

## Study Of Removal Of Micropollutants From Wastewater By Adsorption Process By Using Humic Substance

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### Introduction

A significant number of micropollutants, such as hazardous metals, medicines, pesticides, dyes, surfactants, and others, have contaminated the water supplies and are harmful to people and other living things on the planet

### Problem Statement

The small amount of micropollutant has huge impact on the environment. It cannot be decomposed naturally. Treatment plants not created to particularly elimination of micropollutant.

### Objectives

1. To check removal efficiency of the Cd, Pb & Cr in the adsorption by using humic substance.
2. To observe the Cd, Pb & Cr removal efficiency of the humic substance in comparison with activated carbon

## Material and Methodology

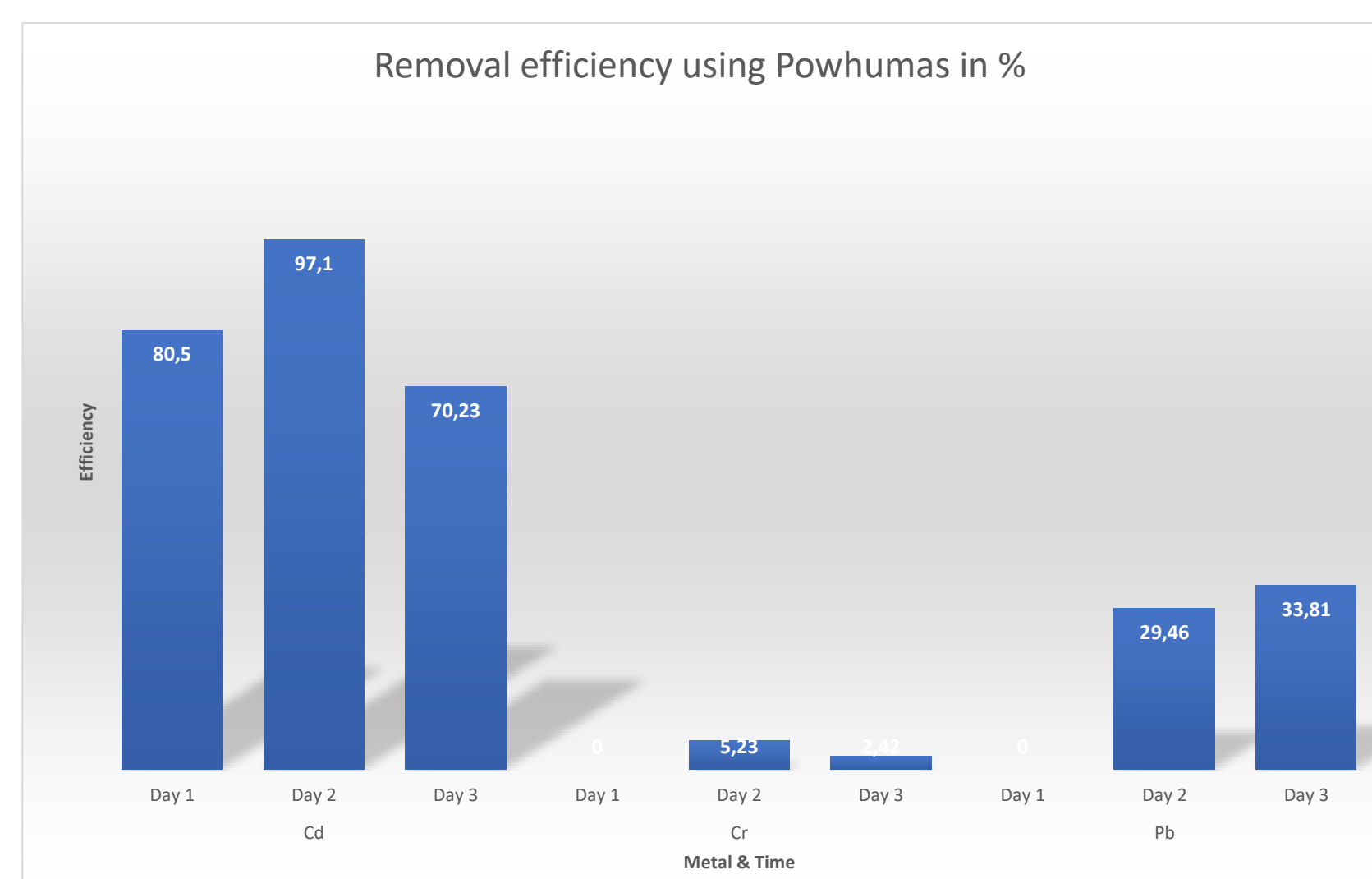
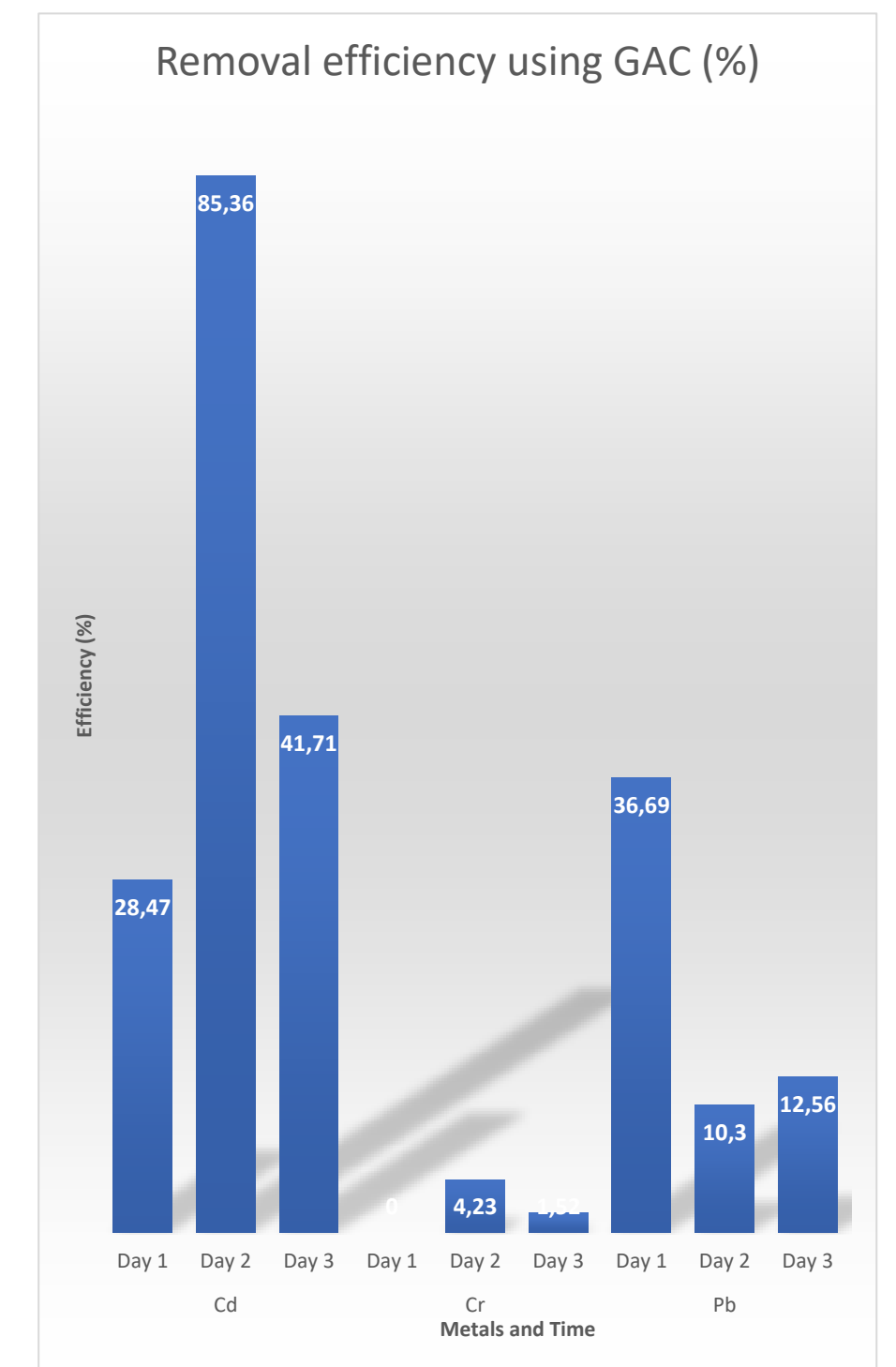
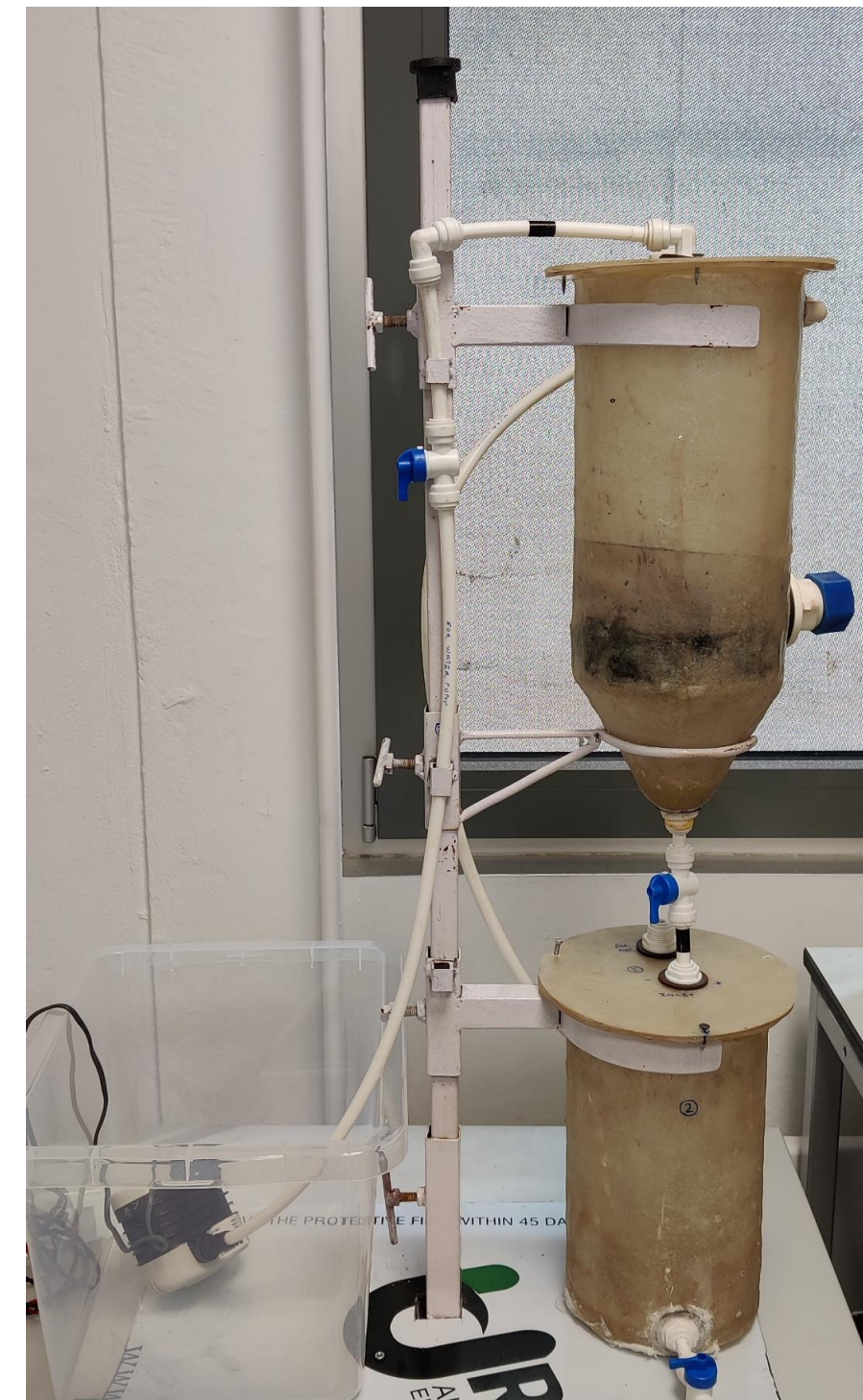
- A laboratory scale adsorption unit was designed (Fixed bed adsorption unit).
- Due to the properties of powhumas, high surface area soil was obtained from nekar, added to the dissolved powhumas in the soil, and left in the sun for 15 days. The soil was then included in the adsorption unit together with gravel and fine sand.
- In an adsorption unit, synthetic wastewater was created and processed. Three times the experiment was conducted .A HACH DR3900 spectrophotometer was used for the analysis of the treated water.

### Results:

- Powhumas had a maximum removal efficiency of 97,1%, 5,23%, and 33,81% for Cd, Cr, and Pb.
- GAC's greatest removal efficiencies for Cd, Cr, and Pb were 85,36%, 4,23%, and 36,69%, respectively.

### Conclusion:

- Initial and final concentrations of Cd, Cr, and Pb after treatment with fixed bed adsorption columns revealed that Cd was largely eliminated within the intended time range. However, fixed bed adsorption failed to remove the Pb and Cr.
- Pb and Cr required acidic pH
- Based on the contact time, flow rate, medium weight, surface area, pH, temperature, particle size, and bulk density, fixed bed and mixed contactor adsorption can lower the concentration of Cd, Cr, and Pb



### References

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