## 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<sup>++</sup> 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<sup>++</sup> is permanently fixed to the collector surface, in contrast, uncoated sand showed reversible retention in Hg<sup>++</sup> in the solid phase. Injection of 50 pore volumes decreased Hg<sup>++</sup> 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<sup>++</sup> 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

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