A Novel Disinfectant: Sphagnum Moss for Coliform and Turbidity Reduction

Kharel, Dhwani

The current drinking water system poses a risk to public and environmental safety due to the volatile nature of the gaseous chlorine used to disinfect water. The project is designed to determine whether Sphagnum moss can clean raw water and have potential application in treating drinking water. The hypothesis is: If raw water is filtered through Sphagnum moss, the Total coliform, E.coli, and turbidity will decrease, and the pH will neutralize. Two trials were conducted. Water was obtained from the Big Sioux River (South Dakota) by breaking through the ice; this water had a moderate Coliform load. For the second trial, water was obtained from the same location; thawing conditions were present, so the sample may have contained a small amount of runoff melt. This sample contained more coliform than the first sample. A circulatory system was built with a tank, pump, PVC pipe, and battery. The hypothesis proved to have merit. Both trials saw a significant decrease in coliform, turbidity, and E. coli. However, the reduction of E. coli cannot be traced to Sphagnum moss because the raw water control saw the same reduction. No conclusion was drawn regarding pH neutralization, since the pH level of the filtered water did not vary greatly from the level of the control water throughout the first experiment. During the second trial, the pH of the filtered water was slightly closer to neutral compared to the control, but the difference was nominal. The coliform count of the filtered water decreased significantly more than the coliform count of the control raw water during both trials. The turbidity of the filtered water also decreased significantly compared to the raw control water during both trials.

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