

Title: Removal of Contaminations from flood water by Activated Charcoal Synthesized from Coffee Grounds and Removal of Arsenic from Drinking Water by Adjusting the pH and Fe²⁺ Content.

Conference theme: Water Quality

Team name: Lotus flowers

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Abstract. After the rainy days, the shortage of clean water occurred on a large scale in the flooded areas in Vietnam. During floods, water swept away and mix everything on the ground such as waste from sewers, latrines, carcasses, animal sheds, poultry, insects, tree, etc. Water and environment are seriously polluted. In the other hand, arsenic contamination in drinking water is a major global problem that affects the quality of life of humankind. This research focuses on reducing contaminations in flooded water, especially arsenic concentration. Activated charcoal has been synthesized from coffee grounds by the method of carbonization and studied the structural properties, surface morphology and specific surface area. After that, the material is applied in purifying water contaminated with organic substances, heavy metals, escherichia coli bacteria, etc. Arsenic contamination has been removed by adjusting the pH and Fe²⁺ content. Acid sulfuric H₂SO₄ was used to control the pH of water and ferrous sulfate heptahydrate FeSO₄·7H₂O salt was used to create iron ionic complexes to adsorb arsenic. The result showed that the pH in the range of [6.8 – 7] and Fe/As ratio of 200 is the optimized condition to remove arsenic from drinking water.