Study of the removal of Bisphenol A from waters by sustainable methods

ABSTRACT

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The present doctoral thesis aimed to identify new, efficient methods of removing BPA from synthetic aqueous solutions and to identify the optimal working conditions to achieve maximum removal efficiency.

The experiments carried out during the research consisted in determining the toxicity level of BPA against bacteria and fungi type microorganisms as a preliminary step in order to identify possible effective microorganisms in biodegradation processes, the identification of adsorbent materials with the potential to be used in the process of retention of BPA namely active carbon and clinoptilolite type zeolite, Rupea, both approved as materials used in water treatment.

The materials were characterized using techniques such as: SEM, EDAX, XRD and the efficiency of the materials were tested in different working conditions (variation of initial concentration, contact time, pH, temperature, ionic strength, etc.), it was tested the effectiveness of exposure to UV and visible radiation on the degradation of BPA in different conditions (exposure time, etc.), the effectiveness of the ozonation process on the degradation of BPA in different conditions (ozone flow rate, exposure time, etc.)

Possible mechanisms of BPA degradation in the presence of US with and without added compounds were proposed and the effectiveness of exposure to US with and without added compounds was tested at different frequencies, exposure time, so as to select the most effective methods of BPA degradation through the comparative study of the efficiency of BPA removal methods.