



Santorum and the EPA's Mercury Rule

April 17, 2015

Rick Santorum misrepresented the Environmental Protection Agency's impact analysis of a new agency rule that would reduce power plant emissions of mercury and other toxins:

- Santorum falsely claimed that the EPA's cost-benefit analysis assumed hundreds of thousands of pregnant women eat six pounds of fish caught in lakes per week, potentially exposing their unborn children to high levels of mercury. Actually, the EPA assumption was far lower, about 0.1 pounds per week on average.
- He also misstated the effects of mercury on IQ levels. He said the EPA calculates that the children of pregnant women who consume six pounds of lake fish per week would suffer a ".009 point reduction in their IQ." That figure — .009 — is what the EPA says would be the reduction in the amount of IQ loss under one emissions-reduction scenario, not the expected IQ loss without the emissions reduction.
- Santorum said the "direct health benefit" of lowering mercury emissions is \$6 million, referring to the EPA estimate for the reduction in IQ loss. That does represent the high-end of EPA's estimate, but he ignores the associated health benefits from reducing pollutants other than mercury. The EPA places the total benefit of the rule at between \$37 billion and \$90 billion per year.

What Is MATS?

The EPA's [Mercury and Air Toxics Standards](#), or MATS, was finalized in February 2012 and takes effect in April 2015. (The rule could be [derailed by a Supreme Court case](#) that is expected to be decided later this year, as we will explain later.)

The rule requires reductions in the volume of various emissions from coal- and oil-fired power plants with a capacity of at least 25 megawatts; it includes mercury and other metals (arsenic, chromium and nickel), as well as "acid gases" such as hydrochloric acid and hydrofluoric acid. Once all plants are in compliance, mercury emissions will drop under the rule by about 75 percent, from [26.6 tons to 6.6 tons](#) per year, according to the EPA. The technology used to reduce mercury and other emissions will produce so-called "co-benefits" by reducing sulfur dioxide and PM2.5 (tiny particles under 2.5 micrometers in size) — those pollutants, however, are not covered specifically by the rule.

The EPA estimates that this rule will affect 1,400 individual electric generators at 600 power plants. [About one quarter of the global human-caused mercury emissions](#) come from combustion of coal; other major sources around the world include small-scale gold mining and cement

production. North America as a whole accounted for only about 3.1 percent of the global emissions in 2013, [according to a United Nations Environment Programme report](#).

[Mercury](#) can stay in the atmosphere for a year, but once it descends to ground level it can enter lakes, rivers and the ocean, where it can be converted to [methylmercury](#). Methylmercury can “bioaccumulate,” or build up in the tissues of fish, which humans (and other animals) then eat. Small children and pregnant women are at particular risk from this buildup in fish, as it can affect development of the nervous system.

It is this benefit — reducing mercury exposure for pregnant women and unborn children — that Santorum, a likely 2016 presidential candidate, discussed in his speech at an event in Iowa called [“Inside Sources Road to 2016: Informing the Energy Debate”](#) (starting at the 55:00 mark).

Conflated Studies, Fish Consumption and the Cato Institute

Santorum argued that the cost of the EPA rule vastly outweighs the benefits, and he falsely accused the EPA of basing its cost-benefit analysis on a hypothetical population of pregnant women who eat massive amounts of fish.

Santorum, April 9: And here’s the calculation [EPA officials] made. The average woman in America consumes five ounces of ocean and lake fish a week. ... This is their assumption: that pregnant women in America will consume not five ounces, but six pounds! Six pounds ... that they caught themselves.

The [Regulatory Impact Analysis](#) does not make that assumption. In fact, EPA used an average consumption of 8 grams per day of fish (about 0.12 pounds per week), and included women in households where anyone engaged in fishing activity at some point in a given year. Ninety-five percent of such women consume less than 25 grams per day, or 0.39 pounds per week.

So where did his “six pounds” number come from?

A spokesman for Santorum referred us to a [March 23 Wall Street Journal op-ed](#) by attorney Brian Potts as the source of the former Pennsylvania senator’s remarks. That op-ed claims that EPA says 6 percent of all pregnant women in the U.S. — with higher numbers in certain states, such as 15 percent in Wisconsin and 21 percent in Minnesota — “subsist primarily by catching and eating as much as six pounds of lake fish a week.” Potts, the author of that article, told us that his analysis was based on a [brief filed to the Supreme Court by the Cato Institute](#). That brief criticizes certain parts of EPA’s analysis, and in doing so inaccurately conflates two separate studies.

The first of the studies Cato cites — an EPA [“Technical Support Document”](#) on mercury risks — was used as part of the EPA’s initial [“appropriate and necessary”](#) finding that paves the way for the agency to regulate various pollutants. This document is used by the EPA to show that some group of people might suffer harm, and thus EPA should regulate the pollutant in question. The analysis focused only on “high-end” subsistence fishers as a way to show that there could be a public health hazard from mercury.

That analysis said that the top 1 percent of female subsistence fishers, or the very highest end of all consumers, would eat about six pounds of fish per week. The average consumption among all subsistence fishers in the study is 0.6 pounds per week.

The second study, the [EPA's Regulatory Impact Analysis](#) on the MATS rule, uses far lower numbers for fish consumption in order to estimate benefits across a much larger population (all recreational angler households). Cato cites that document in regard to the negative effects of mercury consumption — the loss of IQ points and associated income — as if it focused on the same population as the other analysis on high-end fishers.

The conflation of those two reports — one study specifically on high-end subsistence fishers with another that estimates risk across “all recreational freshwater anglers” in the contiguous U.S. — is the source of Santorum's statements regarding fish consumption.

EPA confirmed this to us in an email, saying: “The 6 pounds of fish consumption per week is the consumption rate from the Mercury Risk Assessment, which focused on highly exposed subsistence fishers. This consumption rate was not used in the [Regulatory Impact Analysis] to estimate the benefits of the actual regulation.”

Mercury and IQ Losses

Santorum went on to discuss the potential effects of consuming mercury in fish, again focusing on the false notion that the analysis concerned high-end subsistence fisherwomen:

Santorum, April 9: So women in America, 6 percent of all women in America — they concentrated in around the Great Lakes area, so if you're a Minnesotan woman, 21 percent of Minnesota women who are pregnant, fish for six pounds of food a week that they consume. ... These fisherwomen who are out there on Lake Superior catching fish, filleting it and eating it themselves, they're going to pass on mercury to their children. And that mercury passed on to their children will produce — ready for this? — a .009 point reduction in their IQ.

The EPA calculated how many children were exposed to mercury from fish based on the number of anglers in each state, total population of the states and numbers of pregnant women. The agency calculated that, using 2005 as its “base case,” a total of 239,174 children would be exposed prenatally. This is where Santorum's “6 percent” number came from, as that represents approximately 6 percent of [all births across the United States in 2005](#), according to the Centers for Disease Control and Prevention's National Center for Health Statistics. (The same is true for his Minnesota-specific number.)

The EPA does not claim that 6 percent of all births were to women who catch six pounds of fish each week and consume it themselves. As we noted above, the consumption rates in the Regulatory Impact Analysis are actually far lower (0.12 pounds per week), and include all women who live in a household where any resident engages in fishing at least once in a year.

The source of Santorum's mistake, again, is the Cato Institute's conflation of two study populations. The [Cato brief](#) says: “[T]he agency estimated the number of children who would be

born to the hypothetical high-end self-caught fish-consuming female populations,” and notes the EPA arrived at a total of about 240,000.

That is incorrect. The 240,000 number represents all recreational angler households, not those high-end consumers from the earlier analysis. In fact, the EPA told us that the IQ analyses in the Regulatory Impact Analysis “did not include any analysis of subsistence level consumption. In other words, for the RIA, we did not assume that any pregnant women eat 6 pounds of fish per week.”

The IQ loss Santorum cites is actually a *reduction* in lost IQ, not the full loss itself. (The *Wall Street Journal* op-ed makes the same mistake.) In other words, there will still be an IQ loss due to mercury, but it won’t be quite as large because of the reductions in mercury emissions, EPA estimates. Under one scenario, using 2005 as a “base case,” the reduction in lost IQ is indeed close to .009 points per exposed child. Santorum should actually have used an even lower number, however: The scenario that concerns implementation of the MATS rule and uses 2016 as the “base case” showed a reduction in IQ loss of .00209 points per child.

Santorum then went on to mischaracterize the effect of IQ losses and the reduced IQ losses under the MATS rule.

Santorum, April 9: EPA is saying this .009 point reduction in IQ is gonna cost them, these children, \$2,000 in economic income over the course of their life, and you multiply that out, that’s \$6 million. And for that, we need to spend \$9.6 billion.

Santorum is correct about the \$6 million figure — the EPA calculated a range for the economic value of reducing IQ loss under the MATS rule, from \$500,000 to \$6.1 million — though not for the reason he provides. The “\$2,000 in economic income” he cites refers to an estimate in EPA’s analysis of the net loss of lifetime earnings per IQ point of \$1,958.

Added up, the net losses for the 240,000 exposed children in 2016 would be between \$22 million and \$300 million. The MATS rule, EPA says, would reduce the IQ losses and thus cut up to \$6.1 million from that total amount.

Also, it is worth noting that while the EPA found a tiny average reduction in IQ loss, it found a greater estimated reduction in certain populations.

Based on a review of other published studies of fish consumption, the EPA’s Regulatory Impact Analysis cites certain populations of the country that consume more than the 8 grams per day national average for recreational angler households, and the associated IQ losses are far greater. For example, the mean fish consumption among low-income African American recreational or subsistence fishers in the Southeast is estimated at 171 grams per day, or about 2.6 pounds per week. None of the other high-risk groups — low-income white recreational/subsistence fishers in the Southeast, low-income female recreational/subsistence fishers, Hispanic subsistence fishers, Laotian subsistence fishers and Great Lakes tribal groups — consumed more than 1 pound per week on average.

The EPA estimates that certain African American children born in 2016 in the Southeast could experience an IQ loss as a result of mercury of 7.7 points. The MATS rule would reduce that by an average of 0.176 points, EPA says — about 84 times the benefit seen in the overall population of recreational angler households.

Costs and Benefits

More generally, Santorum implies that the EPA cost-benefit analysis shows that the \$9.6 billion rule will result in only \$6 million in benefits. That's misleading.

We take no position on the legal validity or health-related necessity of the rule and the agency's analysis of its impact. But since Santorum used EPA's number for the cost of the rule, he should also have used its number for the benefits, which the agency says would be between \$37 billion and \$90 billion per year.

"They have calculated that the health benefit has to do with pregnant women and their children," Santorum said. But that's just part of the story.

[EPA lists a wide variety of health-related benefits](#) (see page ES-10) that the agency says will add value to the MATS rule. Many of the benefits that have been "quantified" and "monetized" are related to the associated reduction in the concentration of [fine particles suspended in the air, under 2.5 micrometers in size](#). Reductions in premature deaths related to PM2.5 make up the bulk of the total benefits. Other listed benefits include reductions in non-fatal heart attacks, emergency room visits for asthma, lost work days and hospital admissions. EPA lists other benefits that it hasn't monetized or quantified.

The cost-benefit analysis has been a point of contention. The rule has faced legal challenges, which reached [the Supreme Court in March](#). A decision is expected later this year. The issue before the court is whether the EPA "[unreasonably refused to consider costs](#)" in its rule-making, and critics say the co-benefits associated with PM2.5 reductions should not be included in a cost-benefit analysis.