Peeling Away Pollutants in Water With Banana Char

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The fabric industry contributes roughly 20% of the world's waste water pollution, much of this occurs in Asia (CNN, 4/21/2023). Bananas are also prevalent in this area of the world. This study investigates using banana peel waste as activated charcoal to filter polluted water. Banana peels were cut and dried with a food dehydrator, then one of two treatment methods to activate the banana peels was used: A. Dried by kiln and treated with 1 M sulfuric acid or B. Treated with sulfuric acid and then dried by kiln. The resulting activated charcoal was then used as a filter to measure how much dye was removed. Activated charcoal from Flinn Scientific was used as a control. A colorimeter was used to determine the reduction in dye after treating. All trials from this study outperformed the control. The standard process with a final pH of 6 was 93.6% effective at removing synthetic fabric dye (30% solution) from the solution. The other treatments are also effective, but they had a final pH of 1, which would lead to other water quality issues.

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