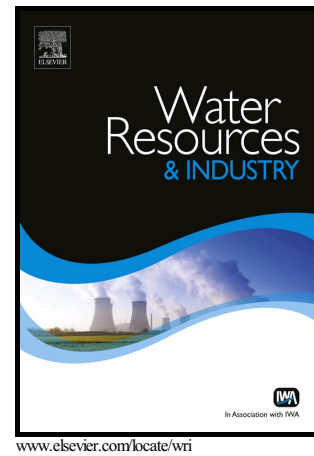


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Amorphous silica waste from a geothermal central as an adsorption agent of heavy metal ions for the regeneration of industrial pre-treated wastewater.

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ABSTRACT

An industrial wastewater regeneration treatment was successfully designed taking advantage of the amorphous silica adsorption properties, generated as an industrial waste in a geothermal power plant located in the city of Mexicali, Baja California. A tertiary wastewater process for the removal of heavy metals from a pre-treated galvanic industry effluent was designed by using a suspension-filtering system, employing previously purified amorphous silica (99.40% by weight) as an adsorbent of metal ions.

The use of the amorphous silica allows to eliminate monovalent and divalent metal ions; 61.19% of silver, 96.28% of Cadmium and up to 98% of zinc, copper, nickel and lead; present in a standard prepared sample solution and between 39.56 and 84.22% of nickel, copper and zinc in a pre - treated industrial sample, achieving a good effluent quality with optimal chemical-physical conditions for its use.

1. Introduction

The current and projected demand for water resources is increasing, due to growing urban, industrial and environmental needs, which is why it is necessary to search for solutions that allow the efficient decontamination of water for possible reuse in various activities ([1] [2] [3]). The reclamation of urban and industrial wastewater is based on finding a proper integration of methods ([4] [5]), materials and technologies to achieve a joint and positive incremental effect of water quality by the elimination of pollutants.([6] [7]).

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