

Environmental Levels P39

Comparison of Dioxin and PCB Congener Patterns for Lake Trout from Lake Ontario and Canadice Lake

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Introduction

Despite two and one half decades of stocking, lake trout still do not breed successfully in most of the Great Lakes (1, 2). One hypothesis to explain this recruitment failure is potential toxic effects of organochlorines that occur in the lakes (3-5). Contrary to this hypothesis, in the early 1980s, lake trout from Canadice Lake, New York, exhibited strong recruitment despite total PCB Aroclor concentrations as high as 10 to 20 ppm in adult trout. In contrast, lake trout from Lakes Ontario, Michigan, and Huron have exhibited total or near total recruitment failure despite much lower (1/3 to 1/6) total PCB concentrations, suggesting that PCBs are not responsible for recruitment failure in those lakes. An alternative hypothesis, examined here, is that Canadice Lake PCBs are composed mostly of comparatively weakly toxic PCB congeners.

Methods and Materials

Trout were collected from Lake Ontario and Canadice Lake in 1997 and 1998. PCB and dioxin/furan congener analyses were performed on the trout by high resolution gas chromatography/high resolution mass spectrometry using Methods 1668 and 1613 respectively.

Results and Discussion

The congener data from each lake were compared to each other and to congener data for Lake Michigan lake trout collected by other researchers (6). The results of these comparisons will be reported and discussed with respect to potential effects of the dioxin and non-dioxin like toxicity of PCBs and their suggested impacts on lake trout recruitment.

References

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