Improvement of the Soil/Sediment Cleaning Technique

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Background/Objectives. Contaminants can be arranged in soil/sediments in different forms. When the soil/sediment contains a large amount of organic matter and clay, the contaminants tend to be incorporated more easily in these fractions mainly due to their capacity of cation exchange and consequently low mobility. Soil/Sediment washing techniques are based on the physical separation of the contaminants, which aims to reduce the volume of soil/sediment to be treated by concentration of the contaminant, as well as the contact and agitation of soil/sediment contaminated with a certain washing solution promotes the transport of contaminants from the solid phase to the liquid phase. This work presents a new methodology (Hidrosplit® System) that aims to optimize soil/sediment washing technique.

Approach/Activities. This system works in a closed circuit whose main stages are: *Separation (or sieving)*: which includes the operations of sorting and classification of coarse materials (fraction greater than 150 mm). In many cases, the coarse fraction is relatively free of contaminants and requires no further treatment. High levels of contamination are incorporated into the fine materials; *Disaggregation of soil/sediments particles*: using water sprays associated with oxidizing agents, surfactants and dispersants are added at this stage to transfer the contaminant in whole or in part to the aqueous phase and *Removal of contaminants*: the thinner portions usually require the addition of coagulants prior to sedimentation and / or removal. The fine solids are finely dehydrated using Geobags. The fine portion of the soil/sediments, on which the heavy metals are concentrated, is dehydrated and destined for controlled landfill.

Results/Lessons Learned. This technique aims at reducing the volume of soils/sediments to be destined for controlled landfills. Reduction of volume of water for soil/sediments washing technique because the System works in a closed circuit and the treated water returns to the process also reducing the generation of effluents.