Text Mining in Mining: Tailings Dam Water Treatment and Reutilization

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Abstract
In Mexico, mining has been important ever since the prehispanic era, rising during the colonial period, so as it is nowadays an important source of GDP. Nonetheless, this industry has to face a huge problem which is the environmental pollution, caused by the residues coming from mineral processing. This residues, known as tailings, end up confined in great ponds, called "Tailing dams". These tailings contain arsenic or heavy metals, which pollute water and soil, affecting human health. Besides, mining industry require great quantities of water, so it's even more important to find out how to clear this water kept in the tailing dams, in order to reuse it or safely discharge it. The target of this analysis is to find out which have been the techniques to clear and reuse water from tailing dams, and how these techniques have evolved through time. The methodology consisted on analyzing patents and literature documents, found by Boolean keyword search related to tailings dam water treatment and reuse. The documents obtained were filtered and classified into different categories, according to the purposes of the treatment (recover metals, reuse water, discharge water safely, remove pollutants, etc.), identifying which were the unit operations or mechanisms involved in the processes, and whether this methods are applicable to other wastes or not.

After analyzing this documents, the results showed the trends of the different methods involved, and how they have been changed from early mechanical separations (such as filtration and sedimentation), to the newly developed selective adsorbent materials.