World Academy of Science, Engineering and Technology
International Journal of Environmental and Ecological Engineering
Vol:13, No:05, 2019

# Development of Column-Filters of Sulfur Limonene Polysulfide to Mercury Removal from Contaminated Effluents

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**Abstract :** In Ecuador, mining operations have significantly impacted water sources. Artisanal mining extensively relies in mercury amalgamation. Mercury is a neurotoxic substance even at low concentrations. The objective of this investigation is to exploit Hg-removal capacity of sulfur-limonene polysulfide (SLP), which is a low-cost polymer, in order to prepare granular media (sand) coated with SLP to be used in laboratory scale column-filtration systems. Preliminary results achieved 85% removal of $Hg^{++}$ from synthetic effluents using 20-cm length and 5-cm diameter columns at 119m/day average pore water velocity. During elution of the column, the SLP-coated sand indicated that $Hg^{++}$ is permanently fixed to the collector surface, in contrast, uncoated sand showed reversible retention in $Hg^{++}$ in the solid phase. Injection of 50 pore volumes decreased $Hg^{++}$ removal to 46%. Ongoing work has been focused in optimizing the synthesis of SLP and the polymer content in the porous media coating process to improve $Hg^{++}$ removal and extend the lifetime of the column-filter.

**Keywords :** column-filter, mercury, mining, polysulfide, water treatment
**Conference Title :** ICSGRE 2019 : International Conference on Soil, Groundwater Remediation and Excavation
**Conference Location :** Berlin, Germany
**Conference Dates :** May 21-22, 2019