

# Integrated sulfate reduction and biosorption process for the treatment of mine drainages

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© 2017 Trans Tech Publications, Switzerland. Sulfate is a pollutant present in the mining waste water and acid mine drainage. High levels of sulfate can generate important environmental problems. One of the alternatives proposed for the treatment of water with high levels of sulfate is the use of sulfate-reducing microorganisms. This work describes the synergistic combination of a treatment system for the removal of metals by biosorption with the strain *Bacillus* sp. NRRL-B-30881 to reduce the inhibiting concentration of metals in waters, followed by a new process of sulfate removal that uses a halotolerant sulfate-reducing microbial consortium. The results show that the sulfate reducing consortium can be cultured and is able to reduce the sulfate concentration using cheaper complex organic substrates like spirulina, cellulose and industrial starch. The sulfate reducing consortium was cultured on a bioreactor with Celite R-635, as support material. Using this bioreactor it was possible