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EWG Briefing: Mercury in Seafood

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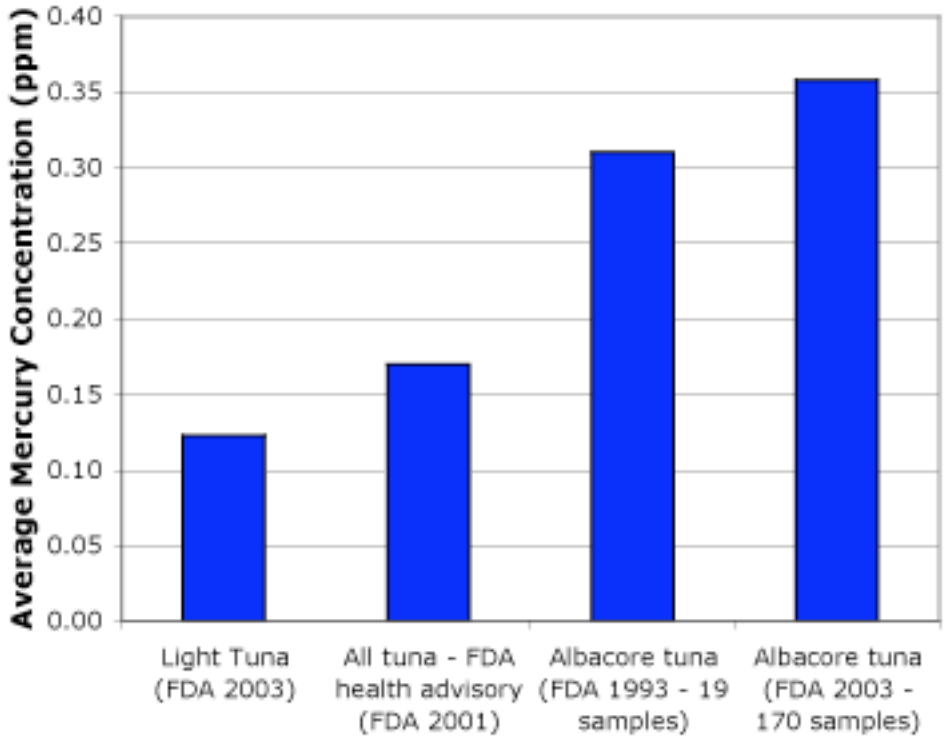
FDA's Consumption Advice:

1. Do not eat shark, swordfish, king mackerel, or tilefish.
2. It is safe to eat up to 12 ounces of seafood each week.
3. Do not eat the same type of seafood more than once a week.

According to the advisory, this consumption advice is safe and protective.

New data show more mercury contamination in Canned Albacore Tuna



Source: Environmental Working Group analysis of Food and Drug Administration testing data.

The new advisory's information on Canned Tuna:

Mercury levels in tuna vary. Tuna steaks and canned albacore tuna generally contain higher levels of mercury than canned light tuna.

One "safe" scenario under this advice:

Eating six ounces of canned albacore each week.

By eating six ounces of canned albacore tuna each week, a woman of average size would exceed a safe dose of mercury by 30 percent.

Body weight: 140 pounds (64 kilograms)
Weekly serving size: 6 ounces (170 grams)
Daily serving size: 0.86 ounces (24 grams)
Mercury concentration in tuna (average): 0.358 ug/g (ppm)

Mercury ingested each day = Daily serving size * Mercury concentration in tuna = 24 grams tuna * 0.358 ug Hg/g tuna = 8.6 ug mercury/day

Dose adjusted by body weight = total mercury dose / body weight = 8.6 ug mercury/day /64 kilograms = **0.13** ug mercury/kg body weight/day

Reference dose = **0.10** ug mercury/kg body weight/day

Conclusion:

Women who follow FDA's advice could face a significant risk of being exposed to mercury at levels above a safe dose.

Do some women eat too much fish?

The convenience and affordability of canned tuna make it a preferred food for pregnant women.

Do some women eat too much fish?

"One of the things that I could eat was a can of tuna, and I think two tablespoons of mayonnaise, was my lunch every day for I think – well, while I was – five days a week. Okay, so ***every day, five days a week for lunch for … seven weeks*** of my pregnancy. You know, so for seven weeks I'm eating more than they recommend."

— FDA Focus groups, 2000.

Do some women eat too much fish?

"…I ate during the summer a lot more tuna because I would just throw it on some lettuce and call it a salad. It was light. It was quick for work. It was done. So, now that I think about that, I did ***eat probably more than a can and a half in one week*** during the summer."

— FDA Focus groups, 2000.

Do some women eat too much fish?

"…for me it was what was most convenient. What was most convenient was taking a can of tuna fish, my two things of mayonnaise and my half an apple to work ***every day for lunch***. That was what was convenient for me. …"

— FDA Focus groups, 2000.

Do some women eat too much fish?

"***I just bought a whole bunch*** of it because it was on sale, too. They were like 39, 49 cents – you know – use your Safeway or Giant bonus card."

— FDA Focus groups, 2000.

Do some women eat too much fish?

"I was doing it before I got pregnant because I was planning to get pregnant. As part of doing the Adkins Diet, you can have stuff like that with fish or your chicken, as much of that as you want to consume. So, I ate a lot of that bag of salad, ***can of tuna, hardboiled egg, that was my lunch***, or salmon or whatever…"

— FDA Focus groups, 2000.

Do some women eat too much fish?

"It is real cheap."

— FDA Focus groups, 2000.

Probabilistic assessment of exposure to mercury from albacore tuna

Monte Carlo style model calculates the exposure for 10 million hypothetical women.

Body weight: Randomly assigned from measured body weights of 1767 women of childbearing age (ages 16-49) examined during NHANES III (1999-2001).

Mercury concentrations in tuna: Randomly assigned once per each modeled week from the 170 samples recently collected and analyzed by FDA.

Modeled period: 40 weeks to simulate typical length of pregnancy.

Result:

By eating a 6-ounce serving of albacore tuna weekly, 74 percent of all women of childbearing age would exceed a safe dose of mercury for their entire pregnancy.

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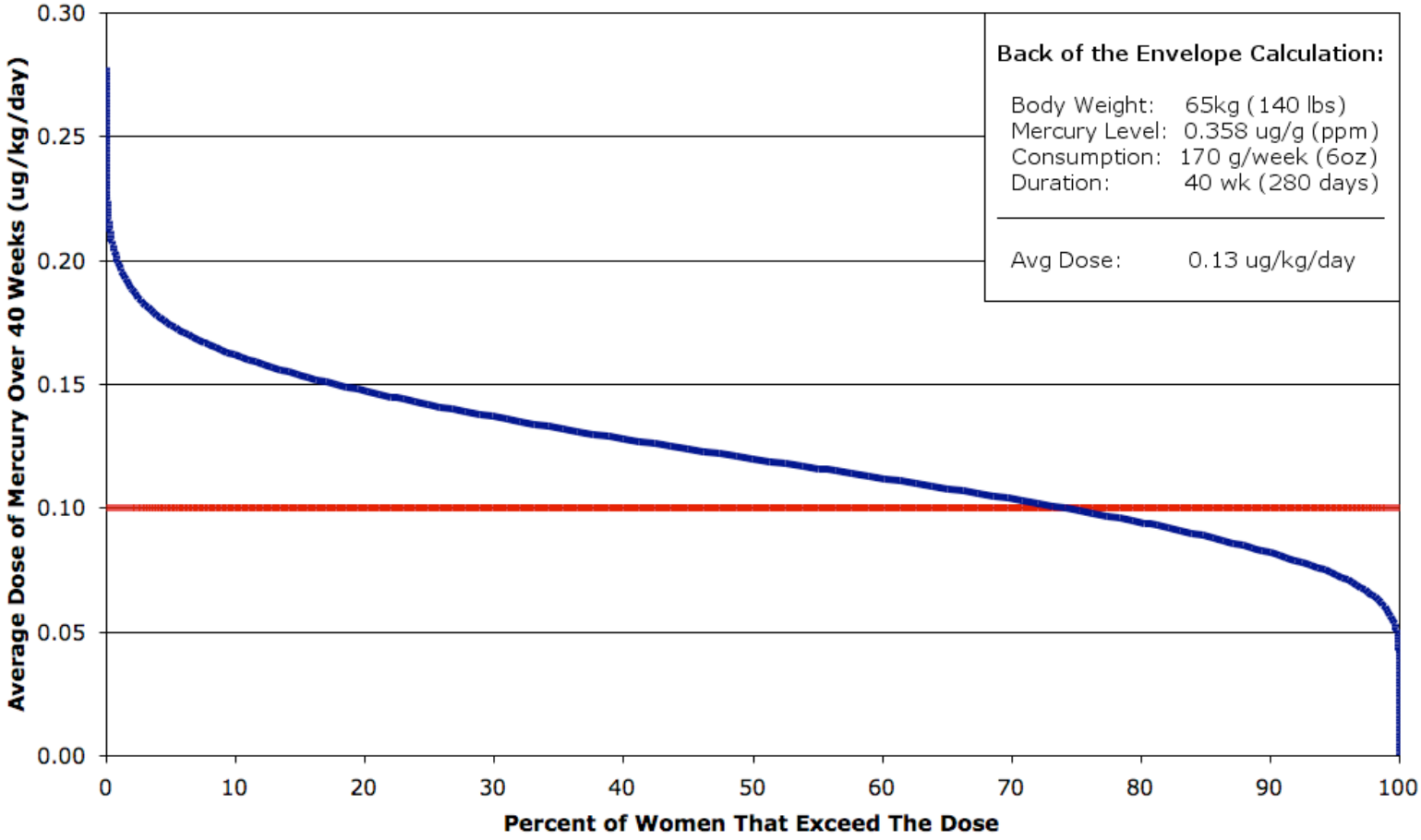
Average Mercury Ingestion of Women of Childbearing Age Eating 6oz Canned Albacore Tuna Weekly



Source: Environmental Working Group analysis

Question:
If FDA's advice is inherently unsafe, why do FDA's models show that just one percent of women will exceed a safe dose if they follow the advice?

Answer:
FDA runs a forcing model that truncates consumption at 12 ounces per week for 100% of high-end fish consumers. Yet this is still the high end of the risk curve. Women eating 12 ounces/wk are those most likely to exceed a safe dose. FDA's 1% exceedence rate banks on the assumption that seafood consumption will remain stagnant, that no one will increase seafood consumption.

FDA's model shows that eating 12 ounces per week is an infrequent behavior. FDA has not used the model to show it is a safe behavior. Simple calculations show it is, in fact, not safe.

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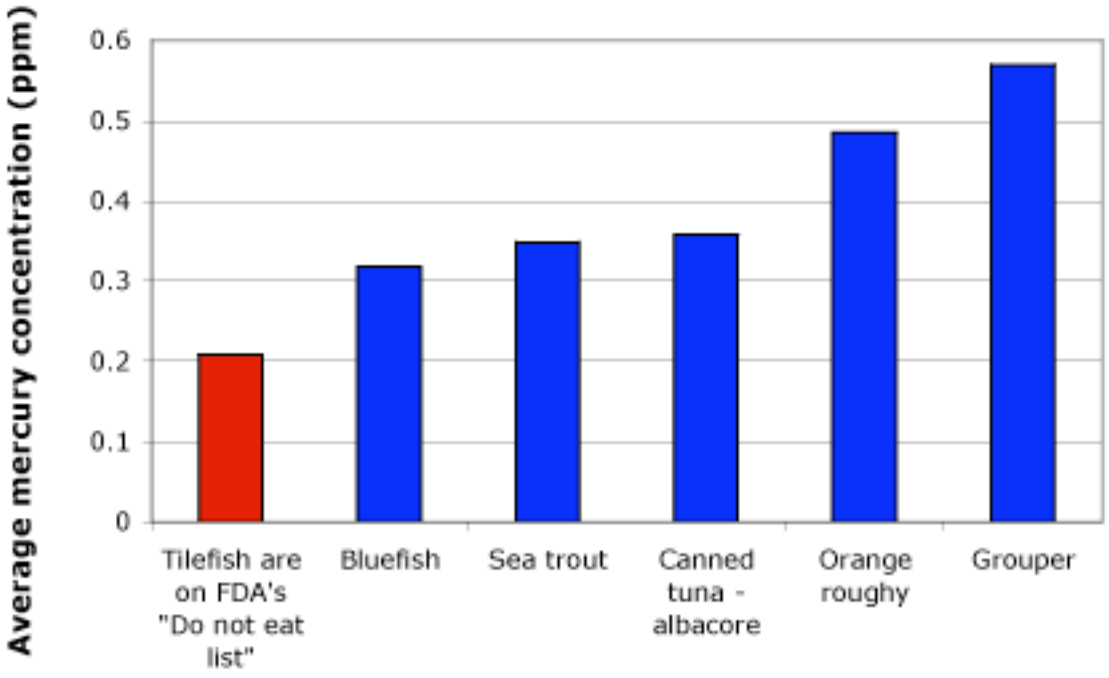
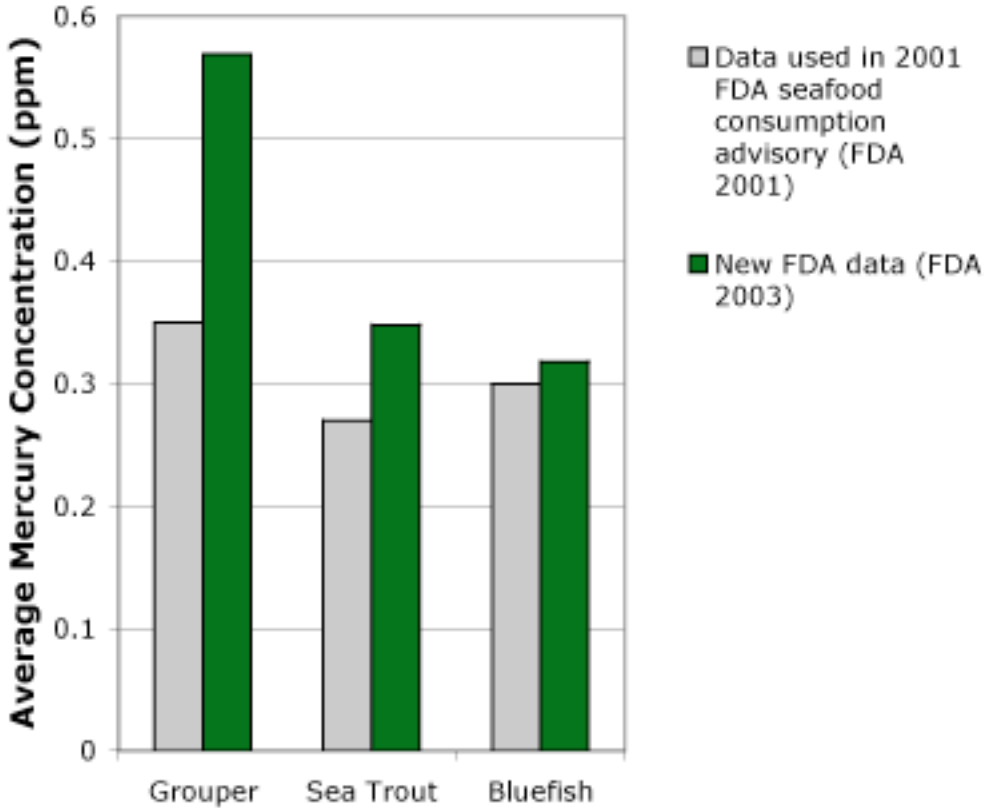
New FDA data show that five fish, including Canned Albacore Tuna, have higher levels of mercury than tilefish, a fish on the FDA "do not eat" list for pregnant women



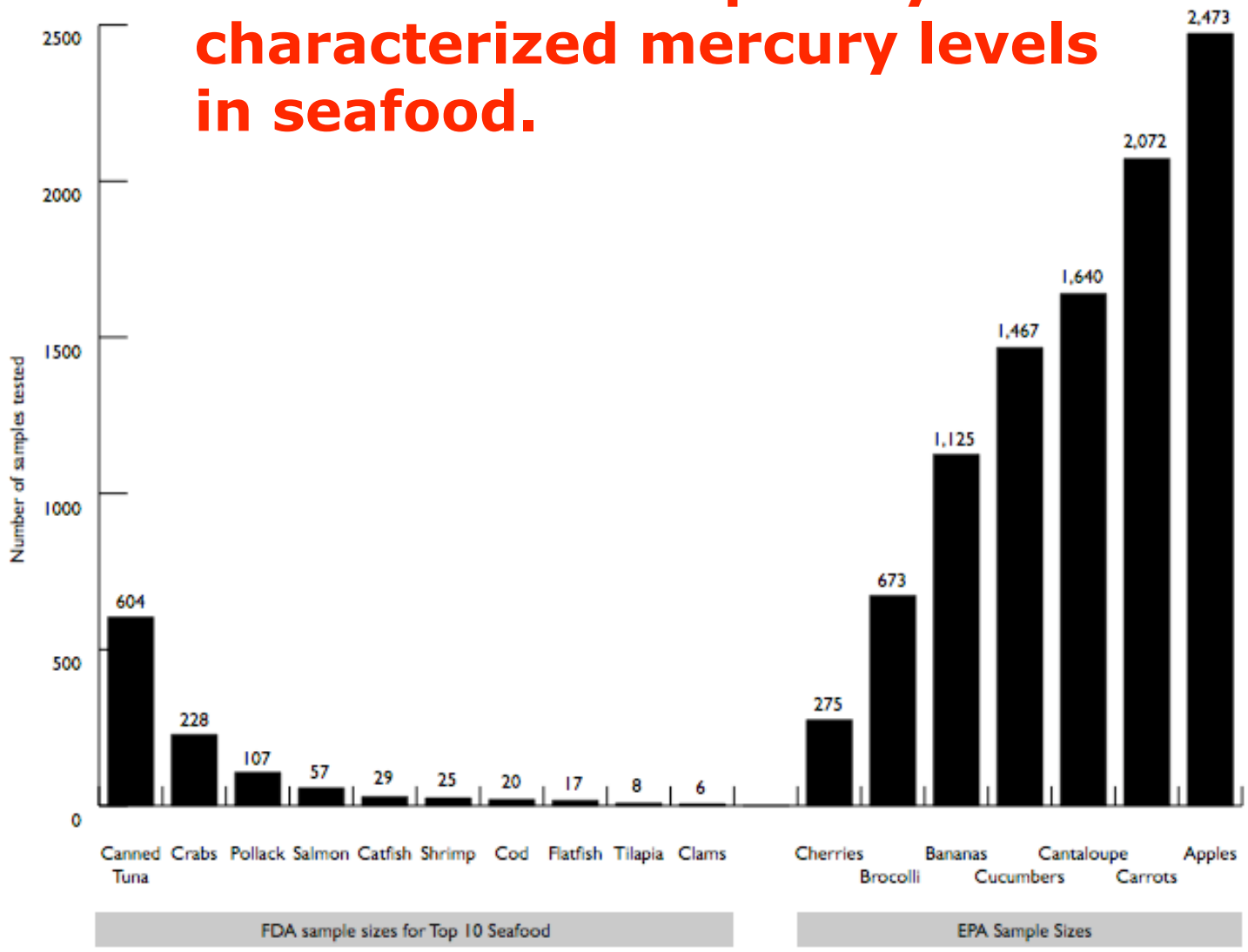
Source: Environmental Working Group. Compiled from FDA 2003 mercury testing data.

Mercury levels higher in some important fish



Source: Environmental Working Group analysis of Food and Drug Administration testing data.

FDA has not adequately characterized mercury levels in seafood.



Source: Dimethoate analyses presented in EPA's Aggregate Organophophate Pesticide Exposure Assessment and EWG analysis of FDA monitoring data

FDA has tested 25 samples of shrimp.

- #1 seafood in US
- 20 states, 81 countries, farmed and wild multiple species

FDA has tested 6 clams.

- #6 seafood in the US
- 9 states, 30 countries

FDA has tested 8 tilapia.

- #9 seafood in the US
- 2 states, 27 countries

FDA has tested more than 100 samples of just three of the top 10 most popular types of seafood in the US - canned tuna, crab, and pollock, commonly used in fish sticks.

FDA documents fewer than 30 mercury analyses for six of the remaining seven most popular types of seafood – shrimp, catfish, cod, clams, tilapia, and flatfish (flounder and sole).

FDA has relied on 57 samples of salmon, the 3rd most popular fish in the US, lumping all data together regardless of the particular species, the source (farmed or wild), or the country of origin.

Recommendations

FDA should test seafood.

Goal: Adequately characterize the distribution of mercury levels in the US seafood supply.

FDA should issue an advisory that tells women what fish are safe to eat in quantities that meet omega-3 requirements.

FDA should add canned albacore tuna to the list of fish women of childbearing age and children should not eat.