



Effects of changes in sewage sludge compressibility in the context of micro-contamination immobilization

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ABSTRACT

Due to a highly compressible character of solids contained in sewage sludge, mechanical process of sludge dewatering is often difficult since dewatering leads to deformation and clogging of pores and micropores in the filter cake. The study attempts to increase the strength and permeability of sedimentary cake during compression that resulted in increased productivity and process rate. The sludge conditioning was performed by addition of 5 mg g⁻¹ dm highly cationic polyelectrolyte, Praestol 658 BC, cement or ash (in an amount of 0.6 or 1.2 g g⁻¹ dm). The pressure filtration process was carried out at a variable pressure of 0.2, 0.4, 0.6 and 0.8 MPa. Compressibility factor values of the examined sludge changed with pressure change in the filtration process. For raw sludge and the sludge conditioned only with structural additions or with polyelectrolyte, this factor adopted lower values at the increasing filtration pressure. The lowest value of the compressibility factor of 0.1 does not correspond to the best dewatering effects. Substantially better results were obtained for the compressibility factor of 0.2–0.4.

Keywords: Sewage sludge; Sludge dewatering; Filtration; Conditioning; Micro-contamination immobilization

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