Polychlorinated Biphenyls (PCBs) are synthetic organic compounds characterized by their persistent, bioaccumulative, and lipophylic properties. PCBs are a family of 209 structurally related congeners that have a common biphenyl structure but differ in number and position of chlorine substitution. PCBs were used as insulating fluids and lubricants in transformers. They were also used in the manufacture of sealants, paints, and pesticides. Findings among epidemiologic studies overall indicate that prenatal PCB exposure in general populations may have adverse effects on the neurodevelopment of children. The use of PCBs was banned in 1977 due to their toxicities and ability to bioaccumulate.

Objectives:
- There have been few studies of levels of PCBs in populations residing near Superfund sites.
- We assessed the geographic distribution of cord serum PCB levels among infants of mothers living in the vicinity of the New Bedford Harbor Superfund site controlling for known pathways of PCB exposure.

STUDY AREA

788 mother-infant pairs were recruited at birth at a local hospital between March 1993 and December 1998. The mothers had resided in the four towns bordering the New Bedford Harbor PCB-contaminated site for the duration of pregnancy. 718 infants had cord serum measurements including the sum of 51 PCB congeners (ΣPCB).

RESULTS

- The spatial variability did not have any apparent relationship to proximity of residence to the PCB Hot Spot.
- Similar results were found with light, heavy PCBs and congener 118.
- The analyses suggest that residing near a Superfund site does not lead to higher PCB levels independent of other exposure risk factors such as diet, maternal age, and maternal birthplace.
- Region-specific factors such as maternal consumption of locally-grown dairy foods and site dredging were correlated with cord serum PCBs.

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