Polychlorinated Biphenyls (PCBs)

Manufacturing of polychlorinated biphenyls (PCBs), a group of chlorinated organic compounds that have been commercially used as insulators in electric capacitors and transformers, protective coating of wood products, hydraulic fluids, and a lubricant for industrial processes, began in the 1930s. Polychlorinated biphenyls were first detected in fish and wildlife from locations around the world during the 1960s. Further research indicated that once in the environment, PCBs do not readily undergo degradation and therefore they persist in the environment. In addition, PCBs are considered to be suspected human carcinogens. Regulations on manufacturing and use of PCBs have been effective in reducing PCB concentrations in fish over time. Nonetheless, PCBs remain classified as legacy contaminants, and monitoring of fish and wildlife PCB concentrations continues to the present time. In general, concentrations of PCBs increase with increasing trophic level within a food chain, a process known as biomagnification. Thus, PCB concentrations in fish are positively correlated with the values of the stable isotope ratio $\delta^{15}N$ in the fish. In addition, because PCBs persist in the environment, they may serve as a tracer of food consumption by free-ranging fish in the wild. Such applications may be useful in field evaluations of fish bioenergetics model performance.

Key citations:

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