

Black RW, Haggland AL, and Voss FD. "Predicting the Probability of Detecting Organochlorine Pesticides and Polychlorinated Biphenyls in Stream Systems on the Basis of Land Use in the Pacific Northwest, USA." *Environmental Toxicology and Chemistry* . 19.4 (2000): 1044-1054.
(Reviewed by Lucy Cho)

This journal article is similar to many other research articles on organic pesticides found in the Willamette River watershed in the methods they used, their analyses and even in the data collected, and like many of those studies, pesticide concentrations were tested in fish tissue and surficial sediment samples taken from various sites along the Willamette River and Puget Sound basins. The paper briefly discusses the history of the use of organochlorine pesticides and polychlorinated biphenyls (PCBs) in the two watersheds, which was the reason for categorizing the different sites where samples were collected, into urban, agricultural and forest areas.

Although these compounds are no longer used in either basin, they are still detected. While the presence of organochlorine pesticides and PCBs in the fish tissue and sediment of the Willamette River is well known, it is not so well established in the Puget Sound basin. Interestingly, samples taken from some of the Puget Sound sites showed much higher levels of DDT and DDE than comparable sites of the Willamette River. Of course, that does not mean the Puget Sound is generally more polluted with pesticides and PCBs. This study revealed that various factors contributed to the different concentrations in a certain site of each basin, and the same factors are most likely the cause of fluctuations in the data and the quality of the data collected.

Critique

In comparison to many similar studies done on the same topic, this paper was much clearer because important details were included. For instance, it stated the importance of the influence of PCBs and organochlorine pesticides on reproduction and development of biota, it showed how carefully different sites along the two bodies of water were chosen and why they chose sculpin as the fish species to work with. By taking into account the different habitats of the fish and the types of sediment in depositional zones of the Willamette River and the Puget Sound basin, it seemed to make every effort to eliminate error as much as possible; there was a specific reason for every step that was taken in their study.

It presented different relationships on tables and graphs, which helped one to understand the comparison between the Willamette River and the Puget Sound. Two different tables showed concentration levels of every compound at every site along both basins, in both fish and sediment. They allowed one to have a better understanding of the various factors that play into the concentration levels. For example, a trend could be seen in that the compounds were most present and in higher concentrations in urban and agricultural areas than in forest areas. Furthermore, it described the specific causes and sources of these pollutants.

Although the samples that were taken showed levels of pesticides below the body burden guidelines,

there were various possible sources of error, for which they gave very clear and valid explanations. They hypothesized that “the continual and variable nature of sediment loading, resorting, and dilution may explain why we detected so few contaminants at each of our sediment sampling sites and why we were unable to produce any significant logistic models.” (Black et al., p.1052) This paper gave me a full understanding of the study and left few doubts in my mind about its accuracy and credibility.

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