Use of green liquor dregs from the paper and pulp industry for sulfidic mine site reclamation – a case for alkaline by-product characterization

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Sweden has several thousand small orphan sulfidic mining sites that pose an environmental problem. Reclamation of these sites are both an economical and practical problem. Most sites are inaccessible and may be marked as cultural heritage. Cultural heritage means that reclamation may be limited to non-appearance changing techniques [1].

At the same time several paper and pulp mills are facing a future problem with disposal of green liquor dregs (GLD). Today the major portion of the produced GLD is landfilled. Several mills are reaching the end of their landfills, and there is also a possibility for a landfill tax coming in the near future, making disposal both a practical and economical problem for the mills.

GLD is an alkaline by-product with a pH between 10 and 14. It mainly consists of non-process elements from the wood pulping, burned and unburnt organic material and spent cooking chemicals [2]. At some mills lime mud is also added during the dewatering stage increasing the calcium carbonate content of the GLD. Due to the fine grained composition of the GLD hydraulic conductivity is low making it suitable as an alternative cover material.

We have used GLD as a proxy for secondary alkaline materials in order to develop a general working method for determining possible applications. This includes a way to characterize and match different types of GLD with different applications.

It was concluded that GLD, in certain applications, could be suitable for reclamation of sites with oxidized sulfidic mining waste.

An approach for characterization of secondary alkaline materials and selection of suitable applications will also be presented.

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