

ACTIVATED CARBONS FROM ANGOLAN WOODS FOR THE ADSORPTION OF MCPA AND DIURON

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Carbon materials, and in particular activated carbon (ACs), are currently one of the most relevant and fundamental adsorbent materials in many areas of human activity, such as medical applications, gas separation and storage, removal of pollutants and odours and catalysis [1,2]. Angola is experiencing a considerable amount of wood wastes, which is the consequence of cutting down the trees for the implantation of residential areas and industrial facilities, like mining, oil and gas, and also for their use in the production of domestic coal. This huge amount of biomass wastes is abandoned and suffers a slow degradation process. In this work we report the preparation of ACs by activation with CO₂ from wood wastes collected in Angola and its use for the adsorption from liquid-phase of pesticides of interest by their availability and toxicity, MCPA and Diuron [3]. The ACs samples were characterised by nitrogen adsorption at 77K, FTIR, CHNS-O elemental analysis and determination of pH of point of zero charge (pzc). The liquid phase adsorption studies were done at 25°C using a batch method and a shaking thermostatic bath. The ACs produced are primordially microporous with BET apparent surface area and pore volume up to 2130m²g⁻¹ and 0.99cm³g⁻¹, respectively. Regarding the surface chemistry, ACs are of basic nature as indicated by the pzc, FTIR and elemental analysis. The MCPA and Diuron adsorption studies shown that the ACs tested show interesting results for the removal of pesticides. This can be particularly interesting and an asset in countries like Angola where the pesticides has been vastly and carelessly used with soil and water contamination as a consequence. The maximum adsorption capacities were 295 and 400mg/g for MCPA and Diuron, respectively.

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