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**IOP Conference Series: Earth and Environmental Science** • Open Access • Volume 1140, Issue 1 • 2023 • Article number 012010

• 2022 World Sustainable Construction Conference, WSCC 2022 • Kuala Lumpur • 14 October 2022 through 15 October 2022 •

Code 186847

#### Document type

Conference Paper • Gold Open Access

#### Source type

Conference Proceedings

#### ISSN

17551307

#### DOI

10.1088/1755-1315/1140/1/012010

#### Publisher

Institute of Physics

#### Original language

English

#### Volume Editors

Putra Jaya R., Duraisamy Y.

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# Treatment of Wastewater by Moringa Oleifera and Maize Seeds as Plant-Based Coagulant

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## Abstract

Coagulants are essential in purifying raw water for drinking water safety for consumers. Commonly, aluminium sulphate, a chemical coagulant, is used for water treatment. However, for long-term usage, chemical coagulants can be considered toxic and harmful to the environment due to the accumulation of this substance in the pipeline system, which can create severe health issues if consumed. The natural plant-based coagulant can be a substitute for a sustainable solution in the water treatment coagulation process. This research aimed to determine the efficiency of plant-based materials as coagulants in surface water treatment. *Moringa oleifera* and maize seeds were chosen as natural coagulants in this investigation since they are both locally available plant-based materials. Here, this research aims to study the ability of *moringa oleifera* seed and maize seed as plant-based coagulants in enhancing the effluent quality of the wastewater treatment plant of UiTM Dengkil Selangor. A jar test experiment was used to assess the capacity of *moringa oleifera* and maize as natural coagulants. The results comprise turbidity removal by 92% (mixed of *moringa oleifera* seed and maize seed), the chemical oxygen demand (COD) of 95% reduction rate using *moringa oleifera* seed. The biochemical oxygen demand (BOD) for 88% removal by *moringa oleifera* seed, ammonia-nitrogen removal of 12% (*moringa oleifera* seed) and total suspended solids (TSS) of 100% reduction rate using mixed *moringa oleifera* seed and maize seed for the effluent sample. Thus, it can be recognized that *moringa oleifera* and maize seeds can be an alternative solution to replace the chemical coagulants in the treatment systems. © Published under licence by IOP Publishing Ltd.

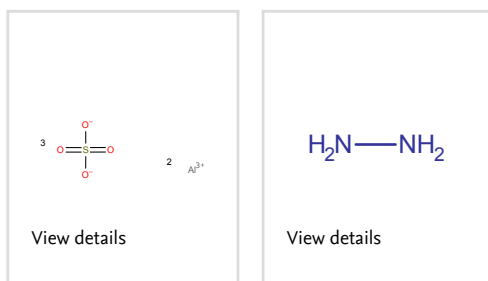
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coagulants; effluent; maize seed; *moringa oleifera*; treatment

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