People of The State of California VS. TRI-UNIONSEAFOODS, LLC ETAL.-The Necessity of Local Law to Protect Citizens from Harmful Tuna Sales

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PEOPLE OF THE STATE OF CALIFORNIA VS. TRI-UNION SEAFOODS, LLC ET AL.—THE NECESSITY OF LOCAL LAW TO PROTECT CITIZENS FROM HARMFUL TUNA SALES

by Marlene Barken*
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INTRODUCTION

Recent research on mercury found in canned tuna calls into question the 2004 Food and Drug Administration/Environmental Protection Agency (FDA/EPA) Advisory on fish consumption for pregnant women, women of childbearing age, and young children. Currently, the federal government promotes canned tuna as an inexpensive, beneficial protein source. Yet, a 2006 report published jointly by the Defenders of Wildlife (DW) and the Center for Science in the Public Interest (CSPI), in conjunction with the Mercury Policy Project (MPP), concluded that a large proportion of America's favorite fish contains unsafe levels of methylmercury.¹

This potent neurotoxin can impede synapese formation, disrupt the release of neurotransmitters, and even strip off the fatty layers wound around the axons of a developing brain.² Populations at risk include low income groups, particularly recipients of federal subsidies such as the Women, Infants, and Children (WIC) and state funded school lunch programs.³ Given the strong evidence of the serious impact of methylmercury on fetal brain development, the authors have previously argued that the federal government must recognize mercury as a hazard, update its consumption guidelines, and better monitor the mercury content in canned tuna.⁴

The state of California has aggressively sought to better inform its citizens about the reproductive toxicity risks of methylmercury in tuna, and it is currently involved in a protracted legal battle with the canned tuna industry. This paper will review the epidemiological studies, history and legal precedent that form the basis for the FDA/EPA Advisory, and then examine the issues presented by California's pending appeal in the People of the State of California vs. Tri-Union Seafoods, LLC.⁵

SCIENTIFIC, HISTORICAL AND LEGAL BACKGROUND FOR CREATION OF THE 2004 FDA/EPA FISH ADVISORY

Scientific Bases for Exposure Limits to Methylmercury

Fascination with the properties of metal mercury dates back to the time of the earliest civilizations in China, India, and Egypt, and alchemists believed mercury held the secret to the transmutation of base metals into gold.⁶ Deaths due to acute mercury poisoning have been well documented, and as early as 1700, the Italian surgeon Bernardino Ramazzini identified the occupational and industrial hazards associated with mining and handling mercury.⁷ The most well known form of chronic mercury poisoning was that suffered by fur cutters in the hat trade. The felt from which hats were made were treated chemically with an acidic solution of mercury nitrate, and the dust from the felt would contaminate the workplace. The
phrase "mad as a hatter" relates to the irrational behavior and other symptoms suffered by the workers,\(^5\) which was immortalized in Lewis Carroll's *Alice in Wonderland*.

Although elemental, inorganic, and organic mercury naturally occur in the environment, today industrial emissions account for 70% of mercury pollution globally.\(^9\) The inorganic mercury suspended in the atmosphere eventually returns to earth through rain and snow deposition, whereupon it contaminates our oceans, lakes, groundwater, and other waterways. In an aquatic environment, mercury reacts with sulfating bacterial algae and undergoes a methylation process whereby it can be taken up by organisms in its much more toxic form, methylmercury. Fish eat the algae, and the methylmercury bioaccumulates as it passes through the food chain, ultimately reaching humans who may be exposed to high levels of toxicity if they consume large predatory fish.\(^10\)

Scientific evidence supporting the establishment of safe levels of methylmercury exposure emerged from poisoning incidents in Japan due to consumption of mercury contaminated fish, and from Iraq where people ate home-made bread that contained grains that had been treated with a mercury-based fungicide to control mold.\(^11\) The Japanese disaster dates back to the 1930s when the Chisso Company used metallic mercury as a catalyst in the production of plastics. The waste was then dumped into Minamata Bay.\(^12\) The elemental mercury was converted into methylmercury and through biomagnification reached toxic levels in larger fish. Pregnant women who ate fish from the bay passed the toxin on to their developing fetuses.\(^13\) By the late 1950's, scientists recognized that thousands of babies were suffering from methylmercury poisoning which caused crippling damage to their brains and nervous systems. A clear causal connection with Chisso's practices was established and the congenital deformities became known as "Minamata disease."\(^14\) The Iraqi poisonings occurred in the early 1970’s, and it is believed that as many as 10,000 people may have died from acute poisoning and that another 100,000 people were severely and permanently brain damaged. In addition, fish and migratory birds were affected because they ate the contaminated grains that were discarded.\(^15\)

The Minamata tragedy and two additional cases of methylmercury poisoning that occurred in Niigata, Japan in 1965, led the FDA to establish an action level of 0.5ppm for methylmercury in fish as the level at which the agency may take legal action to remove a product from the market. Relying on the data from Iraq, the EPA established a reference dose (RfD) for methylmercury in fish of 0.1μg/kg/day (micrograms per kilogram per day).\(^16\) The EPA's reference dose represents an estimate of acceptable exposure, which is proportional to a person's weight. This calculation builds in a stricter standard for small children, and was equivalent to approximately 0.3ppm for the average adult.\(^17\)

In the late 1980’s, three large scale prospective epidemiologic studies were designed to examine children who were exposed to methylmercury *in-utero* at concentrations relevant to US exposure levels.\(^18\) Cohorts from the fish eating populations of the Faroe Islands, The Republic of Seychelles, and New Zealand were monitored during prenatal development and evaluated throughout childhood. Postnatal follow up data is still being collected from the Faroe Islands.\(^19\) To date, the Faroe Island study has found a correlation between neurobehavioral deficits and umbilical cord-blood mercury concentrations,\(^20\) including deficiencies in the childrens' memory, learning, and attention. A dose dependent relationship between delays in mental development and prenatal exposure to methylmercury exists at very low exposures, and children with higher prenatal
exposures also exhibited higher blood pressure.\textsuperscript{21} Moreover, follow-up tests conducted at age 14 found a significant association between pre-natal exposure to methylmercury and cognitive and motor skill deficits, providing strong evidence that the effects are permanent.\textsuperscript{22}

The tuna industry and some members of the scientific community have argued that the Faroe Island’s study is unreliable due to confounding factors, such as Dichlorodiphenyltrichloroethane (DDT) and Polychlorinated Biphenyls (PCBs) found in whale blubber. Also, there was no control group in this study, because the entire Faroese population had been exposed to methylmercury through whale meat prior to the experiment. Nonetheless, a New Zealand study conducted in the mid 1980’s reached results very similar to those of the Faroe Islands.\textsuperscript{23} Here the main exposure to methylmercury was from the consumption of shark meat used in fish and chips. Unlike the pilot whale consumed by Faroese women, shark meat has undetectable levels of PCBs. The New Zealand researchers confirmed that adverse developmental effects are evident at extremely low in-utero exposure levels.\textsuperscript{24}

The third major epidemiological study focused on children born in 1989-90 on the Seychelles Islands of the Indian Ocean. Mothers typically eat a diet rich in fish. The fish they eat has undetectable levels of PCB’s, and there are no direct sources of mercury pollution in the area, thereby minimizing confounding factors in this study. The researchers used maternal hair samples as the biomarker to measure mercury levels, and they tested the children at ages 6, 19, 29 and 66 months of age. This study found no significant association between mercury levels and neurobehavioral performance in the children.\textsuperscript{25} Long term follow-up comparable to that of the Faroe Islands study was not done. It is also possible that had the study utilized cord blood as a primary biomarker, it might have generated different results. Note that all of the epidemiological studies to date have been performed on geographically isolated seafood eating populations; there may be genetic differences that account for the varying results.\textsuperscript{26}

Legal Challenge to the FDA’s Exposure Limit

As already noted, the FDA had used the scientific data from Japan to set its action level at 0.5ppm. In 1978, the FDA took enforcement action against Anderson Seafoods for allegedly distributing swordfish “adulterated” with mercury up to levels of 2.0ppm.\textsuperscript{27} The District Court agreed with the FDA that “adulterated” included substances that are “added” and “may render” the fish injurious, and it upheld the FDA’s enforcement power because some degree of the mercury in swordfish is attributable to manmade pollution.\textsuperscript{28} Laboratory evidence confirmed that the Anderson swordfish contained mercury levels ranging from .53ppm. to 1.00ppm., but Anderson argued that the FDA’s action level was set too low. Experts testified regarding the disputed threshold level of exposure, and the FDA asserted that there may be subclinical effects not yet subject to detection by neurological examination.\textsuperscript{29} The court rejected the FDA’s precautions as speculative and held that the scientific and empirical data supported an action level of 1.0ppm.\textsuperscript{30}

In 1980, the U.S. Court of Appeals for the Fifth Circuit affirmed the lower court’s analysis of the FDA’s power to remove from the market “added” substances such as mercury laced fish, but by then, the government had withdrawn its appeal on the appropriate action level.\textsuperscript{31} An extensive National Marine Fisheries Service (NMFS) study in 1978 reviewed consumption data and methylmercury levels in fish.\textsuperscript{32} The FDA decided that the study supported the exposure levels demonstrated in the Anderson case, and did not contest that
finding on appeal. The FDA's current action level of 1.0 ppm has remained in place since 1979, and it deviates significantly from the EPA's more cautious reference dose, which has remained at 0.1 μg/kg/day. While the varying threshold levels may be in part due to the different regulatory missions of the two agencies, the resulting inconsistency is troubling. Moreover, while the FDA provides consumption guidelines that are consistent with those of the international community regarding high mercury fish such as king mackerel, tilefish, shark and swordfish, their action level is among the least protective. Since some canned tuna may be a high mercury fish as well, this lenient action level is critical. The Defenders of Wildlife study, discussed in more detail below, provides a graphic comparison of the action levels adopted by major developed countries and international health bodies (See Appendix I). The FDA is the only agency that allows mercury levels up to 1.0 ppm. The EPA is at the other end of the spectrum along with the United Kingdom and Japan, at 0.3 ppm.

Evolution of the Current Advisory

The 1994 Advisory:

The FDA is charged with monitoring all domestic and imported commercial fish, and its regulatory mission is to balance health risks against cost considerations, including costs to industry. By the early 1990's, pressure mounted for formal agency action regarding the risks of consuming commercial seafood. In 1991, the Institute of Medicine, a private nonprofit group that works with the National Academy of Sciences (NAS), began advising women who might become pregnant to avoid eating swordfish. Then in 1992, after the release of the Faroe Islands study, the Center for Science in the Public Interest (CSPI) petitioned the FDA to adopt a stricter methylmercury standard. The FDA delayed issuing its first seafood advisory until September, 1994, arguing that it was awaiting the pending results of the Seychelles data.

Published in the FDA Consumer, that advisory only restricted pregnant women and women of childbearing age who may become pregnant to limit their consumption of shark and swordfish to no more than once a month. The FDA offered no consumption advice for the top 10 most consumed seafood species in America—canned tuna, shrimp, Pollack, salmon, cod, catfish, clams, flatfish, crabs, and scallops. These were considered low mercury fish (presumed to contain less than 0.2 ppm) and though they represented 80% of the market, the FDA wanted to assure the public that given normal fish consumption patterns, most people were in no danger of methylmercury poisoning. The 1994 advisory said nothing about albacore tuna, the major predatory fish consumed by Americans. At the time it was believed to have three times the amount of methylmercury found in the smaller and cheaper varieties of canned “chunk light” tuna. Industry lobbyists, however, successfully convinced the FDA to keep tuna off of the restricted list because consumers might misinterpret advice to restrict consumption of albacore tuna as advice to avoid all tuna.

The 1999-2000 NAS Study:

The EPA, along with the states, is charged with monitoring mercury levels in domestic fish found in U.S. rivers and streams and typically caught for sport and private use. Since the EPA is also responsible for protecting the health of the public against toxic contaminants that are discharged or deposited in the waterways and may affect fish, the EPA also issues advisories about which fish are safe to eat.
Unlike the FDA, the EPA need only consider the health risks to the people who eat the fish under its jurisdiction, not the impact on industry. In 1999, Congress appropriated funds for an NAS review of the scientific validity of the EPA’s reference dose. The report was released in July, 2000, and it concluded that the EPA’s RfD of 0.1µg/kg/day was a scientifically justifiable level for the protection of public health, but it recommended basing the RfD on the more recent Faroe Islands study rather than the Iraqi data. The NAS committee found the Seychelles data unreliable because its failure to observe neurodevelopmental effects associated with methylmercury exposure conflicted with the dominant body of scientific evidence. Ominously, the NAS report warned that “Available consumption data and current population and fertility rates indicate that over 60,000 newborns annually might be at risk for adverse neurodevelopmental effects from in-utero exposure to methylmercury.”

Predictably, industry representatives and their congressional supporters urged the FDA to delay any decisions on a new consumer advisory until scientific consensus could be reached regarding the validity of the Seychelles study and possible confounding factors in the Faroe Islands study. They also argued that American fish consumption patterns were different than those of the Faroese cohort. In contrast, Senators Leahy and Harkin had been pressuring the FDA to reexamine its action level since 1999, and they deemed the NAS report a mandate to adopt the EPA’s stricter standard in the interest of protecting public health. They also demanded that the FDA resume its suspended tests for methylmercury contamination in domestically-caught fish.

The FDA 2001 Advisory:

In response to the NAS report, the FDA attempted to reconcile the several conflicting studies of methylmercury exposure in human populations, data regarding fish consumption and mercury concentrations, and the health benefits of a balanced diet that includes fish. They also solicited feedback from eight focus groups asked to react to different types of consumer messages. In addition, the FDA’s Director of the Center for Food Safety and Applied Nutrition (CFSAN) met with numerous stakeholders, including representatives of the National Food Processors (NFP) and the canned tuna industry, who argued strenuously that canned tuna was safe at the FDA’s action level of 1.0ppm, that seafood is a good source of protein, and that the health benefits of seafood products needed to be considered in any regulatory decision. Industry representatives further cautioned that reliance solely on the NAS study could do “irreparable” harm to the canned tuna industry.

The resulting 2001 advisory recommended that pregnant women and women of childbearing age who may become pregnant should avoid eating four high mercury fish—shark, swordfish, king mackerel, and tilefish. No specific advice for canned tuna was issued because the NFP successfully convinced the FDA that actual consumption was less than “anecdotal” observations indicated. In fact, all recommendations for tuna, including fresh and frozen tuna which generally use larger fish than those in canned tuna, were subsumed in the general advice to limit all fish consumption to twice a week, not to exceed 12 ounces in total.

According to the Environmental Working Group (EWG), a public interest watchdog organization, the FDA dropped its plan to include warnings about tuna steaks and canned tuna after 3 meetings with the tuna industry. The EWG further charged that there was no support for the FDA’s claim
that women would misinterpret advice to limit intake of fish as a directive to abstain altogether. Moreover, if pregnant women ate the allowable two portions of albacore tuna per week, many of them would approach unsafe levels of exposure to methylmercury.\textsuperscript{52}

Under considerable attack, the FDA turned to its Food Advisory Committee (FAC). In 2002, the FAC recommended that the FDA and the EPA formulate a joint advisory to resolve the inconsistencies in their mercury exposure levels and that specific advice should be issued for tuna.\textsuperscript{53}

\textit{The FDA/EPA 2004 Advisory:}

Following a process similar to that which preceded the issuance of the 2001 advisory, the FDA and EPA initiated focus groups and held four meetings with stakeholders, including industry, consumer groups and health professionals, the states, and tribes.\textsuperscript{54} The 2004 advisory reiterated the warning that pregnant women should not eat the four high mercury fish, but it specified that they could eat up to two meals (12 ounces total) of low-mercury seafood such as canned tuna. Only one of the two meals (6 ounces) could be higher mercury albacore tuna, and children should eat proportionately less of both types of tuna. Fish caught for sport could be eaten once a week, but then you should not eat any other fish that week.\textsuperscript{55} The EWG objected that albacore tuna and many high mercury commercial and sports fish should have been included in the "do not eat" category for pregnant women.\textsuperscript{56} The tuna industry was relieved, however, and it used the joint federal advisory to extol the nutritional benefits of the omega-3 fatty acids found in canned tuna. Identifying canned light and albacore tuna as low mercury fish, Tuna Foundation advertisements highlighted the FDA/EPA determination that pregnant women could safely consume both.\textsuperscript{57}

Despite its attempt to address the tuna controversy, the 2004 joint advisory still failed to reconcile the FDA’s liberal action level with the EPA’s more restrictive reference dose. Since the advisory is only available on the Internet or in doctors’ offices, women in the at-risk group must still take the initiative to check both federal and local sports fish advisories and to abstain and/or monitor the amount of their fish intake. Caregivers also need to keep track of the type and amount of fish consumed by children. As documented in the Defenders of Wildlife study discussed below, these shortcomings are exacerbated by the lack of routine sampling of canned tuna and new data which indicates significantly higher levels of methylmercury in some imported canned light tuna. More alarming yet, the FDA has asserted that the joint advisory preempts any state attempt to provide consumers with more comprehensive warnings.\textsuperscript{58}

\textbf{CALIFORNIA’S APPROACH TO WARNING CONSUMERS ABOUT THE DANGERS OF METHYLMERCURY}

\textit{California’s Proposition 65}

In 1986, California passed an important voter initiative, the Safe Drinking and Toxic Enforcement Act, more commonly known as Proposition 65.\textsuperscript{59} The preamble to that measure declares the peoples’ rights:

(a) To protect themselves and the water they drink against chemicals that cause cancer, birth defects, or other reproductive harm.

(b) To be informed about exposures to chemicals that cause cancer, birth defects, or other reproductive harm.
(c) To secure strict enforcement of the laws controlling hazardous chemicals and deter actions that threaten public health and safety.

(d) To shift the cost of hazardous waste cleanups more onto offenders and less onto law-abiding taxpayers.\(^\text{60}\)

In furtherance of those rights, "No person in the course of doing business shall knowingly and intentionally expose any individual to a chemical known to the state to cause cancer or reproductive toxicity without first giving clear and reasonable warning to such individual."\(^\text{61}\) In July, 1987, methylmercury was added to California's list of chemicals known to cause reproductive toxicity, and in May, 1996 methylmercury compounds were added to the list of chemicals known to cause cancer.\(^\text{62}\)

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Pursuant to the Proposition 65 mandate, the California Attorney General's office sued grocery chains and restaurants for failure to warn about fresh or frozen tuna, swordfish, and shark. The restaurants settled and agreed to provide a warning. The lawsuit against the grocers is ongoing, but they are posting warnings pending resolution.\(^\text{63}\) The state's suit against the canned and packaged tuna industry for failure to warn consumers was filed in 2004.\(^\text{64}\) Following a lengthy trial replete with expert testimony, the Superior Court rejected the state's position and ruled in favor of the tuna industry on each of the three central issues: (1) federal preemption of the state's Proposition 65 consumer warning requirements; (2) the determination of the Maximum Allowable Dosage Level (MADL) for methylmercury in canned tuna according to Proposition 65; and (3) whether methylmercury in tuna is "naturally occurring" and hence exempt from application of Proposition 65.\(^\text{65}\)

**Federal Preemption:**

The court's decision on the first issue relied on a letter written at the behest of the tuna industry by Lester Crawford, former Commissioner of the FDA.\(^\text{66}\) Addressed to then California Attorney General Bill Lockyer, the letter reviewed the FDA's deliberative process in arriving at the 2004 advisory, the agency's concern that consumers should not be "overexposed" to warnings such that they ignore all warnings, and the FDA's adoption of a "nuanced" approach in relaying to the public the risks and benefits of eating seafood. Commissioner Crawford discussed at length the agency's decision to allow qualified health claims involving Omega-3 fatty acids and a reduced risk of coronary heart disease to appear in conjunction with the sale of seafood without any corresponding product label statement about the mercury content of fish and possible harmful effects to the vulnerable population.\(^\text{67}\) The choice of an advisory, instead of a point of purchase warning, was designed to convey a complex message directly to the target audience, rather than to all consumers. Commissioner Crawford concluded that the proposed Proposition 65 warnings were preempted by federal law both because they would frustrate the FDA's regulatory approach and because they would be misleading due to a failure to provide the proper context in which to convey the necessary factual information.\(^\text{68}\)

Attorney General Lockyer's response pointed out that the FDA's failure to contact his office regarding the litigation and its reliance strictly on the defendant tuna industry's ex parte communication, had led to an erroneous conclusion.\(^\text{69}\) The FDA had not reviewed the actual proposed warnings, only the "safe harbor" language permitted under applicable regulations.\(^\text{70}\) The Attorney General noted that in other Proposition 65 enforcement cases the state had reached
settlements with restaurants and some grocers concerning appropriate warnings. Thus, he read the letter narrowly to only preempt warning messages that directly contradicted the FDA advisory. States could disseminate truthful, accurate information consistent with the advisory, and such information need not be identical to the language used by the FDA. While California supported the joint efforts of the FDA and the EPA to develop a fish advisory, the Attorney General argued that the advisory had only been promulgated on a web page, a method that significantly restricted consumer access. Moreover, the “target” audience was not limited to women and mothers as the FDA suggested, but should include anyone who might have significant contact with pregnant women, nursing mothers and small children, and who might make purchasing decisions for the target population. The Attorney General urged that Proposition 65 was actually an important tool that could be used to further the state and federal governments’ common goal of protecting public health by supplying the critical information to more consumers at the point at which they purchase fish.

In addition to the deficiencies California found in the FDA’s “nuanced” regulatory approach, the state objected that Commissioner Crawford’s informal letter, solicited by the tuna canners, did not constitute final agency action and was not entitled to deference. Furthermore, the appropriate standard for federal preemption of state law, particularly in areas of health and safety, is clear and convincing evidence. Nonetheless, the trial court described the Crawford letter as “dispositive,” and found for the tuna industry on the issue of preemption. Using the lesser standard of preponderance of the evidence, the court held that any Proposition 65 sign or educational campaign would conflict with federal law and policy “both as to the message that should be conveyed to consumers about fish consumption, and as to the manner in which that message is to be conveyed.” According to this interpretation, even making the actual FDA/EPA advisory available at the point of sale would be prohibited.

Determination of the MADL:

The trial court adopted almost verbatim the tuna industry’s position on the remaining questions, dismissing credible testimony by the state’s experts as well as the most recent studies on human exposure to mercury in fish. Based on the 1980 Bornhausen study of methylmercury in rats, the court determined that the appropriate MADL for methylmercury under Proposition 65 is 0.3µg/day, and that the tuna canners food products were below that level. The undisputed evidence confirmed that even using the tuna companies’ “blended mean” of methylmercury concentrations in albacore and light tuna, a single-serving exposure is multiple times above the .3µg/day MADL. The tuna defendants, however, successfully argued that using the arithmetic mean of the distribution of female tuna consumption patterns, the “average” woman eats canned tuna every 60 days. Dividing the exposure concentrations by 60 brings the level below the MADL.

At trial and now on appeal, California has argued that Proposition 65 Regulations do not permit the tuna companies to use a blended mean. Moreover, since methylmercury is a teratogen that can cause harm from a single serving, the Regulations do not permit averaging. Even if averaging were allowed, the state contends that pursuant to the Regulations, the appropriate denominator would be 23, which represents the median or central tendency of the “average user.” Survey data demonstrated that 50% of women in California eat canned tuna at least every 23 days. Using this “norm” eliminates the skewed result that occurs when high-end and low-end users are included to compute the arithmetic mean of 60 relied on by the
tuna industry. The state’s calculation would put canned tuna over the .3µg/day MADL, thus mandating the Proposition 65 warning.

The “Naturally Occurring” Exemption:

Lastly, the court concluded that the tuna canners were exempt from Proposition 65 under the “naturally occurring” exception to the statute. The court was “persuaded on balance that virtually all of the methylmercury in tuna originates from natural sources, while a small amount may be attributable to human activity.” The exemption applied because the tuna canners “have no way to control the level of methylmercury in their canned tuna products.” This last finding seems to be in direct contradiction to the holding in the Anderson Seafood case discussed earlier, as well as with the explicit language of the EPA/FDA Advisory. In addressing “Frequently Asked Questions,” the Advisory explains that:

Mercury occurs naturally in the environment and can also be released into the air through industrial pollution. Mercury falls from the air and can accumulate in streams and oceans and is turned into methylmercury in the water. It is this type of mercury that can be harmful to your unborn baby and young child. Fish absorb the methylmercury as they feed in these waters and so it builds up in them. It builds up more in some types of fish and shellfish than others, depending on what the fish eat, which is why the levels vary.

Though the Advisory unequivocally recognizes that the methylmercury of concern is partly attributable to anthropogenic sources, the court’s ruling would seem to exempt from Proposition 65 coverage all harmful chemicals that might end up in food as a result of industrial pollution. As long as the defendant didn’t deliberately add the dangerous substance, there would be no accountability for its presence.

Pending Appeal

California appealed the case. All briefs were filed by December, 2007, and oral argument has been scheduled for January 27, 2009. Notably, the San Francisco Medical Society and the San Francisco Bay Area Physicians for Social Responsibility joined with the Natural Resource Defense Council and the Mercury Policy Project in filing an amici curia brief in support of the state’s authority to protect the food supply and to warn citizens of food hazards. For now, the tuna industry’s victory has stymied California’s (and perhaps other states) efforts to reach a larger audience concerning the risk to benefit ratio of eating canned tuna. If the case is upheld on federal preemption grounds, then the FDA will completely control both the message and the means by which it is delivered. To date, that message has been heavily influenced by the tuna industry.

NEW DATA RELEASED AFTER THE 2004 FDA/EPA ADVISORY

The 2006 Defenders of Wildlife study further questions the FDA’s advice. Actual test results comparing the mercury content in canned chunk light and albacore tuna found higher mercury levels in both. An additional finding of concern was that tuna from several Central and Latin American countries had higher than average mercury levels. This is likely due to fishing practices that aim to catch older, larger fish. Unfortunately, those fish may have accumulated more methylmercury, and consumers have no way of knowing the exact mercury content of the tuna in each can. Though country-of-origin labeling requirements
apply to fresh fish, canned fish is exempt, and the label only reveals where it was canned, not where it was harvested. The Defenders of Wildlife study called for a revision of the Joint Advisory based on a comprehensive scientific review of the validity of both the FDA’s action level and the EPA’s reference dose. Pending such revision, the report urged immediate government action to conduct tests on canned tuna, to enforce the FDA’s existing 1.00ppm action level, to identify mercury as a hazard so that the seafood industry would be required to monitor mercury content, to issue warnings for canned light tuna equivalent to those for albacore tuna, and to reexamine the role of canned tuna in government food subsidy programs.

Following release of the study, responsible consumer groups, including Consumer Reports, now advise pregnant women to avoid eating canned tuna altogether due to the uncertain and variable levels of methylmercury within each can. Women can obtain the benefits of Omega-3 fatty acids through fish oil supplements, leafy greens, walnuts, and flaxseed, and there are good substitutes for low fat protein, including chicken, tofu, and legumes.

CONCLUSIONS AND RECOMMENDATIONS

Environmental toxicologist Deborah Rice, an expert witness for the state of California in the Tri-Union Seafoods case, has argued that based on available data for adverse neuropsychological effects, there may be no safe threshold for methylmercury exposure and thus calculation of a reference dose is inappropriate. Indeed, even one episode of high mercury exposure may be enough to harm a developing fetus, particularly during the critical period of brain cell migration that occurs during months four and six of pregnancy. The FDA’s “nuanced” message certainly does not convey the magnitude of this risk, and even the existing weak message is not reaching its target audience.

To date, the tuna industry successfully has kept tuna from being classified as a high mercury fish and has aggressively lobbied for the right to emphasize the health benefits of tuna on the label. The findings of the most recent studies make clear that information about mercury exposure risks should be available at the point of sale—warnings should appear on canned tuna labels and in stores and restaurants where fish is sold. Consumers also need to know where their food comes from, and country-of-origin labeling requirements should apply to all commercial fish, including canned varieties. The authors concur with the Defenders of Wildlife study recommendations in their entirety, including the imperative to reevaluate the current Advisory. In addition, the outcome of the pending Tri-Union Seafoods case is critical. In order to protect public health and vulnerable populations, states must be able to promulgate their own advisories and to conduct educational campaigns. The trial court’s embrace of the tuna industry’s arguments is unsupported by the weight of scientific evidence and by law. On appeal, the decision should be overturned in favor of the state.
Appendix I.

INTERNATIONAL COMPARISON OF MAXIMUM ALLOWED/RECOMMENDED MERCURY LEVELS IN FISH

![Graph showing mercury levels in fish from various countries](image)

Figure 1: Maximum Allowed/Recommended Mercury Levels in Fish (ppm) in Selected Countries and by International Governmental Organizations (Defenders of Wildlife, supra note 1)

ENDNOTES


3 Defenders of Wildlife, supra note 1.
4 See Palme and Bunker, "Is Tuna Toxic? An Evaluation of the FDA/EPA 2004 Advisory on Mercury in Fish and Shellfish," under review for publication in the University of Michigan's compilation of the papers presented at its 2007 Environmental Justice Research Symposium. The paper reviewed the literature on the dangers of methylmercury exposure and focused on the history and shortcomings of the FDA/EPA Advisory as well as environmental justice concerns due to the disproportionate impact on low-income and minority groups who comprise the largest segment of eligible recipients under government-funded subsidy programs.
7 Id., at p. 47-48.
8 Id., at p. 52.
12 Steingraber, supra note 2, at p. 44.
14 Steingraber, supra note 2, at p. 44-46.
16 Consumer Advisory Executive Summary, Tab B, supra at note 13.
17 Defenders of Wildlife, supra at note 1.
18 Transande, supra at note 12.
21 Steingraber supra at p. 122-123.
23 Puller and Becker, supra at note 4.
24 Transande supra at note 12.

26 See Pallo and Barken for a more detailed review of the three epidemiological studies, as well as discussion of a 2004 ecological study in the United States which found a significant correlation between the amount of environmentally released mercury and an increased need for special education services along with an increase in the rate of autism, citing Palmer, R., Blumberg, S., Stein, Z., Mandell, D., Miller, C. (2006). Environmetal mercury release, special education, and autism disorder: an ecological study of Texas. Health & Place. Issue 12, pp 203-209.


28 Id. at 1156.

29 Id. at 1158.

30 Id. at 1160.


33 Defenders of Wildlife, supra at note 1.

34 Id., and see Pallo and Barken supra at note 4.

35 Nestle, supra at note 15, p.191.

36 Steingraber, supra at note 15, p. 125.

37 Consumer Advisory Executive Summary, Tab B, supra at note 13.

38 Id.

39 Nestle, supra at note 15, p.191.

40 Steingraber, supra at note 2, p. 126.

41 Nestle, supra at note 15, p.191.

42 Id. p.194.

43 Consumer Advisory Executive Summary, Tab A, supra at note 13.


45 Id, Tab A

46 Id.


48 Id., Document #22, CFSAN Memorandum of Meeting with fish industry on methylmercury, September 25, 2000.

49 Id., Document #4

50 Id.

51 Id.

52 Nestle, supra at note 15, pp 192-194.

53 Id.

ILLEGAL IMMIGRATION: ECONOMIC, SOCIAL AND ETHICAL IMPLICATIONS

by
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INTRODUCTION

In 1986 Congress passed and President Reagan signed into law the Immigration Reform and Control Act of 1986 (IRCA) (P.L. 99-603, 100 Stat. 3359) which amended the Immigration and Nationality Act of 1952 to better control unauthorized immigration.1 IRCA made it more difficult for illegal immigrants to obtain work or receive government benefits by requiring employers and states to check the right to work documents of prospective applicants for employment and benefits.2 The Act also included an amnesty provision that allowed certain illegal immigrants who had lived in the United States on or before January 1, 1982 to apply to become legal residents with the right to work and an eventual path to citizenship.3 Contrary to the intent of Congress, IRCA did nothing to stem the flow of illegal immigration which has steadily increased since that time. In 1986, the number of illegal aliens was estimated to be between three and six million.4 Almost three million illegal aliens adjusted their status to legal permanent residents after passage of the act.5 But the IRCA requirements that employers verify the right to work status for new employees have not been enforced, according to Senator John Cornyn (R-TX), who noted: “Between 1999 and 2004, the number of notices of intent to fine employers for improperly completing paperwork or knowingly hiring unauthorized workers decreased from 417 to three.”

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