

A Comparative Analysis of Pectin and Iron (III) Oxide-Hydroxide Modified Bagasse Beads for Lead Filtration

Angeles, J.G.G., Austria, S.G.B.,
Bautista, J.A.M.B., Antalan, J.J.T

BACKGROUND OF THE STUDY

The Meycauayan River is considered as one of the most polluted rivers in the Philippines due to the exorbitant amount of organic pollutants and heavy metals present (Pleto et al., 2020). Sugarcane bagasse has shown a

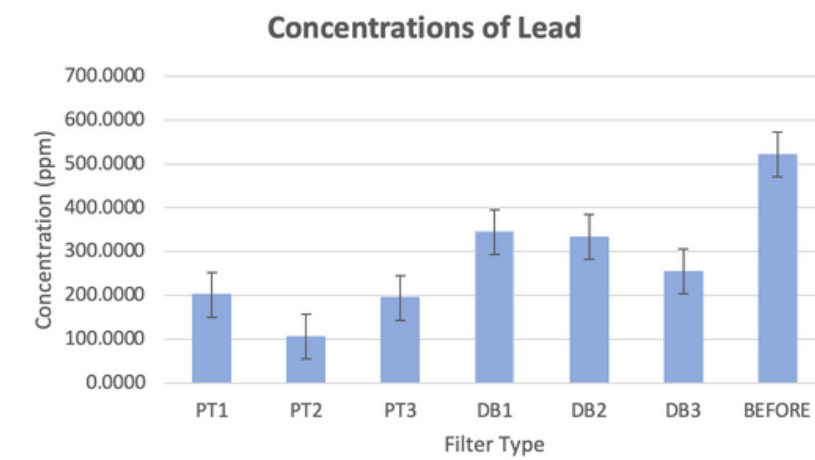
OBJECTIVES

- **modify** sugarcane bagasse with iron (III) oxide-hydroxide using ferric chloride (FeCl_2) and sodium hydroxide (NaOH);
- **formulate** pure pectin beads and pectin beads with modified bagasse;
- **simulate** a wastewater solution with lead concentrations adapted from real-life measurements at the Meycauayan River in Bulacan, Philippines;
- **compare and contrast** the lead adsorption of the two filter materials; and
- Provide insight into the possible environmental factors that may further influence the effectiveness of lead adsorption filters.

METHODOLOGY

- [1] preparation of pectin and bagasse-pectin beads
- [2] preparation of sample waste water
- [3] filtration of samples
- [4] Atomic Absorption Spectrometry
- [5] statistical analysis of results

Beads of ferric oxide-doped sugarcane bagasse and pectin exhibited a potential for filtration capabilities of Lead (Pb) and neutralization of acidity in the simulated waste water of Meycauayan River, the latter showing better effectiveness.



RESULTS AND DISCUSSION

- pure pectin beads had an average lead removal percentage of **67.76%**
- pectin beads with incorporated modified bagasse had an average lead removal percentage of **40.33%**
- the two filter types significantly different from the pectin beads ($p < 0.05$)

CONCLUSION

- [1] pure pectin beads showed better effectiveness in filtering and neutralizing pH compared to the DB pectin beads
- [2] areas with low pH levels are encouraged to check for lead contamination in local bodies of water

GLOBE IVSS BADGES

