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Phosphate Washing Sludge in Morocco: A Literature Review on Characterization and Sustainable Applications

Abstract:

Phosphate washing sludge (PWS) is a byproduct produced during the phosphate ore washing process. Its properties and characteristics vary depending on the phosphate basins and washing plants, and they can also change based on storage area and time.

Morocco, holding the world's largest phosphate reserves, generates significant amounts of phosphate waste annually. Unfortunately, these wastes are not currently valorized, posing environmental risks due to heavy metal accumulation and aesthetic degradation, which can impact the ecological system.

This work presents a comprehensive review of the valorization applications of PWS in cementitious materials, including cement, concrete, mortar, aggregates, and geopolymers. It details the sources of PWS, its diverse characteristics, and the methods of its valorization. Furthermore, it highlights the best results found, demonstrating the impact of this waste on the final properties of cementitious products. This research aims to contribute to sustainable waste management and the development of innovative construction materials.

Biography

ATIA Chaimaa is currently completing her 1st year of a PhD, which began in November 2023, focusing on the valorization of phosphate washing sludge in the production of high-performance and sustainable cementitious materials. She holds a master's degree in chemical engineering and materials science. Chaimaa has participated with a literature review poster at the 11th edition of the PhD Student Day at University Hassan First in Settat, Morocco.