

Are Tailings Waste?

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The mining industry is a worldwide business, playing a significant role in the economy of many countries around the world. Mining operations and mineral processing activities produce a large quantity of tailings. Tailings are a by-product of ore beneficiation processes, such as crushing, grinding, and concentration. In many cases, tailings are reputed to be hazardous for the environment, health and economy. Moreover, tailings have been traditionally considered as waste (in other words, unwanted or worthless materials) and not a resource, and thus deposited in tailings storage facilities (tailings impoundments) located at the surface of the mine. The surface disposal of tailings and management of surface tailings disposal facilities have been a major technical challenge for the mining industry as well as an environmental concern worldwide. Aside from the relative high cost associated with the management of the aforementioned facilities and the aesthetic disturbance of the environment, these facilities can cause several environmental problems with severe social and economic ramifications, such as acid mine drainage, contamination of surface and groundwater, contamination of soils, destruction and/or disturbance of ecosystems and habitats. These risks and consequences associated with these conventional surface tailing disposal systems, the immense operation and maintenance cost of these impoundments as well as public perception and stricter regulations regarding the disposal of such tailings have made the mining industry and engineering community consider emerging and novel approaches of tailings management. These emerging approaches don't consider tailings as waste, but as a resource. In this keynote talk, the today and tomorrow's tailings management methods, which consider tailings as a valuable resource, will be presented and discussed. Several successful applications of these new techniques will be also presented.