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Geotechnical Characterization of an Industrial Waste Landfill: Stability and Environmental Study

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Abstract : Even though recycling strategies are becoming more important in recent years, there is still a huge amount of industrial by-products that are the disposal of at landfills. Due to the size, possible dangerous composition, and heterogeneity, most of the wastes are located at landfills without a basic geotechnical characterization. This lack of information may have an important influence on the correct stability calculations. This paper presents the results of geotechnical characterization of some industrial wastes disposed at one landfill. The shear strength parameters were calculated based on direct shear test results carried out in a large shear box owned by CEDEX, which has a shear plane of 1 x 1 m. These parameters were also compared with the results obtained in a 30 x 30 cm shear box. The paper includes a sensitive analysis of the global safety factor of the landfill's overall stability as a function of shear strength variation. The stability calculations were assessed for various hydrological scenarios to simulate the design and performance of the leachate drainage system. The characterization was completed with leachate tests to study the potential impact on the environment.

Keywords : industrial wastes, landfill, leachate tests, stability
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