MONSANTO

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Date : August 23, 1988

cc: W. J. McCarville-wo/e
R. A. Kimerle-wo/e

Subject : Quincy Bay Report by Metcalf & Eddy for EPA

Reference :

TO : T. M. Bistline
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R. G. Kaley
Rob James - Terra Inc.

The attached report is a summary of an extensive study of pollution in Quincy Bay, which forms the southern part of Boston Harbor. The study focuses on heavy metals, polycyclic aromatic hydrocarbons (PAHs), PCBs, and selected chlorinated pesticides.

The most significant conclusions with regard to PCBs are:

- PCBs contribute more than 50%, and in one case 98%, of the total upper bound cancer risk calculated for all measured organic chemicals from consumption of seafood. See Table 10 in the report.

- Based on data from 8 lobsters, PCBs in the hepato-pancreas, commonly called the tomalley, average 44 ppm with a range of 23-62 ppm. Muscle from the same lobsters average 0.23 ppm and range from 0.20 to 0.27 ppm. While this confirms the conventional wisdom that "pollutants" are concentrated in the liver, it is especially significant because many seafood connoisseurs consume the tomalley as a delicacy. The report recommends the Massachusetts Department of Public Health issue a health advisory regarding the consumption of lobster tomalley from Quincy Bay.

- Using a cancer potency factor of 2.6 $(mg/kg/day)^{-1}$, discussed on pp 43-44, the maximum upper bound estimated lifetime cancer risk for a maximally exposed individual consuming clams, flounder, lobster meat and tomalley is $2.3 \times 10^{-2}$. Approximately 75% of this risk is due to PCBs. For the same individual consuming only flounder, the risk is $4.7 \times 10^{-3}$, 97% attributable to PCBs. The above numbers apply to individuals eating 100-200 meals per year of Quincy Bay seafood. The impact of these numbers is moderated somewhat by the statement:

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"Consumption of 'typical' amounts of lobster muscle (not tomalley) and/or flounder, on the order of fewer than 10 meals per year, was estimated to pose potential risks similar to those of other eating and drinking activities."

- PCBs in winter flounder, a major recreational fish in the area, average 0.27 ppm with a range of 0.06 to 0.75 ppm. This is well below the 2 ppm FDA limit.

- The highest level of PCBs found in the surface sediments was 1.09 ppm. This was approximately 100 times lower than the total PAHs. Still, the authors consider this to be "elevated" and say this is comparable to the "lower range of sediment levels reported from the outer Harbor area off of New Bedford".

- The authors conclude the evidence of fish tumors and disease point most strongly toward the polycyclic and polynuclear aromatic hydrocarbons. While the chlorinated hydrocarbons are described as "not considered to be potent tumor initiators", they are not absolved because of the possibility "that many compounds may act in concert to cause the diseases."

Once again, PCBs seem to have received more than their fair share of attention.

Paul

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