USE OF NATURAL FIBERS IN LANDFILL LEACHATE TREATMENT

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I. INTRODUCTION

Leachate is a highly polluting liquid resulting from the decomposition of solid waste and may contaminate soil and water sources, that is the reason that leachate requires treatment to be released into the environment. Conventional treatments have trouble removing pollutants, so it is essential to search for alternative sustainable and efficient treatment.

Fig. 1. Leachate from a dump located in Volta Redonda, Brazil. Source: Authors.

PROPOSAL

To evaluate if leachate is likely to be handled by own rubbish constituent materials such as natural fibers, whose disposal is easily accomplished, a fact that makes environmental liabilities.
II. MATERIALS AND METHODS

A. METHOD 1
Two oxidative steps in which: Test 1 was helped by palm fiber; Test 2 was helped by coconut fiber; Test 3 was helped by banana fiber.

B. METHOD 2
Three oxidative steps in which: Test 4 was helped by palm fiber; Test 5 was helped by coconut fiber; Test 6 was helped by banana fiber.

**Oxidative Step 1:**
3g of fiber + 150mL of leachate + 2mL of HNO₃ + 1mL of H₂O₂ + 7mL of Ca(OH)₂ + Filtration

**Oxidative Step 2:**
2g of fiber + effluent obtained in Step 1 + 2 mL of HNO₃ + 1mL of H₂O₂ + 3mL of Ca(OH)₂ + 0,5g of Al₂(SO₄)₃ + Filtration

**Oxidative Step 3:**
Effluent obtained in Step 2 + 1ml of HNO₃ + 1ml of H₂O₂ + 3ml of Ca(OH)₂ + 0,5g of Al₂(SO₄)₃ + Filtration
III. RESULTS

Graph 1. Percentage of Pollutants Removal in each test. Source: Authors

- Fibers reduce coloration by electrostatic attraction [1].
- On removal of turbidity, the fibers acquired after adsorption particle size allowing their retention in the filtration process.
- The application of H$_2$O$_2$ can increase concentration of COD.
IV. CONCLUSION

From the results obtained it can be inferred that the natural fibers used can be entered in efficient advanced oxidation processes currently used in the treatment of leachate, with significant ecological gains, due to the possibility of reuse of this material.

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MAIN REFERENCES