a major government miscue. In effect, the FDA put its seal of approval on a set of arbitrary fish-intake limits.

As early as 1994, that same agency had acknowledged in its *FDA Consumer Magazine* that its principal mechanism for regulating mercury in fish, the "Action Level," was "established to limit consumers' methyl mercury exposure to levels 10 times lower than the lowest levels associated with adverse effects."[49] The FDA had no compelling reason to begin blacklisting *any* fish species other than to pacify pressure groups, since it knew the risk of developing mercury poisoning from commercially available fish was practically nonexistent.

But by framing the mercury question in black and white terms, the federal government had opened the door for the eventual tarring and feathering of the ubiquitous canned tuna.

It didn't take long after the 2001 guidelines for green groups to shift gears. In April of that year, a mere three months after the advisory's release, the Environmental Working Group (EWG) stepped up its efforts against tuna.

Seeing an opportunity to steer public opinion, EWG caught the attention of science editors across the country with a report titled **"Brain Food: What women should know about mercury contamination in fish."**[50] By 2002, EWG was targeting FDA directly. It wasn't long before the government agency called an advisory panel into session to consider the newest green-group demand.

CAN HIGHER PRICES ACCOUNT FOR THE DECLINE IN TUNA CONSUMPTION?

No. In fact, data from the U.S. Department of Labor's Consumer Price Index show that the purchasing power of the American dollar decreased by 21 percent between 1999 and 2006,[51] but the average price of canned tuna rose by only one percent during the same period.[52] So even though consumer goods became significantly more expensive during the years covered in this report, canned tuna was actually cheaper in 2006 in "real" (inflation-adjusted) dollars than it was in 1999.

In everyday terms, the price consumers paid for a can of tuna increased by an average of less than 1 cent per ounce between 1999 and 2006. That's around a 5-cent-per-can increase, which was roughly one-fourth the rate of increase of overall food prices.

While short-term spikes certainly occur (as consumers at all income levels buy slightly more tuna when it's "on sale," for instance), it doesn't seem plausible that these minor variations accounted for the dramatic drop-off in canned tuna purchasing that we've seen among America's most economically disadvantaged families.

> "According to a landmark 2007 study published in a leading British medical journal, children whose mothers eat no fish during pregnancy are 29 percent more likely to have abnormally low IQs.

Presumably seeing a conspicuous lack of necessary evidence to rule in activists' favor, the FDA opted to buy time. Throwing a monkeywrench in its own bureaucratic gears, the **panel called for "more study" on mercury levels in canned tuna**. Activists' response was an immediate call for tuna to be added to the "do not eat" list. **EWG filed a legal challenge** to this effect several months later.[53]

The public feud between the environmental lobby and the FDA over whether to declare canned tuna a public-health hazard continued throughout 2003. The one-man Mercury Policy Project (MPP) was among the most vocal antagonists, specifically recommending that pregnant women avoid canned albacore tuna entirely in its June 2003 **"Can the Tuna"** report.[54] MPP's scare campaign **made national headlines**, including mentions in *The New York Times* and *USA TODAY* (where it appeared under the factually inaccurate headline "High Mercury Levels Found in Canned Tuna"[55]).

Despite the bias toward sensationalism inherent in writing newspaper headlines, mercury levels in canned tuna aren't "high" by any standard. Of the four seafood species addressed in the FDA's consumer advisory, the fish with the lowest average mercury level is king mackerel, whose average concentration in FDA testing is 0.730 parts-per-million (ppm).[56] The same FDA data show a far lower average level of just 0.118 ppm for canned chunk light tuna, and 0.353 ppm for canned albacore.[57]

About the same time as MPP was romancing the *Times* and *USA TODAY* with tall tales of dangerous canned fish, a peer-reviewed study (which should have garnered far more attention) presaged the findings of this report. **An August 2003 Harvard study found that pregnant women in the Boston area reduced their fish consumption by 17 percent after the FDA issued its 2001 seafood advisory**.[58] Tuna consumption accounted for the majority of that decline.

By this time, the federal government had more than enough information to accurately predict the consequences of embracing a fear-factor approach to seafood and nutrition. Regulators understood the health necessity of fish consumption for pregnant women and their unborn children. And they knew the 2001 FDA advisory was discouraging the consumption of fish in general, and canned tuna (the only affordable source of omega-3 fatty acids for many families) in particular.

In early 2004, the situation went quickly from bad to worse. **First, Dr. Kathryn Mahaffey, an EPA toxicologist, claimed in February that one in six children—"630,000 newborns a year"—were at risk for developmental disorders** due to *in utero* mercury exposure.[59] The EPA sent Mahaffey out on future speaking engagements with disclaimers that she wasn't speaking for the agency (since her numerical gymnastics ignored the ten-fold safety cushion built into the EPA's methylmercury Reference Dose), but the damage was done.

Within a month, more than ten national environmental groups were using this new number in their advertising and fundraising, and on their websites. The media ran with it as well. The Canadian Press wrote that Mahaffey "estimates that one in six pregnant women in the United States had blood mercury high enough to damage her child, meaning approximately 630,000 U.S. newborns are at risk."[60] To date, more than 800 national news articles have cited this flawed statistic uncritically.[61]

In March 2004, the FDA and EPA announced a new fish-consumption advisory targeting tuna for the first time.[62] The joint advisory fell short of activist demands to blacklist canned tuna, but it did establish government-recommended limits on how much a pregnant woman should consume. In light of the body of evidence available at the time, however, the release of the 2004 fish advice was a victory for green groups and a defeat for science. The medical literature contained (and still contains) a total of zero cases of mercury poisoning in the from mercury in commercially available fish. The U.S. mercury panic was—and is—an epidemic without a body count. But for activists who wanted to keep the anxiety alive, the 2004 advisory was all the validation they needed.

"Clear the Air," a coalition of environmental groups funded by the Pew Charitable Trusts, trumpeted Kathryn Mahaffey's specious claim of "1 in 6" endangered pregnancies with a "Mother's Day Stroller Brigade" protest in front of the White House.[63] An animal rights organization called the **Physicians Committee for Responsible Medicine (PCRM) launched an ad campaign called "Brane Fude,"** a dramatization of neurological damage the group claimed was caused by eating fish.[64]

Aside from the **wave of sensationalist "science" journalism set off by the *Chicago Tribune* in December 2005**,[65] the first six months after the 2004 FDA/EPA guidelines set the tone for the mercury-scare movement as it exists today: continue to criticize the federal advisory as too lax (especially for tuna) while raising public alarm with mercury-in-fish tests, creative ploys like **hair testing programs (Greenpeace)**, **alarmist online calculators (gotmercury.org)**, and **a concerted "right to know" campaign targeting seafood consumers directly at the point of sale**.

As the circus of sushi-testing reports, national ad campaigns, and doom-and-gloom activist pronouncements (**"Is mercury-contaminated fish an ingredient for 'life' or an ingredient**

FLASHBACK: FDA AND THE MERCURY MOVEMENT, 1992

Public awareness campaigns about trace levels of mercury in fish have been around since at least the early 1990s. Consumers Union, a key player in the mercury-in-tuna scare, published its first mercury fish-testing report in a 1992 issue of *Consumer Reports*. That feature, titled "Is Seafood Fit To Eat?," concluded that 40 percent of the fish sampled were of fair or poor quality due to supposed contamination by bacteria or contaminants, including methylmercury.

FDA's reaction to Consumers Union in 1992 provides some helpful perspective on what may have gone wrong a decade later, resulting in the public-health debacle of economically disadvantaged mothers swearing off the only source of omega-3 fatty acids their budgets would allow.

In stark contrast to the federal government's more recent reactions to activist-inspired mercury hysteria, the FDA Commissioner at that time (Dr. David Kessler) dismissed the Consumers Union report as "absolute nonsense." In fact, Kessler's FDA took issue specifically with the magazine's advice that children and pregnant women steer clear of certain fish (including tuna) because of methylmercury, citing a lack of scientific evidence—still the case today—to support the alleged hazard.[66]

> "The joint EPA/FDA seafood consumption advisory serves to validate environmental campaigns that recklessly exploit groundless consumer concerns about seafood and health.

for illness and possible death?"[67]) continued after its 2004 advisory, the government remained silent. It has yet to "set the record straight" about the virtually nonexistent risk of mercury poisoning from eating canned tuna or any other fish Americans purchase at retail stores. It has yet to amend its guidelines to support the current science.

For many years, EPA toxicologist Dr. Kathryn Mahaffey promoted her own personal interpretation of mercury-related harm to children as a government-sanctioned scientific position (which it never was). Not only did other scientists challenge her contentions, but her employer (the EPA itself) eventually required public disclaimers about its lack of support for her theories.

Mahaffey left the EPA in August 2008 for a job at the George Washington University School of Public Health and Health Services,[68] where her marginalized opinions no longer carry the implication of government approval.

A NATURAL POLLUTANT

Methylmercury, the organic form of mercury found in fish, is not the same substance found in some older thermometers, mixed into dental fillings, or used in the manufacture of compact fluorescent light bulbs. It is produced both naturally and as a consequence of industrial activity.[69]

Although environmental activists correctly point out that industrial pollution is largely to blame for mercury deposits in rivers, lakes, and estuaries, mercury "pollution" in the oceans—where most commercially available fish (including tuna) are harvested—occurs nearly 100 percent naturally.[70] It comes from volcanoes, forest fires, and the weathering of mercury-bearing rocks.[71] In fact, American coal-burning power plants are responsible for only about 1 percent of global mercury emissions.[72]

And in scientific tests performed at Princeton University, tuna caught off the coast of Hawaii in 1998 had mercury levels nearly identical to similar fish caught in 1971.[73] Despite a well-documented increase in industrial pollution, trace mercury levels in these ocean fish remained constant.

ACTIVIST FEAR CAMPAIGNS

Setting aside a few animal rights groups that promote exclusively vegetarian or vegan diets, the largest public awareness campaigns about mercury levels in fish are run by environmental advocacy groups. These organizations have been exploiting consumer concerns about chemical contamination in seafood as a tool for promoting their own agendas.

The most obvious motive behind the mercury-in-fish scare campaigns is to elevate public concerns about industrial pollution (*e.g.,* Greenpeace, the Environmental Working Group, the Sierra Club, and the Natural Resources Defense Council). Other activist groups, like Oceana, are motivated by the conservation of marine life. As one campaigner from the Turtle Island Restoration Network (the group behind *gotmercury.org*) put it in October 2004, the idea is to "alert the public to their own self-interest—if you eat these fish, you are poisoning yourself and your children—as a way to convince the public to eat less fish."[74]

Through "public awareness" campaigns, these groups continue to discourage pregnant women from eating canned tuna—completely ignoring the growing body of science showing that negative consequences will invariably flow to the children of women who take their advice to heart.

And what of green groups' warnings about fetal mercury poisoning? It simply isn't happening. "There has been no case of fetal mercury toxicity due to fish consumption reported in the United States," reports New York University Medical Center Professor of Obstetrics and Gynecology Dr. Ashley Roman.[75] And pregnant women themselves have nothing to worry about either.

Environmental campaigners' health advice for adults appears completely out of touch with reality. "The bottom line," notes Harvard Medical School Assistant Professor of Medicine and Epidemiology Dr. Dariush Mozaffarian, "is that there's inconclusive evidence that mercury has any long-term effects in adults at the levels that are commonly consumed, and that even if there are effects, studies suggest that they are only to lessen the benefit of the fish."[76]

THE LANCET STUDY

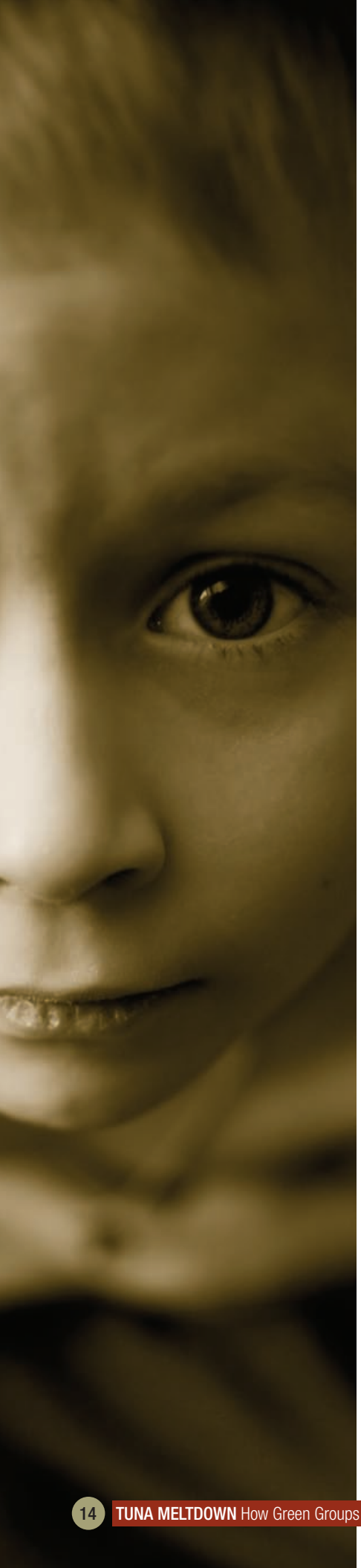
In February 2007 the esteemed British medical journal *The Lancet* published a groundbreaking study titled "Maternal seafood consumption in pregnancy and neurodevelopmental outcomes in childhood."[77] This study compared nutrition data collected from more than 8,900 British mothers with the results from IQ, motor-skill, and other developmental tests performed on their children from the ages of 6 months to 8 years.

The research, funded by the U.S. government and led by National Institutes of Health physician Dr. Joseph Hibbeln, concluded that "there is no evidence of neurodevelopmental risk from prenatal methylmercury exposure resulting solely from ocean fish consumption."[78]

Even more amazing, considering the FDA and EPA advisories, Dr. Hibbeln's team concluded that children whose mothers eat the most fish during pregnancy are likely to score the *highest* on IQ and developmental tests—and vice versa. "[T]he lower the intake of seafood during pregnancy," the researchers wrote, "the higher the risk of [children's] suboptimum developmental outcome."[79]

As Dr. Hibbeln later told *Newsweek,* the federal government's seafood consumption advisory "didn't calculate in the beneficial effects of the nutrients in seafood." To the contrary, he explained, it likely "causes the harm it intended to prevent."[80]

"There has been no case of fetal mercury toxicity due to fish consumption reported in the United States," reports New York University Medical Center Professor of Obstetrics and Gynecology Dr. Ashley Roman.



MEDIA SCARE TACTICS

The current mercury scare could be a case study of the potential effect that bad public health policy and unchecked activist influence can have on the most economically vulnerable consumers. But the mass media has also played a role in the debacle. Though its function in the "tuna meltdown" was secondary, the media undoubtedly made its own contribution to the flawed public perception of just what trace mercury levels in seafood *mean*.

Given the horrifying public-health results of overblown mercury fears for the children of low-income Americans, many reporters could have better served the public by digging deeper into the actual (which is to say, *minuscule*) risk of negative heath effects from eating tuna or any other fish. Health and science journalists should reasonably be expected to put the federal government's seafood advisory into proper context by point¬ing out its built-in ten-fold safety factor, and by highlighting the complete absence of commercial fish-related mercury poisoning cases in the medical literature.

Reporters in general should be presenting a more balanced picture of seafood's dietary health impact. But most media-driven hysteria about mercury levels in fish has arisen from a relative handful of journalists enamored with the peculiar fad of fish testing, a trend that two *Chicago Tribune* environmental reporters jump-started in late 2005.

The most striking thing about the *Tribune's* December 2005 "Mercury Menace" series was how the newspaper's own laboratory tests failed to support its reporters' conclusions—or its editorial recommendations. The *Tribune* showed a complete disregard for the safety margins already built into the government's consumer advice. And none of the fish tested for the report represented a health risk for consumers.

Tribune reporters Michael Hawthorne and Sam Roe singled out canned tuna when claiming that some popular fish were "tainted" and "violat[ed] food safety rules."[81] But they later described the trace mercury levels in canned tuna as "far lower than the average [fish]."

Hawthorne and Roe's lab results ultimately confirmed tuna as a low-mercury seafood choice. But their editors made it the poster-fish for mercury "contamina¬tion" anyway. In an editorial titled "Tuna Roulette," the paper warned of "dangerous levels of mercury" and called for new FDA action.[82]

The *Tribune* report set off a fish-testing frenzy: Local television news teams in Cincinnati,[83] Dallas,[84] New York City,[85] St. Louis,[86] and Washington[87] joined the mercury fish-testing club in the first half of 2006.

That same year, *Consumer Reports* magazine claimed (incorrectly) that there were "new safety concerns" over canned tuna. A CR article concluded that pregnant women should "avoid canned tuna entirely,"[88] a factually baseless determination even by the hyper-precautionary standards of the U.S. federal government. (The current seafood advisory allows for regular, weekly consumption of canned light and/or albacore tuna.)

Consumer Reports, a trusted source of information on the reliability of toasters and SUVs, gave no consideration to the impact of its advice on lower-income women. Nor did it acknowledge that canned tuna in general is on the low end of the mercury scale.

In October 2007, *USA Today* weighed in with a slapdash front-page story alleging that American infants were literally suffering brain damage from their mothers' seafood consumption.[89] "As many as 600,000 babies may be born in the USA each year with irreversible brain damage," the story claimed, "because pregnant mothers ate mercury-contaminated fish, the Environmental Protection Agency says."

The *USA Today* reporter cited no science to support his claim, basing it instead on the fringe conclusions of a single EPA scientist, Dr. Kathryn Mahaffey,[90] whose own agency disavowed her claims after she first raised the "600,000" figure at a 2004 conference. (See page 10 for details.) Mahaffey later added a disclaimer about her speculative calculation to her public presentations, making it clear that the EPA didn't endorse it. There is not a single documented case of any American child with brain damage resulting from normal consumption of fish.

By early 2008, even *The New York Times* had jumped on board, as reporter Marian Burros penned an embarrassingly inaccurate Page One report about mercury levels in New York City's sushi-grade tuna.[91] The *Times'* own Public Editor, Clark Hoyt, later wrote that the story's claims were unfair, concluding: "I thought the package was less balanced than it should have been, given the state of existing research." And *Times* science editor James Gorman conceded that he "should have raised more questions" about the story before it was published.

What was so bad about Burros' reporting? She ignored the ten-fold safety cushion built into the Food and Drug Administration's methylmercury "Action Level." The highest-mercury tuna sample reported by the *Times* (1.4 parts-per-million) actually contained less than one-seventh the level of mercury that might be a cause for health concern. Readers were never told.

Burros wrote that "mercury found in fish [is] tied to health problems." But the only documented medical case occurred more than 40 years ago in Japan, as the result of an industrial spill. She also claimed that "mercury enters the environment as an industrial pollutant." But since the *Times'* focus was on tuna—an ocean fish—this is not true at all. Virtually all the mercury in marine creatures enters the environment naturally, not from man-made sources.

The *Times* also claimed that consumers eating a specific number of pieces of tuna could "reach what the Environmental Protection Agency calls its weekly reference dose." But the EPA writes that "reference doses" refer to levels "likely to be without an appreciable risk of deleterious effects during a lifetime." By definition, it's not possible for anyone to exceed an EPA reference dose with a single week's worth of exposure.

Despite significant outcry from *TIME*[92], *Slate* magazine[93], and the Center for Independent Media[94], *The New York Times* refused to withdraw its sloppy story. But the Public Editor's apology spoke volumes. Marian Burros retired from her *Times* post in late December 2008.

Reporting like this has contributed to the needless anxiety that keeps millions of economically vulnerable U.S. women from including omega-3 fatty acids from affordable fish sources in their diets.

> "Harvard professor Dr. Emily Oken told the Los Angeles Times: "The FDA/EPA guidelines were considering the risks of mercury primarily as a contaminant but did not consider the benefits of the nutrients of fish, which may offset the risks of mercury."

THE SCIENCE

There is a wealth of scientific evidence showing that for women of child-bearing age who eat fish while pregnant, the developmental benefits for their babies far outweigh any concern about trace levels of naturally occurring mercury.

Studies also indicate that the federal government's 2004 seafood advisory has resulted in considerable consumer confusion. It has caused U.S. women to eat less fish, and produced a "spillover" effect—changing the seafood-eating patterns of men, post-menopausal women, and other groups to whom the advisory doesn't apply at all.

The following is a selection of the most relevant literature. Journalists, policymakers, and other interested parties may contact the Center for Consumer Freedom for complete copies of specific studies.

LARGE LONGITUDINAL STUDIES

Maternal seafood consumption in pregnancy and neurodevelopmental outcomes in childhood (ALSPAC study): an observational cohort study
Lancet (February 17, 2007)
Joseph Hibbeln, et al
U.S. National Institutes of Health

A largely British research team, led by a physician from the U.S. National Institutes of Health, used the Avon Longitudinal Study of Parents and Children (ALSPAC) to assess the possible benefits and risks to children's development of different levels of maternal seafood intake during pregnancy. The research covered 11,875 pairs of mothers and children, and was funded by the United States government.

Mothers in this study who ate the most seafood during their pregnancies had children with the best developmental outcomes. In fact, the highest developmental test scores came from children whose mothers ate more seafood than the 12 ounces per week permitted by the U.S. government's 2004 advisory.

"Advice to limit seafood consumption," NIH researchers wrote in 2007, "could actually be detrimental." The lead researcher later commented in interviews that the federal government's seafood advisory "apparently causes the harm that it was intended to prevent."

Associations of maternal fish intake during pregnancy and breastfeeding duration with attainment of developmental milestones in early childhood: a study from the Danish National Birth Cohort
American Journal of Clinical Nutrition (September 2008)
Emily Oken, et al.
Harvard Medical School

Harvard researchers studied data on 25,466 Danish mothers and their children, enrolled in a government-administered health survey between 1997 and 2002. Their goal was to determine if the health benefits babies got from maternal fish intake during pregnancy were affected by the length of time the babies were breastfed.

The study found that breastfeeding helped childhood development regardless of its duration; but the data connecting development scores with fish intake during pregnancy were astonishing. Researchers took measurements at six and eighteen months of age.

Comparing pregnant women who ate at least two ounces of fish per day with others who ate little or no fish, the six month-old babies of heavy fish eaters were 25 percent more likely to have higher developmental scores. This benefit rose to nearly 30 percent for eighteen month-old toddlers.

The study's lead researcher commented in a Harvard press release that "consumption of three or more weekly servings of fish was associated with higher development scores, so in this case the nutrient benefits of prenatal fish appeared to outweigh toxicant harm." That level of fish consumption—three or more weekly servings—exceeds the recommendation in the federal government's 2004 seafood advisory.

THE FAROE ISLANDS

Cognitive Deficit in 7-Year-Old Children with Prenatal Exposure to Methylmercury
Neurotoxicology and Teratology (November 1997)
Philippe Grandjean, et al
Institute of Community Health, Odense University, Denmark

When researchers in Denmark's Faroe Islands asked 917 mothers about their seafood intake, and then gave their 7-year-old children a battery of developmental tests, they couldn't find any straightforward or unambiguous health problems related to mercury. But they did claim to find some "neuropsychological dysfunctions," which amounted to extremely minor *statistical* deficiencies among groups of kids whose mothers had higher than average mercury exposures. These were all very subtle, and too tiny to actually be observed in individual children.

The mothers followed for this study got most of their mercury exposure through the consumption of pilot whale meat, not fish. But they failed to examine the likelihood that the host of other chemical contaminants found in whale meat (besides mercury) could have been responsible for causing whatever they found.

Separation of Risks and Benefits of Seafood Intake
Environmental Health Perspectives (March 2007)
Esben Budtz-Jørgensen, et al
University of Copenhagen

A subset of the Faroe Islands population who were heavy fish eaters—but abstained from eating whale meat—performed better than average on all seven of the tested "outcomes" measured by researchers. Children whose mothers ate the most fish during their pregnancies had the greatest advantage with regard to their motor-skill and spatial development.

As a result of this study, Faroe Islands health authorities recommended that women of childbearing age avoid eating whale meat—but no such advice has been issued regarding ocean fish.

THE SEYCHELLES ISLANDS

Effects of prenatal and postnatal methylmercury exposure from fish consumption on neurodevelopment: outcomes at 66 months of age in the Seychelles Child Development Study
JAMA (August 26, 1998)
Philip W. Davidson, et al
University of Rochester

The ongoing Seychelles Child Development Study, carried out in an Indian Ocean island chain, was designed to test the hypothesis that prenatal mercury exposure from pregnant women's fish consumption can impact their children's later development. In the Republic of Seychelles, 85 percent of the population eats ocean fish every day. Seychelles residents do not eat whale meat,

> "Following the FDA's first seafood advisory in 2001, national news outlets validated apocalyptic environmental campaigns about supposed "dangers" from mercury in fish. Lower-income families have been hardest hit by the resulting misconceptions.

but they do consume eight times as much fish as the average American. Researchers studied 789 mothers and their children, beginning at the age of six months.

After determining that the women's exposure to toxins other than mercury (e.g., lead, alcohol, PCBs and pesticides) was too low to be considered a "confounder," researchers could find "no adverse association" between fish-related mercury exposure and the development of children at 66 months of age.

Prenatal methylmercury exposure from ocean fish consumption in the Seychelles child development study
Lancet (May 17, 2003)
Gary J. Myers, et al
University of Rochester

The mother/child pairs from the Seychelles Islands were re-examined when the children were nine years old. Researchers performed a battery of neurocognitive, language, memory, motor, perceptual-motor, and behavioral tests on 640 of the children still enrolled in the study.

The researchers concluded that their data "do not support the hypothesis that there is a neurodevelopmental risk from prenatal methylmercury exposure resulting solely from ocean fish consumption."

Association between prenatal exposure to methylmercury and visuospatial ability at 10.7 years in the Seychelles Child Development Study
Neurotoxicology (May 2008)
Philip W. Davidson, et al
University of Rochester

In an attempt to address the disagreement between the Faroe Islands study (which found a subtle developmental impact from maternal mercury exposure) and the Seychelles Child Development Study (which found none at all), Seychelles researchers tried to reproduce the Faroe team's findings on children who were a little over 10 and one-half years old. They couldn't.

The competing studies had two specific tests in common, and the Seychelles team administered them using the procedures observed in the Faroes. On one test, their results totally failed to replicate the Faroe team's findings. And on the other, a hint of a mercury-related effect disappeared when an abnormal test score from a single "outlier" subject was dismissed.

The researchers concluded: "In a population whose exposure to methylmercury is from fish consumption, we continue to find no consistent adverse association..." The implication remains that while eating a pregnancy diet heavy in whale meat may impact childhood development, large amounts of ocean fish don't appear to carry any negative impact to unborn children.

Associations of maternal long-chain polyunsaturated fatty acids, methyl mercury, and infant development in the Seychelles Child Development Nutrition Study
Neurotoxicology (September 2008)
Sean J.J. Strain, et al
University of Ulster

Seychelles researchers revisited their developmental testing data from 9-month- and 30-month-old children, and re-analyzed prenatal blood samples that were still available from 229 mothers. Their goal was to learn if the children might have been protected from traces of mercury by the "long-chain polyunsaturated fatty acids" (most notably omega-3 fatty acids) in ocean fish eaten by their mothers during pregnancy.

The data supported the idea that it's important to ensure the "prenatal availability of omega-3 [fatty acids] present in fish" in order to produce good child development outcomes. The researchers also concluded that "the beneficial effects" of omega-3s "can obscure the determination of adverse effects of prenatal methylmercury exposure" in large studies.

In other words, it's likely that omega-3s in the typical Seychelles pregnancy diet compensated for any *potential* harm that might have been caused by mercury alone. Of course, ocean fish is rich in omega-3s, but pilot whale meat is not. This might explain why children in the Faroe Islands study were not as well protected as their Seychelles counterparts.

Fish Intake, Contaminants, and Human Health: Evaluating the Risks and the Benefits
JAMA (October 2006)
Dariush Mozaffarian, et al
Harvard Medical School

The authors completed a literature review covering large, well-documented studies of the risks and benefits of eating fish. They found that avoiding seafood consumption because of perceived health risks could result in "suboptimal neurodevelopment in children" and thousands of needless heart-disease-related deaths every year.

For the general population, they concluded, "the benefits of fish intake exceed the potential risks." And for women of childbearing age, they found that the only suggestion of health risks that might not be outweighed by health benefits involved extremely high-mercury fish species like swordfish and shark. Tuna, by comparison, was considered a low-mercury fish whose health benefits outweigh any potential risks for pregnant women.

In a Harvard School of Public Health press release, the study's lead author said: "It is striking how much greater both the amount of the evidence and the size of the health effect are for health benefits, compared with health risks. Seafood is likely the single most important food one can consume for good health."

> "The EPA and FDA should revise their current seafood consumption advisory to specifically encourage pregnant women and young children in low-income households to eat more canned tuna, the primary source of omega-3 fatty acids that is most likely to fall within the restrictions of their household budgets.

PRENATAL INTAKE OF OMEGA-3 FATTY ACIDS

Essential n-3 fatty acids in pregnant women and early visual acuity maturation in term infants
American Journal of Clinical Nutrition (March 2008)
Sheila M. Innis, et al
University of British Columbia

Researchers at the University of British Columbia's Child and Family Research Institute studied a group of 135 pregnant women to determine if any of them was dangerously deficient in docosahexaenoic acid (DHA, the most common omega-3 fatty acid). They feared that some women's DHA levels were low enough to endanger the future neurological development of their babies.

The researchers did indeed find that "some pregnant women in our study population were DHA-deficient," that this deficiency was linked to low fish intake during pregnancy, and that babies later born to these women had lower visual acuity scores—a good measure of brain development in two month-old children.

Beneficial effects of a polyunsaturated fatty acid on infant development: evidence from the inuit of arctic Quebec
The Journal of Pediatrics (March 2008)
Joseph L. Jacobson, et al
Wayne State University School of Medicine

In this study, researchers looked at 109 infants born to Inuit mothers in the Arctic northern regions of Quebec. Higher levels of omega-3 fatty acids in umbilical cord blood was associated with better visual acuity at six months of age; better motor skills and mental development at 11 months of age; and a lower risk of pre-term birth.

Interestingly, omega-3 fatty acids transmitted from mother to child during breastfeeding didn't generate the same positive effects—only those passed to babies *in utero* through women's diets during the third trimester of their pregnancies.

THE U.S. GOVERNMENT'S SEAFOOD ADVISORY

Mercury Advisories and Household Health Trade-offs
Working paper, December 2008
Jay P. Shimshack, Tulane University
Michael B. Ward, Australian National University

Two economists set out to determine what effect the FDA's 2001 seafood advisory (the one *preceding* the current joint FDA-EPA advisory) had on omega-3 and mercury intake, and on fish consumption overall. Their household purchase data included the years 2000, 2001, and 2002—and came from the AC Nielsen Homescan program—the same data set we rely on for the current *Tuna Meltdown* report.

Shimshack and Ward found that in U.S. households containing at least one adult "targeted" by the advisory (i.e., women of childbearing age), mercury consumption declined by 17.1 percent. But in those same households, consumption of omega-3 fatty acids declined by 21.4 percent, "a substantial trade-off."

The data in this paper also show that consumers didn't react to the 2001 FDA advisory by only eating less so-called "high mercury" fish. They responded by eating less from every category of fish and shellfish, including salmon (the most oft-cited fish providing a "healthier" balance between mercury and omega-3 levels). "It does not appear," the authors conclude, "that at-risk households responded to the advisory in a nuanced fashion."

Overall, according to this analysis, there is "no clear evidence for net benefits from actual advisory response."

Fish Consumption by Women of Childbearing Age, Pregnant Women, and Mothers of Infants

International Association for Food Protection Annual Meeting August 3-6, 2008)
Conrad Choiniére, et al.
U.S. Food and Drug Administration,
Center for Food Safety and Applied Nutrition

According to this FDA research, absolutely no segment of the American female population eats more than one-quarter of the amount of fish recommended by government nutrition experts (12 ounces per week).

In particular, pregnant women in the United States eat, on average, only 16 percent of the recommended amount of fish. The number is only 18 percent for post-partum mothers, and 25 percent for women who are not pregnant or nursing.

For this survey, the FDA asked women about the specific types of fish they were consuming. Canned tuna eaters averaged less than 1-⅓ ounces weekly.

The researchers concluded: "Since fish can also aid in children's proper growth and development, most women could increase their fish consumption substantially and remain within the FDA-EPA advisory recommendation. "

Decline in fish consumption among pregnant women after a national mercury advisory

Obstetrics & Gynecology (August 2003)
Emily Oken, et al.
Harvard Medical School

Researchers used questionnaires filled out by 2,235 pregnant women in a Massachusetts OB/GYN medical practice to determine the impact of the federal government's 2001 seafood advisory. They compared questionnaires collected before (April 1999 through December 2000) and after the advisory was issued (April 2001 through February 2002).

The study concluded that after the federal government advised pregnant women to reduce their fish intake, they "reported reduced consumption of fish, including tuna, dark meat fish, and white meat fish. Because these fish may confer nutritional benefits to mother and infant, public health implications of these changes remain unclear."

> "The United States mercury panic was—and is—an epidemic without a body count. But activists want to keep public anxiety alive.

POLICY RECOMMENDATIONS

The current federal government seafood-consumption advisory was intended to protect unborn children from the neurological effects of methylmercury exposure. But recent studies published in *The Lancet*, the *American Journal of Epidemiology*, and elsewhere[40] have shown that children's developmental benefits from maternal seafood consumption far outweigh any hypothetical risks associated with mercury exposure at the levels found in canned tuna.

Still, there appears to be a significant knowledge gap among consumers, as few Americans comprehend the size of seafood's positive health impact. Even fewer appear to understand that food toxicologists who have considered all possible health risks still conclude that they are not significant enough to warrant concern.

Omega-3 fatty acids found in seafood are vital to the neurological development of unborn and young children, and children whose mothers eat the most fish during pregnancy are likely to score highest on IQ and developmental tests. Yet the FDA's own research shows that pregnant women in the United States eat, on average, only 16 percent of the amount of fish recommended by government nutrition guidelines. The number only rises to 18 percent for post-partum mothers, and just 25 percent for women who are not pregnant or nursing.[95]

The EPA and FDA should revise the current seafood consumption advisory to specifically encourage pregnant women and young children in low-income households to eat more canned tuna, the primary source of omega-3 fatty acids that is most likely to fall within the restrictions of their household budgets.

Several environmental advocacy groups, including Oceana, the Center for Science in the Public Interest, and the Mercury Policy Project, have encouraged grocery stores to post warnings instructing pregnant and nursing women to limit their seafood consumption. Some grocery chains are already posting these warnings, and others are considering doing so.

The Food and Drug Administration should issue guidance to grocery stores recommending that they refrain from posting the federal seafood advisory without also posting information about the vital importance of omega-3 fatty acids in fish to the neurological development of unborn children.

The EPA's current methylmercury Reference Dose (RfD) contains a ten-fold safety cushion. The medical literature contains no documented cases of harm from methylmercury at levels up to ten times the RfD. Unfortunately, the federal government routinely promulgates its needlessly low RfD without any significant guidance about its actual meaning in terms of consumer behavior.

The federal government's Agency for Toxic Substances & Disease Registry has stated that "daily intake of methylmercury at a level of 0.3 micrograms per kilogram [of] body weight per day for extended periods up to a lifetime presents no risk of adverse health outcomes in even the most sensitive human populations (pregnant women, developing fetuses, and young children)."[96] This level is *three times higher* than the EPA's flawed methylmercury Reference Dose.

In 2003 the World Health Organization declared that 1.6 micrograms per kilogram of body weight constituted a "safe" weekly intake level of mercury in food.[97] Converted to a daily intake limit, this level is *more than twice as high* as what the EPA's flawed methylmercury Reference Dose permits.

The EPA should revise its methylmercury Reference Dose upward in order to negate unwarranted fears of exposure at levels ten times lower than those associated with any known human health risk. As a starting point, EPA's chronic risk information data on methylmercury—which currently dates back to 2001—should be updated to include a broader sample than only residents of the Faroe Islands, a population whose dietary mercury is largely derived from whale meat, not fish.

The federal Food and Nutrition Service (FNS) is the agency responsible for administering the Women, Infants, and Children program (WIC). FNS grants allow state agencies to provide low-income mothers with foods rich in protein, calcium, iron, and vitamins A and C.

The FNS should revise the WIC program guidelines to designate omega-3 fatty acids as an essential nutrient, and it should direct state agencies to provide all women and children in the program with canned tuna (which is low in saturated fat and rich in protein and omega-3s). The FNS should also direct state agencies to educate new mothers and mothers-to-be about the importance of omega-3 fatty acids to the neurological development of their children.

MERCURY-CAMPAIGNING ADVOCACY GROUPS

CENTER FOR SCIENCE IN THE PUBLIC INTEREST

The Center for Science in the Public Interest (CSPI) is a food and nutrition advocacy organization founded by current executive director Michael Jacobson and two of his co-workers from Ralph Nader's Center for the Study of Responsive Law.[98] CSPI's attitude toward food safety is best summed up by Jacobson's observation in a February 1994 *Washingtonian* magazine interview that "CSPI is proud about finding something wrong with practically everything."
In 2002, CSPI recommended that the FDA include warning labels on canned tuna "similar to the warning labels targeted to pregnant women that are on alcohol and cigarettes."[99]

Reason magazine senior editor and syndicated columnist Jacob Sullum explained the Center's general approach to food activism in a 2003 article: "The typical CSPI report takes one or two plausible concerns, blows them way out of proportion, and throws in several dangers that are trivial, unlikely, or highly speculative, all in an effort to scare people into the one course of action CSPI knows to be right."[100]

CONSUMERS UNION

The Consumers Union of the United States, which publishes the well-known *Consumer Reports* magazine, bills itself as an "independent nonprofit organization whose mission is to work for a fair, just, and safe marketplace for all consumers." But recommending one toaster or vacuum cleaner over another has far fewer health implications than recommending that pregnant women not eat canned tuna (which the magazine did in 2006).

This advice was a far cry from the magazine's earlier 1992 advice, which concluded that "the amount of mercury in the typical American diet—even a diet that includes a serving of tuna practically every day—poses virtually no risk to the average healthy adult."[101] In the interim, science has repeatedly proven that *Consumer Reports* was correct the first time around.

ENVIRONMENTAL WORKING GROUP

The Environmental Working Group (EWG) was started as a project of the Tides Foundation, a secretive organization established to "incubate" activist groups that might not qualify for tax-exempt charitable status on their own. EWG's number one stated goal is to "protect the most vulnerable segments of the human population—children, babies, and infants in the womb—from health problems attributed to a wide array of toxic contaminants."[102] But the group's mercury scare tactics have, ironically, facilitated precisely the opposite by denying the most vulnerable children in America the benefits of nutrients vital to their development.

> "Advice to limit seafood consumption," National Institutes of Health researchers wrote in 2007, "could actually be detrimental."

EWG has joined with other advocacy groups to steer consumers away from eating fish, especially canned tuna. In 2004, it joined MoveOn.org (the anti-war organization) to proclaim that traces of mercury in fish were causing brain damage in children, and that the best way to reverse this harm would be to vote President Bush out of office.[103]

GOTMERCURY.ORG

The principal goal of the Sea Turtle Restoration Project (STRP, also known as the Turtle Island Restoration Network) is to protect vulnerable marine animal species, especially endangered sea turtles. Its concern that commercial swordfish and tuna fisheries destroy sea turtle habitats, however, has translated into advocacy against all consumption of these fish.

Put simply, STRP leverages consumer fear about mercury in order to frighten consumers away from the seafood counter—judging that sea turtles will be better off for their efforts. The fact that human children (especially those most economically disadvantaged) may end up holding the short straw is merely an unpleasant consequence.

STRP operates the *gotmercury.org* website, whose mercury "calculator" recommends limiting tuna consumption to amounts even lower than what the federal government's hyper-restrictive seafood advisory permits.[104] The group also released two reports in 2006 claiming (incorrectly) to have found "dangerous" levels of mercury in tuna sushi.[105]

GREENPEACE

Greenpeace is among the world's largest environmental advocacy organizations, and the "green" movement's most recognizable brand name. The organization generally aims to save planet Earth from pollution, global warming, illegal fishing, and other threats perceived to be man-made.[106]

A mercury-testing project Greenpeace began in 2004 was aimed at lowering demand for commercial fish, especially albacore tuna. But the campaign was based on concerns other than human health—overfishing, "pirate" fishing, and aquatic habitat destruction, to name a few. Greenpeace ultimately hopes to help rehabilitate the oceans (a worthy goal), but ultimately at the expense of developing children whose mothers may deny them vital nutrients based on ill-informed mercury scare campaigns.

ILLINOIS PIRG / MARYLAND PIRG

The Illinois Public Interest Research Group (ILPIRG) and the Maryland Public Interest Research Group (MaryPIRG) are progressive advocacy organizations that sought to further their campaigns against coal-fired electric power generation in 2006 by alarming consumers with reports of "dangerous" mercury levels in fish.

In 2006, ILPIRG released "Risky Fishing," a report claiming that "potentially dangerous levels of mercury contamination are widespread in Illinois."[107] ILPIRG based its warnings on the EPA's Ambient Water Quality Criterion (AWQC), a measurement used to determine water pollution levels, not food safety.

The AWQC is 70 percent lower than the FDA's more appropriate Action Level, which itself includes a 1,000-percent safety factor. MaryPIRG used the same faulty criteria when evaluating samples of fish for its 2006 report titled "Mercury Pollution in Maryland."[108]

MERCURY POLICY PROJECT

The Mercury Policy Project is largely a one-man outfit managed by San Francisco's secretive Tides Center.[109] MPP was created "to reduce human and ecological exposures to mercury resulting from human activities and to advocate for virtual elimination of mercury emissions."[110] The best way to get the government to impose stricter regulations on our nation's power plants, according to MPP, is to scare consumers away from eating fish.

Michael Bender, the group's sole on-site staffer, is a 10-year veteran of what the MPP website has described as "the municipal hazardous waste management field."[111] During a 2002 FDA hearing, Bender conceded, "I don't have a science background."[112] But that hasn't stopped him from making alarmist pronouncements about the dangers of fish consumption.

In a 2003 report, MPP found a total of 3 cans of tuna whose mercury level was slightly above the FDA's hyper-precautionary Action Level. But the *average* mercury level of the fish MPP tested was less than half the Action Level.[113] In 2005, MPP teamed up with Oceana to release a report claiming that swordfish and tuna bought at major grocery chains in 22 states contained "hazardous" levels of mercury. Only "warning signs in grocery stores where these fish are sold,"[114] Bender insisted, could keep the public safe.

NATURAL RESOURCES DEFENSE COUNCIL

The Natural Resources Defense Council's rather grandiose mission is "to safeguard the Earth." Its involvement in the debate over mercury in fish consists of attempts to "force power companies and other giant mercury polluters to switch to pollution-cutting technologies."[115] This motivation may be a misguided one, since mercury levels in some fish preserved over a century ago are basically the same as what scientists find in similar fish caught today.[116]

NRDC also claims that it wants to "break down the pattern of disproportionate environmental burdens borne by people of color and others who face social or economic inequities."[117] But scaring low-income consumers away from canned tuna has served to exacerbate that inequality by denying America's poorest children the benefits of nutrients vital to their neurological development.

OCEANA

Oceana, whose public face is the actor Ted Danson[118], advocates for "policy changes to reduce pollution and to prevent the irreversible collapse of fish populations, marine mammals and other sea life." The group is concerned with protecting the world's oceans and fish populations—not consumers. The easiest way to ensure that there are more fish in the sea, of course, is to scare consumers away from eating them. This is a discipline which Oceana has carefully cultivated.

Oceana claims "hundreds of thousands of newborns could be handicapped by mercury [from fish] from the very beginning of their lives."[119] In September 2005, the group (along with the Mercury Policy Project) released a report claiming that swordfish and tuna bought at major grocery chains in 22 states contained "hazardous" levels of mercury. Oceana turned this into a loud, public demand for "warning signs in grocery stores where these fish are sold."[120]

ACNIELSEN'S HOMESCAN®

ACNielsen's Homescan program is the foremost consumer purchasing habits survey in the world. The Homescan program captures data on all consumer packaged goods purchases. Items are generally identified by Universal Product Code (UPC—the bar code on all packaged grocery items); non-UPC coded products such as fresh fruits and vegetables are also included in the survey. The Homescan program currently operates in 27 countries and in more than 260,000 individual households.

Participants in the program are given hand-held scanners that save all purchase information. Once a week, the saved consumer information is uploaded to Homescan.

Homescan is the only consumer survey that encompasses all types of purchases, including grocery stores, wholesale clubs, local drug stores, online merchants, etc. Participants in Homescan are demographically balanced to represent the American household population. This program is recognized as the best source of accurate consumer purchasing data across all demographic groups and all types of purchasing locations.

PHYSICIANS COMMITTEE FOR RESPONSIBLE MEDICINE

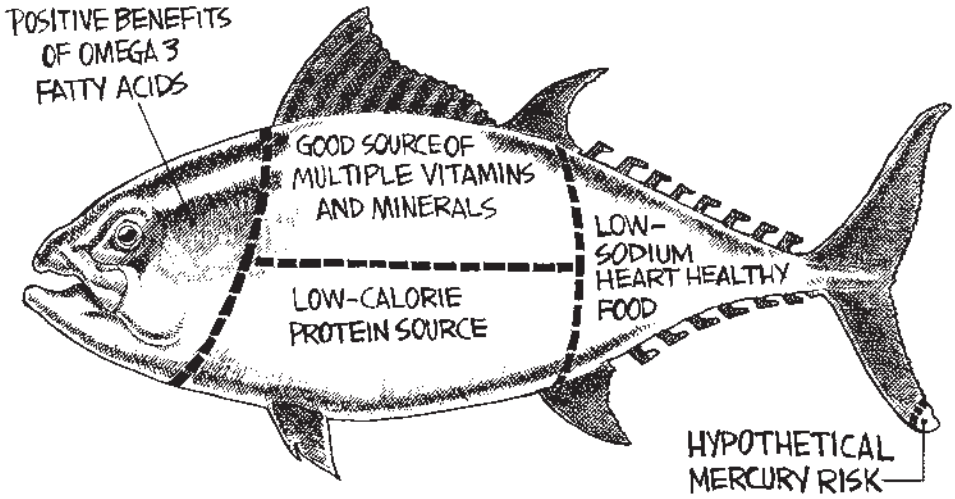
The Physicians Committee for Responsible Medicine (PCRM) is an animal rights group with longstanding connections to its better-known sister organization People for the Ethical Treatment of Animals,[121] but it masquerades as a mainstream medical charity. Less than four percent of PCRM's members are actual physicians. Two-thirds of its operating budget is supplied by a single person: Animal Rights Foundation of Florida founder Nanci Alexander,[122] the ex-wife of Houston Rockets NBA team owner Leslie Alexander.

PCRM's "Brane Fude" ad campaign[123] sought to scare consumers by telling them that even the tiniest concentration of mercury can cause brain and cardiac damage.The group's ulterior motive was (and remains) to promote veganism and a strict animal rights philosophy by scaring consumers away from seafood, and all other animal-derived dietary proteins.[124]

SIERRA CLUB

The Sierra Club is an environmental advocacy organization dedicated to preserving the earth's natural resources and environments. The Club's involvement in the public health debate over mercury in fish stems from a desire to see drastically reduced emissions from power plants.

The Sierra Club's website features testimonials suggesting that women should eliminate all fish from their diets during pregnancy.[125] Such a move would likely deny developing fetuses the developmental benefits of omega-3 fatty acids, harming their neurological growth.



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THE BATTLE BETWEEN HYPE & SCIENCE

2000

APR 25 — MERCURY POLICY PROJECT

Mercury Policy Project (MPP) report "The One That Got Away: FDA Fails To Protect The Public From High Levels Of Mercury In Seafood" claims inadequate mercury testing threatens the health of women and children.

JUL 11 — NATIONAL ACADEMY OF SCIENCES

National Academy of Sciences report to Congress, "Toxicological Effects of Methylmercury," supports the EPA's Reference Dose for methylmercury.

2001

JAN 11 — FOOD AND DRUG ADMISTRATION

FDA consumer seafood advisory warns pregnant and nursing women and young children to avoid swordfish, shark, king mackerel, and tilefish, and to limit other fish consumption to 12 ounces per week. MPP and CSPI claim "Pregnant women and parents must be told about unsafe seafood."

MASSACHUSETTS GREEN PARTY

Dr. Jill Stein of the Massachusetts Green Party claims on *20/20's* "The Fish Risk" episode that "Low level [mercury] exposures do cause attention problems, memory deficits, problems learning language," and that exposure from one fish meal "could potentially harm the fetus at a critical point in brain development."

FEB 01 — CONSUMER REPORTS

Consumer Reports tests seafood and concludes: "Results of tests for the presence in fish of potentially harmful compounds such as methylmercury ... Half of the swordfish samples exceeded the FDA's action level set for methylmercury, a compound that can harm the developing nervous system."

APR 01 — EWG/US PIRG

EWG/US PIRG report, "Brain Food: What women should know about mercury contamination in fish," recommends that pregnant women should avoid eating canned tuna.

2002

FEB 01 — ENVIRONMENTAL WORKING GROUP

EWG continues to campaign against tuna, telling newspapers: "The FDA is withholding important information from women on the dangers of mercury in seafood, specifically tuna."

JUL 25 — FOOD AND DRUG ADMISTRATION

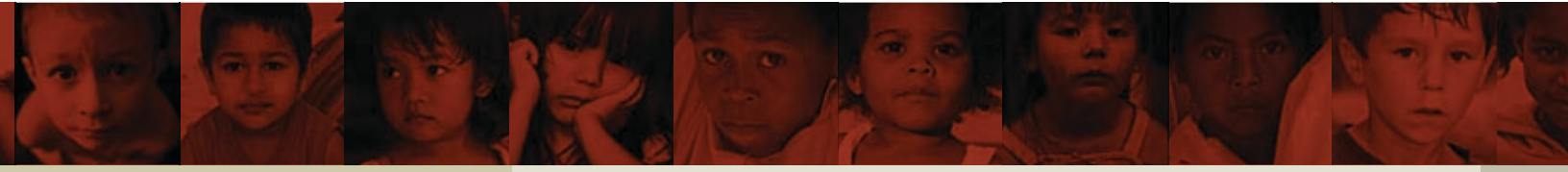
FDA advisory panel recommends more study of mercury levels in tuna; the Center for Science In the Public Interest (CSPI) and EWG call for tuna to be added to the "do not eat" list.

NOV 01 — HIGHTOWER

San Francisco physician Jane Hightower publishes a paper based on anecdotal and cherry-picked evidence in the government journal *Environmental Health Perspectives*, suggesting that mercury poisoning from fish is a serious public health threat: "You have people who have been told to eat fish because it's healthful, but they have not been told it contains contaminants."

DEC 11 — ENVIRONMENTAL WORKING GROUP

EWG files a legal challenge against the FDA, demanding stricter fish consumption guidelines for pregnant women.



2003

MAY 15 — THE LANCET

A peer-reviewed study of the heavy fish-consuming Seychelles Islands inhabitants, published in *The Lancet*, concludes: "There is no evidence of neurodevelopmental risk from prenatal methylmercury exposure resulting solely from ocean fish consumption."

JUN 01 — MERCURY POLICY PROJECT

MPP releases "Can the Tuna," a report misinterpreting the FDA's mercury Action Level to conclude that tuna purchased from grocery stores was "dangerous."The report specifically recommends that pregnant women avoid canned albacore tuna entirely.

JUL 01 — MERCURY POLICY PROJECT

MPP's Michael Bender tells *The New York Times* that women and children should be warned about mercury levels in tuna. Citing FDA and EPA standards alongside the results of his own tuna-testing experiment, Bender falsely claimed that a 132-pound woman would exceed "safe" levels by eating only 6 ounces of tuna in a given week. *USA TODAY* features the report with the inaccurate headline "High Mercury Levels Found in Canned Tuna."

AUG 01 — OKEN/HARVARD

A Harvard study titled "Decline in Fish Consumption Among Pregnant Women After a National Mercury Advisory" concludes that pregnant women in the Boston area reduced their fish consumption by 17 percent after the FDA's 2001 seafood advisory. The study also finds that canned tuna consumption made up the majority of the decrease.

2004

FEB 10 — ENVIRONMENTAL PROTECTION AGENCY

Dr. Kathryn Mahaffey, who works in the Office of Prevention, Pesticides and Toxic Substances at the EPA and helped create the artificially low mercury Reference Dose, recklessly estimates that 1 in 6 children is at risk for developmental disorders due to *in utero* methylmercury exposure.

MAR 01 — EWG/MOVEON.ORG

EWG and MoveOn.org hold a press conference claiming that mercury in fish is causing brain damage in American children.

MAR 19 — FOOD AND DRUG ADMISTRATION

EPA and FDA release new fish consumption advisory, recommending that women and young children entirely avoid shark, swordfish, king mackerel, and tilefish and limit total fish consumption to only 12 ounces a week of fish low in mercury, and only 6 ounces per week of albacore tuna.

MAY 01 — CLEAR THE AIR COALITION

A coalition of green groups, funded by the Pew Charitable Trusts, stages a "Mother's Day Stroller Brigade" protest in front of the White House. This event is advertised with flyers featuring a photo of a pregnant woman and the warning "One in six moms needs to be worried about toxic mercury."

MAY 01 — PHYSICIANS COMMITTEE FOR RESPONSIBLE MEDICINE

PCRM launches "Brane Fude" campaign, falsely claiming that "Mercury [in fish] is such a potent neurotoxin that even small doses can cause irreversible brain and heart damage."

JUN 22 — U.S. TUNA FOUNDATION

California Attorney General sues three canned-tuna companies for violating "Proposition 65" toxics right-to-know law, demanding that they place warning labels on tuna cans.

SEP 15 — GREENPEACE

Greenpeace launches hair testing program, urging Americans to test themselves for mercury exposure.

2005

JUN 01 — TURTLE ISLAND RESTORATION NETWORK

GotMercury.org / Turtle Island Restoration Network launches ad campaign and mercury calculator targeting grocery chains. An accompanying press release asks "Is mercury-contaminated fish an ingredient for 'life' or an ingredient for illness and possible death?"

SEP 01 — OCEANA AND MERCURY POLICY PROJECT

Oceana and MPP release "Fair Warning" report recommending that "State and federal governments should require warnings to be posted where fish covered by government advisories is sold."

SEP 15 — OCEANA/MERCURY POLICY PROJECT

Oceana (with the Mercury Policy Project, Women's Voices for the Earth, Clean Water Action and the New England Zero Mercury Campaign) publishes second "Fair Warning" report claiming elevated average mercury levels in 55 samples of tuna and swordfish from grocery stores.

SEP 28 — OCEANA/ SEA TURTLE RESTORATION PROJECT

Oceana and GotMercury.org run a full page ad in *The New York Times*, calling on grocery chains to warn all consumers about mercury in seafood.

DEC 01 — THE CHICAGO TRIBUNE

The *Chicago Tribune* launches "Mercury Menace" feature, a 3-part series including a claim that "Federal regulators and the tuna industry fail to warn consumers about the true health hazards of an American favorite."

2006

MAR 06 — SEA TURTLE RESTORATION PROJECT

STRP releases a report, based on testing of 12 fish samples, claiming that sushi sold in Los Angeles is "toxic" due to elevated mercury levels. STRP calls on the EPA and FDA to revise the 2004 seafood advisory to clarify that women and children should stop eating almost all tuna. The report is widely disseminated by *Good Morning America*, the *Los Angeles Times*, Reuters, and United Press International.

MAY 03 — SEA TURTLE RESTORATION PROJECT

STRP releases another report on mercury in sushi based on 20 fish samples, calling for women and children to avoid tuna completely.

JUL 01 — CONSUMER REPORTS

Consumer Reports publishes "Mercury in Tuna: New Safety Concerns" report, advising pregnant women to avoid eating all canned tuna.

JUL 07 — CENTER FOR SCIENCE IN THE PUBLIC INTEREST/ MERCURY POLICY PROJECT

A study of mercury in canned tuna claims that the EPA and FDA did not "provide adequate protection for the American public because the agencies' testing failed to adequately consider mercury levels in imported light canned tuna." CSPI and MPP collaborated on the study.

AUG 01 — MADISON

The 8th International "Conference on Mercury as a Global Pollutant" takes place in Madison, Wisconsin. Conference attendees declare that despite overwhelming evidence to the contrary, mercury in fish at ordinary levels of consumption is a significant health threat.

OCT 17 — NATIONAL ACADEMIES OF SCIENCE

The Institute of Medicine of the National Academies of Science releases study echoing 2004 FDA guidelines. The findings recommend less than 12 ounces of fish per week (6 oz. of albacore tuna) for women who are pregnant or nursing.

NOV 20 — OCEANA

Oceana claims some grocery stores are posting mercury warnings as a direct result of its campaigns and those of other groups, and continues to pressure all grocery chains to follow suit.

By steering consumers away from the fish counter and the canned tuna aisle, overblown warnings about trace mercury levels have harmed the neurological development of countless children born to low-income mothers.

Green groups and the federal government share the blame.

mercuryfacts.org