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Fish Line

Mercury and Tuna: U.S. Advice Leaves Lots of Questions

**Balancing Interests, Agencies
Issue Guidance at Odds
With EPA Risk Assessment**

A Schoolboy's Sudden Setback

By **PETER WALDMAN**
Staff Reporter of THE WALL STREET JOURNAL
August 1, 2005; Page A1

SAN FRANCISCO -- One by one, Matthew Davis's fifth-grade teachers went around the table describing the 10-year-old boy. He wasn't focused in class and often missed assignments, they said. He labored at basic addition. He could barely write a simple sentence.

"Our jaws dropped," says his mother, Joan Elan Davis, describing a teachers' meeting she had requested in late 2003, when her son abruptly lost interest in homework. Matthew had always excelled in school. In the fourth grade, he had written and illustrated a series of stories about a superhero named Dog Man.



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Ms. Davis noticed something else: Her son's fingers were starting to curl, as if he were gripping a melon. And he could no longer catch a football.

A neurologist ordered tests. They showed Matthew's blood was laced with mercury in amounts nearly double what the Environmental Protection Agency says is the safe level for exposure to the metal. Matthew had mercury poisoning, his doctors said.

The Davises had pinpointed the suspected source: tuna fish. For a year or so, starting in late 2002, Matthew had gobbled three to six ounces a day of white albacore tuna. Based on Food and Drug Administration data for canned albacore, he was consuming a daily dose of mercury at least 12 times what the EPA considered a safe level for a 60-pound child. The Davises' doctors' prescription was simple: Matthew should stop eating canned tuna.

TROUBLED TUNA

- See the EPA/FDA [advisory](#) on fish consumption.
- See a 2000 National Academy of Sciences [study](#).
- Read Dr. Grandjean's [2004 Faroe Islands findings](#), his [2004 letter to the Wall Street](#)



Ms. Davis, an artist, says she and her husband, a corporate executive, had been proud of their son for choosing tuna over junk

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[Journal](#) and his [2004 testimony](#) on mercury-exposure risks to Maine's legislature (PDF). Adobe Reader available [here](#).

- Read University of Rochester's [Seychelles Islands study](#) (PDF)
- Read U.S. Tuna Foundation's [statement](#).
- See an [FDA chart](#) showing mercury levels in seafood.

food. Now, she asks herself: "Was I a bad parent? Was it my fault I didn't know there was mercury in tuna?"

One reason she didn't know was that the government had never

said so. The FDA had known for many years that canned tuna contained mercury, which studies link to learning impairment in children. Consumer groups long urged the agency to address the issue. But it wasn't until March 2004, after regulatory tussles between health advocates and the tuna industry and between clashing scientists for the FDA and EPA, that those agencies issued a mercury advisory that cited tuna. That joint EPA and FDA advisory urged limits on how much tuna children and some women should eat.

But the limits set in the advisory may exceed safe levels for some people, judging by a mercury risk assessment that the EPA produced on its own years earlier.

The federal advisory said that nursing mothers and women who are pregnant or may become so should eat no more than 12 ounces of chunk light tuna a week. For solid white albacore, which is higher in mercury, it set a six-ounce weekly limit. Young children, it said, should eat "smaller portions." No advice was given for men or older women.

The maximum mercury ingestion the EPA deems safe is one microgram a day for each 22 pounds of body weight. If a 130-pound woman ate as much albacore tuna as the joint federal advisory allows, she would exceed that safe level by 40%.

If the joint advisory had been available in 2003 and the Davises, following its advice about "smaller portions" for children, had given Matthew just half a can of albacore a week, he still would have consumed 60% more mercury than the EPA can say with confidence is safe.

"This is a glaring example of shutting out science," says Vas Aposhian, a University of Arizona toxicologist. He quit the FDA's Food Advisory Committee in early 2004 because he felt the agency ignored the panel's instructions to hew closely to the EPA's mercury maximum.

Senior EPA and FDA officials deny the advisory is unscientific. The EPA's daily limit for mercury intake, called a "reference dose," isn't some "bright line" that distinguishes safe from unsafe, officials of both agencies say. To provide an ample margin of safety, the EPA had set the limit at just one-tenth of the mercury level that had been found to affect children's learning.

And the EPA limit is extra-cautious in another way, says David Acheson, the FDA's director of food safety and security. It was based on a study of prodigious fish eaters in the Faroe Islands of Denmark that found neurobehavioral effects, such as learning and language deficits, in children who'd had high bloodstream mercury at birth. But those effects were "subtle" and insubstantial, Dr. Acheson emphasizes, not "clear, long-lasting mental disability."

The struggle to find the right balance on mercury is part of a larger issue: How to deal with dozens of industrial chemicals now known to linger in the environment and the human body in trace amounts. Mercury emissions, about 40% of which in the U.S. come from coal-fired power plants, settle into oceans, lakes and rivers. Then people take in mercury by eating large fish that have accumulated an organic form of the metal in their flesh by consuming smaller fish.

People vary in how they react to mercury they ingest and how fast they purge it. The EPA's exposure limit is based on its calculation that mercury above 5.8 parts per billion in young

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women's bloodstreams may pose a danger to their babies. By this measure, 5.7% of U.S. infants, or 228,000 a year, could be at risk of mercury poisoning during gestation, based on the latest blood survey of women of childbearing age by the Centers for Disease Control and Prevention.

The maximum safe level might be lower still, says the EPA's top mercury risk assessor, Kathryn Mahaffey, based on recent evidence that fetuses concentrate more mercury in their blood than do their pregnant mothers.

Former EPA Administrator Michael Leavitt says the reason the government didn't make the mercury-in-fish advisory tougher was to avoid scaring people away from fish. "Mercury is bad and fish is good. We needed to choose the right words that would give people a sense of knowledge without creating unwarranted fear," says Mr. Leavitt, now head of the Health and Human Services Department. He adds that scientists, not bureaucrats, worked out the guidelines, reconciling the varying views of FDA and EPA researchers.

The EPA senior scientist handling that reconciliation, Rita Schoeny, says there is no way to know for sure whether people who follow the fish advisory and consume more mercury than the EPA's limit are actually safe. Asked whether she agreed with what the advisory said about tuna, she didn't respond except to say: "I think what we have in the advisory is good public-health advice."

At Bumble Bee Seafoods, executive vice president John Stiker acknowledges the federal tuna-eating advice could lead some people to exceed the EPA safe level for mercury. But he says it's not a big problem because the average American eats only 10 servings of tuna a year, and just 35% of that is the higher-mercury type, albacore.

Food companies have long lobbied to mitigate any FDA action on canned tuna, one of the top-grossing supermarket items in revenue per unit of shelf space. Five years ago, after risk assessments by the EPA and the National Academy of Sciences raised fresh worries about mercury, the FDA began preparing to revise a 1979 advisory that said it was all right to consume four micrograms of mercury a day per 22 pounds of body weight -- four times the EPA's maximum.

Food companies urged the FDA not to single out canned tuna. In private meetings with FDA officials in fall 2000, industry and agency documents show, the industry argued that health data were inconclusive, that citing canned tuna would drive down its consumption by 19% to 24%, and that seafood producers "would face the distinct possibility of numerous class action lawsuits."

A strict advisory "could have an irreversible impact on American dietary habits, profoundly affecting consumers and producers of seafood and resulting in significant segments of the population turning away

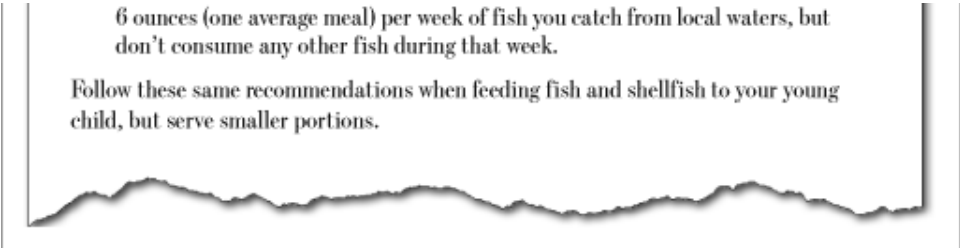
Federal Fish Advisory

Excerpt from the 2004 joint FDA-EPA advisory on mercury in fish for women who are pregnant or might become pregnant, nursing mothers and young children

By following these 3 recommendations for selecting and eating fish or shellfish, women and young children will receive the benefits of eating fish and shellfish and be confident that they have reduced their exposure to the harmful effects of mercury.

1. Do not eat Shark, Swordfish, King Mackerel, or Tilefish because they contain high levels of mercury.

from the proven health benefits of fish consumption," said a 2000 letter to an FDA commissioner



6 ounces (one average meal) per week of fish you catch from local waters, but don't consume any other fish during that week.

Follow these same recommendations when feeding fish and shellfish to your young child, but serve smaller portions.

from three trade groups: the National Food Processors Association, the National Fisheries Institute and the U.S. Tuna Foundation.

When the FDA issued a revised mercury advisory in 2001, it urged women of childbearing age to shun four high-mercury species: swordfish, shark, king mackerel and tilefish from the Gulf of Mexico. It didn't mention tuna. Yet cumulatively, according to data provided by the EPA, the four species it urged avoiding account for less than 10% of Americans' mercury ingestion from fish, while canned tuna accounts for about 34% of it.

Echoing industry arguments, FDA scientists also rejected the study of fish eaters in Denmark's Faroe Islands, saying dietary differences made the data inapplicable to Americans. The FDA stood by its 1979 mercury-consumption limit that was much higher than the EPA's.

Some EPA scientists griped that FDA officials were coddling food companies. "They really consider the fish industry to be their clients, rather than the U.S. public," charges Deborah Rice, a former EPA toxicologist now working for the state of Maine. The FDA's Dr. Acheson denies that commercial concerns played a role in the agency's decision making.

Change of Course

In April 2003, his agency changed course, following years of prodding by health advocates, some members of Congress and the agency's own outside food advisory panel. The FDA said it would base future mercury warnings on the EPA's stricter limit. Late in 2003, FDA and EPA officials proposed their first joint mercury advisory at a meeting of the FDA's Food Advisory Committee.

At the hearing, FDA scientists said they had put fish in three categories: high in mercury, medium and low. The level for the low-mercury group was that of canned light tuna, explained FDA official Clark Carrington. "In order to keep the market share at a reasonable level, we felt like we had to keep light tuna in the low-mercury group," he said, according to the meeting's official transcript.

Later, the FDA's Dr. Acheson reiterated that point. He told the meeting the fish categories "were arbitrarily chosen to put light tuna in the low category."

Says Maine's Dr. Rice: "Here's the FDA making what are supposed to be scientific decisions on the basis of market share. What else is there to say?"

Asked about this, Dr. Acheson gives a different reason why the low-mercury group was pegged to light tuna. He says it was because a woman weighing 140 pounds could eat 12 ounces of it a week and stay at or below the EPA reference dose.

The FDA's outside advisory panel asked the agencies to rework the advisory, saying it didn't adequately spell out mercury risks from canned tuna. In particular, members of the panel urged a specific warning about the higher-mercury albacore tuna.

But food processors lobbied the administration. At the White House, they implored officials not to single out albacore. They said doing so would only drive people, especially the poor, to eat more junk food, says a scientist who was there.

In meetings with companies, there are indications administration officials sometimes expressed views not in sync with those of all agency scientists.

At the EPA, three companies met with Steve Johnson, then deputy administrator, on Feb. 23, 2004. The three were the StarKist unit of [Del Monte Foods Co.](#); Chicken of the Sea, part of Thailand's Thai Union Frozen Products PCL; and Bumble Bee, which is owned by Connors Bros. Income Fund in Toronto.

The three companies later wrote to then-EPA chief Mr. Leavitt that Mr. Johnson -- who now heads the agency -- had assured them that "the EPA did not consider any children to be at risk from mercury poisoning." An EPA spokeswoman denies Mr. Johnson said that. Asked about the denial, Bumble Bee's Mr. Stiker said, "I was at the meeting. It was clear that that was said at the meeting by Steve Johnson and others in that room.... We were assured the EPA did not consider any U.S. children to be at risk of mercury poisoning."

The FDA tested the planned advisory with focus groups of women of childbearing age, the target of the warning. Some complained they didn't understand the vague advice to give kids "smaller portions." Others said the advisory was ambiguous because it encouraged them to eat fish but not too much.

'His Brain Food'

Like many parents, the Davises in San Francisco always thought fish was great. They knew it was high in omega-3 fatty acids, which they understood could help brain development. They were delighted, Ms. Davis says, when Matthew started eating what she calls "his brain food" for lunch and snacks.



Matthew Davis

It struck Matthew that something was wrong one day at recess, he says, when his buddy Zach could suddenly catch and throw a football much better than he could. He remembers his father, a little while later, getting frustrated when his son couldn't hit a baseball. "I kept telling Dad I was rusty," Matthew says.

After the meeting with his teachers, the Davises spent thousands of dollars on tutors, but still Matthew struggled. A specialist gave him a diagnosis of "mixed learning disability," which just made his parents mad because they had watched him do so well in school before.

Then Matthew's father happened to read an article in the San Francisco Chronicle describing adults with similar problems as a possible result of eating too much swordfish, tuna steaks and other high-end fish in restaurants. Ms. Davis remembers bolting to the pantry and throwing away eight pouches and 20 cans of StarKist albacore tuna.

Spokeswomen for StarKist and Chicken of the Sea referred questions to the U.S. Tuna Foundation. The trade group's executive director, David Burney, says the study of mercury in heavy fish eaters of the Faroe Islands had found only minor effects in kids. It wasn't as if they "couldn't function in school," he says, adding: "There is no connection between a learning disability and mercury."

The notion that chronic, low-level mercury exposure can diminish children's learning capacity was affirmed in 2000 by a panel of experts convened by the National Academy of Sciences. Citing "a large body of scientific evidence showing adverse neurodevelopmental effects" on children from mercury, the NAS panel endorsed the EPA's choice of the 1997 Faroe Islands study, led by Philippe Grandjean of Harvard, as the basis for the agency's reference dose.

It noted that a similar study of fish eaters in the Seychelles Islands in 1998 hadn't found any

effects on childhood development from mercury-tainted fish, but concluded the Faroe Islands results were more reliable because they were firmly supported by other studies.

Matthew Davis's symptoms -- declines in concentration, coordination and learning ability -- were classic signs of mercury toxicity, says one of his doctors, Jane Hightower, who has published studies of such toxicity in her patients. She notes that in some kinds of fish, mercury content varies widely, exposing diners to random spikes. In chunk light tuna and snapper, some samples had seven times as much mercury as the average for the species, as measured by the FDA. Certain samples of canned albacore tuna showed a spike to 2½ times the average.

As for the fresh and frozen tuna found in tuna steaks, its mean mercury level was comparable to that of canned albacore.

Industry Marketing

The tuna industry has continued to aim some marketing at pregnant women and kids. An ad sponsored by the U.S. Tuna Foundation last year, which specified the new federal consumption guidelines, reassured "pregnant and nursing women and young children" that canned tuna "is absolutely safe to eat." Extolling the benefits of fish's omega-3 fatty acids for babies' eyes and brains, the ad said: "No government study has ever found unsafe levels of mercury in women or young children who eat canned tuna."

By "unsafe levels," says the foundation's Mr. Burney, the ad wasn't referring to mercury above what the EPA declares safe, but to the actual blood-mercury level of Faroe Islands infants. That level is 10 times as high as the EPA's safe level.

Mr. Burney maintains that no Americans come close to having a toxic level of mercury in their blood. Accordingly, he rejects the notion that Matthew Davis or anyone else could get mercury poisoning from eating canned tuna. "That's the dumbest thing I've ever heard in my life," Mr. Burney says.

Bumble Bee's Mr. Stiker, when told of Matthew's problem, said it didn't make sense to him because only early-childhood development can be affected by trace amounts of mercury. "The hype has far outstripped the science" on mercury in fish, he said, with the result that canned-tuna sales are falling more than 10% a year. "We're getting killed because of this perception," he said.

Today, nearly two years after Matthew quit eating albacore tuna, his blood-mercury level is zero and his condition is dramatically improved. Although his doctors don't know if he had any permanent damage, signs so far are that he didn't. Sports and homework come much easier again. Matthew played the lead in a local performance of "Charlie and the Chocolate Factory." He is writing stories again.

His mother wrote about her son's struggle for the school newsletter. The family hasn't consulted a lawyer and doesn't plan to sue anyone, Ms. Davis says. But "I think about what I could have lost, and it makes me angry," she says.

The American Medical Association called on the FDA a year ago to consider requiring stores to post warnings and mercury-content data wherever fish is sold. Dr. Acheson of the FDA says the agency opposes mandated warning labels or market postings. "We feel the best way to get the word out is via the advisory," he says, calling it "an optimal balance between the benefits of eating fish and the risks of mercury."

Write to Peter Waldman at peter.waldman@wsj.com



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