White River Quality and Pollution Study Using Benthic Macroinvertebrate Bioindicators

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In 1999, over four million fish and an uncountable number of macroinvertebrates died when the Guide Corporation released a large amount of Sodium Dimethyldithocarbamate (HMP-2000), a corrosion inhibitor, into the sewers of Anderson, Indiana. The chemical broke down into thiram, a pesticide, which is highly toxic to all organisms in the White River. This toxin spread to over fifty miles of the White River. The purpose of this project is to investigate the effects that this pollution had on the ecology and hydrology of the White River. This study focused on two sites near the original dumping site, one upstream (River Bend Park) and one downstream (Perkinsville). The Kick Seine standardized collection method was used to disturb macroinvertebrates attached to the substrate, thus allowing them to float downstream into the net. Samplings were taken from both riffle and run locations at both sites. Samples were then separated and identified for the name and number of macroinvertebrates using the Pollution Tolerance Index (PTI). PTI numbers were then totaled and multiplied to obtain the PTI rating (PTIR), based on the tolerance group of the various macroinvertebrates. Results were compared with those upstream and downstream of the original contamination site. Results of the study revealed that upstream samplings had a PTIR geometric mean of 53.85 and downstream samplings had a PTIR geometric mean of 46.54. This shows that recovery has occurred between the two sites tested. However, it is also indicated in the study that there are lower numbers of less tolerant species, suggesting that the White River may still be experiencing pollution, in which further research would be warranted.