



FOR IMMEDIATE RELEASE
January 30, 2009

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Recent Reports Regarding Mercury and High Fructose Corn Syrup Flawed and Misleading

SAN FRANCISCO - ChemRisk, a leading scientific consulting firm, was asked by the Corn Refiners Association (CRA) to examine the recent publication by Institute for Agriculture and Trade Policy (IATP), "Not So Sweet: Missing Mercury and High Fructose Corn Syrup," and the *Environmental Health* journal publication "Mercury from chlor-alkali plants: measured concentrations in food product sugar," by Dufault et al, 2009, and to offer our comments and analysis.

In summary we found:

- The IATP report and *Environmental Health* article it references fall well below standards for proper scientific research and published literature.
- The authors of both publications provide incomplete data and misleading conclusions.
- Methods described by the authors deviate from standard procedure in testing for mercury.
- The authors ignore important distinctions between organic and other forms of mercury and their implications for assessing human health risk.
- Even if it were assumed that the mercury content found in the extremely limited sampling of foods and beverages was representative, the amounts are far lower than levels of concern set by government agencies.
- The authors assume that the total mercury they detected in a questionably small sampling of consumer foods is primarily the result of high fructose corn syrup; an assumption that has not been properly tested or validated. The recipes for the items studied may have had multiple sources of potential contamination

To imply that there is a safety concern to consumers based on the findings presented is both incorrect and irresponsible.

By combining the results of a four-year-old sampling analysis of high fructose corn syrup with a more recent testing of branded foods and beverages for total mercury, the IATP report fails to recognize basic scientific facts regarding mercury; ignores common dietary sources of mercury, an element that is widely present in our environment at low concentrations; and makes improper assumptions regarding the source of the mercury measured in various branded food products.

- More than two-thirds of the samples analyzed by IATP had no detectable level of mercury at all. In the remaining sample, most of these were at or near the limit of

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detection. The average concentration for the 17 samples with detectable levels was only 128 *parts per trillion (ppt)*. EPA sets limits for mercury in drinking water at two *parts per billion*.

- It is well known that small amounts of mercury are broadly present in our environment. For example, Health Canada reported in 2003 that the concentrations of total mercury in steak ranged from 420 to 1,800 parts per trillion (ppt); fresh pork contained 1,100 to 1,500 ppt; organ meats (liver and kidney) contained over 2,100 ppt; and lamb contained 290 to 2,300 ppt of total mercury. (Dabeka et al, 2003) For the sake of reference, one part per trillion is equal to one drop of water spread out into 26 Olympic-size swimming pools. (Washington Suburban Sanitary Commission, 2009)
- That same study by Health Canada looked at mercury in seafood, finding amounts that ranged from 40,000 ppt in fresh or frozen marine fish to 148,000 ppt in canned fish. Other foods, such as canned mushrooms, had 5,100 to 16,000 ppt total mercury, grapes had 180 to 590 ppt, blueberries 210 to 640 ppt, rice 570 to 1,800 ppt, raisins upwards of 700 ppt, and shelled seeds up to 1,000 parts per trillion (ppt).
- The levels noted above are substantially greater than those found by Wallinga and colleagues in their reports. (Dabeka et al, 2003) Other studies by other international authorities (FDA, United Kingdom Food Standards Agency and others) have found similar or higher levels of mercury in common components of a typical human diet. (FDA, 2006; Ysart et al, 2000)
- IATP assumes that the total mercury they detected in a questionably small sampling of consumer foods is primarily the result of high fructose corn syrup; an assumption that has not been properly tested or validated. In fact, the authors do not attempt to characterize whether there may be mercury in any other ingredients contained within the consumer products tested, even while the recipes for the items studied may have had multiple sources of potential contamination. As we have mentioned, very small amounts of mercury are practically ubiquitous in our society.
- IATP demonstrates a gross lack of understanding of the current state of knowledge of the different forms of mercury and their effect on the human body. This is illustrated in their statement that “The mercury found in HFCS may be a different form of mercury than the methylmercury typically found in fish (we just don’t know), but it poses a risk just the same. Mercury in any form can be toxic to the developing brain.” (Wallinga et al, 2009). The ATSDR (Agency for Toxic Substances and Disease Registry) is a sister agency of the Centers for Disease Control, and regularly provides reviews of chemicals in our

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society that may pose a risk to human health. Regarding mercury, it is clear that inorganic forms are considered to be much less dangerous to humans than organic forms, with absorption generally at least ten times less (ATSDR, Public Health Statement on Mercury, 1999).

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