The Effects of Crystallization on Water Impurities: The Natural Purification of Benton Lake National Wildlife Refuge

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Problem Statement Is there a way to eliminate contaminants from a body of water such as Benton Lake by utilizing the simple yet effective methods of my previous two years of experimentation? Furthermore, is such a process already occurring naturally, controlled only by Mother Nature, and not year realized? Procedures This year the experimental procedures will mainly consist of collecting the samples and testing them for conductivity. All of the samples will be taken to a test lab for full analysis. The sample of water taken from beneath the ice will also be frozen and tested. Results and Conclusions The experiment yielded results that were expected, along with results that were quite unexpected. The “expected” results were those that indicated an increasing conductivity as the depth increased. In short, the ice got “dirtier” as the depth from which the sample came from got deeper. The “unexpected” results were those showing the actual conductivity levels of the water sample taken from beneath the ice. Compared to data compiled by the United States Geological Society, the conductivity data collected from this experiment was roughly 94% LOWER! Why? My theory is that there exists a concentration gradient in the water layers just below the ice. The water closest to the ice undergoes a cyclic freezing/thawing process throughout the winter months, and as my previous experiments have shown, water is purified with these cycles! If this theory is correct, then it is clear that the concerns referenced in my Problem Statement are truly being addressed NATURALLY. The fourth, and final year of this experiment will address this phenomenon and how to possible harness this natural purification process.

Awards Won: