This special issue addresses a widely studied topic: environmental contaminant exposure resulting from consumption of fish. It was conceived as a means of setting the stage for study of such exposures and health consequences in the 21st century, when the worldwide patterns of contamination will have changed dramatically. Fish intake is healthy. The benefits of a diet rich in fish and fish oils led disease prevention specialists to promote a diet containing at least two meals of fish per week (AHA, 2000). Worldwide, fish and shellfish consumption continues to expand, so that fish consumption has now surpassed other animal dietary protein sources such as beef and fowl. Unfortunately, the increase in fish as a protein source has grown to such an extent that overharvesting of wild fish is threatening the viability of some species. Aquaculture is rapidly growing in importance but provides only about 25% of fish and shellfish consumed worldwide. Although farmed fish may be contaminated (Hites et al., 2004), at least their nutrition sources can be controlled. But we cannot control the diet of wild fish, which thus remain vulnerable to all environmental pollutants discharged to water. Therefore, the issue of contaminants in fish will remain a serious public health question for the foreseeable future—the 21st century.

However, levels of some contaminants such as PCBs have declined worldwide, especially in developed countries. Unfortunately, other contaminants have stayed the same or increased (methyl mercury, polybrominated diphenyl ethers). The papers assembled here represent an international collection of research that addresses state-of-the-art issues concerning mercury (Hg) and organochlorine (OC) exposures and their industrial sources. Two of the papers address methodological questions, the first indicating that spousal reporting of fish intake can be a useful metric, even at different distances of recall (Li et al., 2005). A second paper reviews recent experience on retention in a longitudinal study of infants, a successful investigation that required intensive effort by the participants (Senn et al., 2005). The same cohort study earlier reported reduced birthweight related to DDE levels (Longnecker et al., 2001), an effect that is supported by data obtained from mothers in 1994–1995 in a study reported in this issue in which DDE but not PCB was associated with decreased birth weight (Weisskopf et al., 2005). This finding is from a study of a population in which there appears to be a decline in OC levels related to fish advisories and in which DDE levels are very low compared to those in the older study. From New York State, a study of 2237 pregnant women investigated relationships between birth defects and fish consumption and found an elevated risk for birth defects among male infants.
(Mendola et al., 2005). Another paper from the New York State Angler Cohort Study provides profiles of PCB, DDE, hexachlorobenzene, and Mirex in male anglers (Bloom et al., 2005). Further evidence of declining levels of OCs can be found in a New York City cohort of pregnant women from 1998 to 2002, in whom median OC levels were below 1 µg/L but an association of PCBs with reported fishing habits was found (Wolff, 2005).

Fish and shellfish consumption remains the predominant source of methyl mercury and organochlorine exposure to humans. Current regulatory fish contaminant policies and voluntary consumption advisories are a stopgap measure until broader environmental pollution prevention actions can be implemented to reduce the chemical burden in fish and shellfish. It remains critically important that the scientific community continue to refine our understanding of the circumstances and extent of exposures and apply modern techniques to identify the subtle abnormalities associated with past and continuing exposure as well as document successful interventions.

References


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