

Rachel's Environment & Health News

#555 - Dioxin in Chickens and Eggs

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The federal government has found evidence of dioxin contamination in chickens, eggs, and farm-raised catfish, and has banned the shipment of chickens and eggs from hundreds of producers. The ban initially included farm-raised catfish as well,[1] but the Mississippi Congressional delegation successfully lobbied the FDA (Food and Drug Administration) to exclude the catfish industry from the ban, according to the WALL STREET JOURNAL.[2] However, today the FDA flip-flopped and now says catfish farmers have until Sunday (July 20) to prove their fish contain less than one part per trillion (ppt) of dioxin.[3]

Dioxin was declared a Class 1 carcinogen, or "known human carcinogen," by the International Agency for Research on Cancer (IARC), an arm of the World Health Organization, in February, 1997.[4] Furthermore, dioxin's non-cancer dangers loom larger each year. After studying dioxin intensely for a decade, U.S. Environmental Protection Agency said 5 years ago that dioxin is much more toxic than previously known. The agency said then, "Indeed, these [dioxin] compounds are extremely potent in producing a variety of effects in experimental animals based on traditional toxicology studies at levels hundreds or thousands of times lower than most chemicals of environmental interest." And: "There is adequate evidence from studies in human populations as well as in laboratory animals and from ancillary experimental data to support the inference that humans are likely to respond with a plethora [an abundance] of effects from exposure to dioxin and related compounds." (See REHW #390; see also #391 and #414.)

The chicken-and-egg ban was announced July 8 and went into effect July 13.[5] As many as 350 chicken and egg producers may be affected, most of them in Arkansas and Texas but some as far flung as North Carolina, Indiana, and California.[2] Companies can sell their chickens and eggs again as soon as they demonstrate that dioxin levels in their products are below one part per trillion (ppt).[6] There are only about 20 laboratories in the U.S. that can test for dioxin at concentrations as low as one part per trillion. Dioxin testing often takes 30 days or longer under normal circumstances. With an entire industry clamoring for data, some test results may be delayed even longer.

Dioxin does not occur naturally; it is created as an unplanned and unwanted byproduct of metal smelting, pesticide manufacture, and all types of incineration (medical, solid waste, and hazardous waste).

The source of the dioxin in chickens, eggs, and catfish is reported to be a contaminated soybean-based feed produced by two companies -- Riceland Foods, Inc., and Quincy Soybean Co. --both located in Arkansas. Between them, these two companies send feed to 350 customers, providing an estimated 1% of all animal feed in the U.S.[5] The dioxin reportedly appeared when bentonite clay (sometimes called "ball clay") was added to the feed to prevent clumping and improve flow. Bentonite is familiar to most people as the main ingredient in kitty litter. The dioxin-contaminated bentonite has been traced to an open-pit bentonite mine near Sledge, Mississippi, operated by the Kentucky-Tennessee Ball Clay Company.[5] The source of the dioxin in the ball clay is unknown. Bentonite deposits are a favorite place to bury hazardous wastes because the wastes tend to stick to the clay and move only slowly thereafter. There is no evidence that hazardous waste was buried in the Sledge mine.

Until now, the U.S. has never set standards for dioxin in food. The one-part-per-trillion standard was set last week by FDA as a "level of concern" for this single instance of dioxin contamination of animal feed; it is not to be taken as a "general action level for dioxin in foods," government officials emphasize. In essence, FDA has declared that chickens and eggs are contaminated and unfit for human consumption if they contain more than 1 ppt dioxin. Yet the agency initially, in a political compromise, exempted the most contaminated food: farm-raised catfish. A 1994 study found that farm-raised Mississippi catfish fillets contained dioxin at levels

ranging from 10.2 to 27.8 ppt.[7] The FDA's stance seems certain to create public confusion and deep anger among chicken and egg producers. Some 2000 workers in Arkansas were told to stay home earlier this week when the FDA ban on chickens and eggs went into effect.[8] The ARKANSAS DEMOCRAT-GAZETTE reported today that half the eggs produced in Arkansas this week have failed the 1 ppt dioxin test and cannot be sold.[3] Test data were not made public.

U.S. EPA began looking for dioxin in food in the early 1990s, as part of the agency's ongoing dioxin reassessment. (See REHW #390, #391.) In early drafts of its dioxin reassessment report, EPA said 95% of human exposure to dioxins occurs chiefly through eating red meat, fish, and dairy products (milk, cream, cheese, ice cream). This prompted more government studies of dioxin in cheese, fish, pork and chicken.[9]

In September, 1996, U.S. EPA found that 2 of 80 samples of chicken had elevated levels of dioxin: 3.9 and 3.2 parts per trillion. Each sample was a composite of tissues taken from several birds. The other 78 samples reportedly averaged 0.09 ppt.[10] The two unusual samples came from Tyson plants in Pine Bluff, Arkansas and Seguin, Texas. Those two samples gave rise to additional testing, which led to the present ban on chickens and eggs.

In announcing the ban, FDA emphasized again and again that there was no immediate health hazard from eating chicken, eggs, or catfish even if they are contaminated at 3 or 4 parts per trillion. "Consumers should not hesitate to consume eggs and catfish they have at home or purchase on the retail market," FDA officials said.[11] "Dioxin is something where you care about your cumulative lifetime exposure," said FDA Deputy Commissioner Mary Pendergast. "This was an avoidable contamination, and we're basically turning off the faucet."[12]

Pat Costner, a Greenpeace chemist, put the dioxin numbers into perspective this way: The U.S. EPA says one cancer in a million persons can be expected to occur with a daily intake of 0.01 picograms of dioxin per kilogram of body weight per day for a lifetime. (See REHW #390.) (A picogram is a trillionth of a gram; a trillion is a million million.) Therefore, a 70 kilogram (154 pound) person should not take in more than 0.7 picograms per day to keep the cancer danger below one-in-a-million. Five ounces of chicken meat contaminated with 3 ppt of dioxin would contain a total dioxin load of 420 picograms, or about 600 times what EPA might consider an adult's acceptable daily intake of 0.7 picograms per day.

Put another way: if an adult ate 43 5-ounce servings of chicken containing 3 ppt of dioxin, they would exceed the EPA's recommended LIFETIME dose of dioxin from those 43 meals alone. Many Americans eat far more than 43 servings of chicken every year.

In 1992 EPA said the average American is routinely taking in, from all sources of food and water, somewhere between 300 and 600 times the "acceptable" 0.7 picograms of dioxin each day. (See REHW #390.) Clearly, reducing our dioxin intake is good public health policy.

If the new 1 ppt "level of concern" were applied to foods in general, it might create serious problems for the food industry. For example, a 1994 study of foods purchased in an upstate New York supermarket found 1.5 ppt dioxin in ground beef.[13]

In 1992, EPA analyzed 60 fish samples from 34 fresh and estuarine sites where there were no obvious industrial dioxin sources. They found that the average dioxin concentration in the 60 samples was 1.2 ppt.[14] This represented the fillet (edible) portions of the fish.

Thus there is evidence that neither ground beef nor fish might be considered fit for human consumption in the U.S. if they were

judged by the 1 ppt "level of concern" that FDA has recently adopted for chicken and eggs.

People in Arkansas are extremely angry at the federal government's seemingly-arbitrary imposition of the 1 part per trillion standard.[15] The "no immediate health hazard" language and the flip-flopping on catfish has given people the impression that there is no good reason for the ban.

"This is obviously regulation overkill on the part of the FDA and the [Environmental Protection Agency]," said Arkansas Governor Mike Huckabee. "What they're going to end up doing, with no scientific data to support them, is put thousands of Arkansans out of work either permanently or temporarily and possibly go a long way toward destroying our economy." [15]

In actual fact, the federal government has volumes of data showing that dioxin harms wildlife and humans at exceedingly low levels. (See REHW #390, #391.) Dioxin's most powerful effects are seen in the reproductive system, the endocrine (hormone) system, and the immune system. Most sensitive of all are newborn infants and fetuses exposed while in the womb. In 1992, EPA wrote, "In mammals, postnatal functional alterations involving learning behavior and the developing reproductive system appear to be the developmental events most sensitive to perinatal dioxin exposure. The developing immune system may also be highly sensitive." In other words, dioxin exposure of mammals (including humans) shortly before or shortly after birth ("perinatal") are most likely to impair intellectual development and the immune system. The immune system protects against bacterial and viral disease, and cancer, so damage to the immune system can invite other serious diseases. (See REHW #390.)

Some effects --such as degradation of the human immune system --seem to occur at dioxin levels that the average American is already carrying around in his or her body. However, because FDA has couched its ban in the language of "no immediate threat to health," and because catfish were initially exempted, then included, people naturally assume there really is no threat to health from dioxin and that the ban is somehow entirely political.

Thus FDA's ban on chickens and eggs seems likely to undermine the credibility of the federal government in general, and its emerging dioxin policies in particular. Inadvertently or not, government seems to be playing into the hands of the Chemical Manufacturers Association (CMA) and the Chlorine Chemistry Council (CCC). CMA and CCC say that the dangers of dioxin have been greatly exaggerated to suit the political purposes of environmental zealots who are really just interested in promoting Big Government.

--Peter Montague (National Writers Union, UAW Local 1981/AFL-CIO)

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[1] Lawrence Bachorik, "FDA Stops Distribution of Some Eggs and Catfish Because of Dioxin-Contaminated Animal Feed," HHS NEWS [T-97-29] July 7, 1997. Available on the world wide web; see <http://www.fda.gov/bbs/topics/NEWS/>. Mr. Bachorik's phone: (301) 443- 1130.

[2] Bruce Ingersoll, "U.S. is Banning Some Poultry Fearing Dioxin," WALL STREET JOURNAL July 15, 1997, pg. unknown.

[3] Don Chaney and Chuck Plunkett, "Dioxin-testing halts egg shipments; fish face weekend deadline," ARKANSAS DEMOCRAT-GAZETTE July 17, 1997, pg. 1. Thanks to Pat Costner for all articles from the ARKANSAS DEMOCRAT-GAZETTE.

[4] The new IARC label for dioxin will be published in Volume 69 of IARC MONOGRAPHS ON THE EVALUATION OF CARCINOGENIC RISKS TO HUMANS. The IARC can be contacted at: IARC, 150 Cours Albert Thomas, 69372 Lyon, France.

[5] Mark M. Mina, Deputy Administrator, Field Operations, Food Safety and Inspection Service, U.S. Department of Agriculture, "TO: Owners and Custodians of Poultry, Livestock, and Eggs," July 8, 1997. Available on the world wide web: <http://www.usda.gov/agency/fsis/dioxinlt.htm> .

[6] Carol M. Seymour, Acting Deputy Administrator, Food Safety and Inspection Service, U.S. Department of Agriculture, "To District Managers: Guidance for Reprocessing of Broilers Exposed to Dioxin- Contaminated Feed," July 13, 1997. Available from: Jacque (pronounced Jackie) Knight of USDA at (202) 720-4623.

[7] H. Fiedler and others, "Polychlorinated dibenzo-P-dioxins and polychlorinated dibenzofurans (PCDD/PCDF) in food samples collected in southern Mississippi, USA," CHEMOSPHERE Vol. 34, No. 5 (March 1997), pgs. 1411-1419. Thanks to Pat Costner for this information.

[8] Chuck Plunkett and Don Chaney, "Dioxin Ruling Keeps 2,000 Workers Home," ARKANSAS DEMOCRAT-GAZETTE July 15, 1997, pg. 1.

[9] "FDA Launches Study on Dioxin in Fish, Dairy Foods," FOOD CHEMICAL NEWS February 27, 1995.

[10] "Soybean Processing Solvent May Have Led to Dioxin Contamination," FOOD CHEMICAL NEWS June 23, 1997.

[11] "US FDA stops catfish, egg shipments over dioxin," REUTERS FINANCIAL REPORT [wire service] July 7, 1997.

[12] Pendergast quoted in Associated Press, "FDA finds elevated dioxin levels in some chicken feed," July 3, 1997.

[13] Arnold Schecter and others, "Congener-specific Levels of Dioxins and Dibenzofurans in U.S. Food and Estimated Daily Dioxin Toxic Equivalent Intake," ENVIRONMENTAL HEALTH PERSPECTIVES Vol. 102, No. 11 (November 1994), pgs. 962-966.

[14] U.S. Environmental Protection Agency, ESTIMATING EXPOSURE TO DIOXIN-LIKE COMPOUNDS VOL. II: PROPERTIES, SOURCES, OCCURRENCE AND BACKGROUND EXPOSURES [EPA/600/6-88/005Cb; June 1994 External Review Draft] (Washington, D.C.: U.S. Environmental Protection Agency, 1994), pgs. 4-21 and 4-37.

[15] Don Chaney and Chuck Plunkett, "Fish industry not off dioxin-test hook," ARKANSAS DEMOCRAT-GAZETTE, July 16, 1997, pg. 1.

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