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REMOVAL OF ARSENIC AND HEAVY METALS FROM ARSENIC-CONTAINING ACID WASTERWATER WITH IRON SALT AND LIME

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Abstract

Arsenic-containing acid wastewater produced in the mining and smelting process will bring great harm to the environment, while to treat arsenic-containing wastewater with iron salt and lime is an economical and effective method. In this paper, iron salt was added to co-precipitate the arsenic and heavy metals, the pH value of arsenic containing acid leaching solution was adjusted by adding of lime. The stability of co-precipitates was also investigated in this study. The results show that the iron, arsenic, copper and zinc in the leaching solution can be removed to less than 0.6 mg/L. In addition, arsenic removal is greatly affected by temperature and Fe/As. The leaching toxicity test of the co-precipitates presents that the precipitates can be stably stored. SEM and XRD analyses of the co-precipitates indicate that the particles size of the co-precipitates is only several microns, and the ferric arsenate still appears in the amorphous state. Moreover, there are crystal calcium arsenate and calcium sulphate which can improve the stability of the co-precipitates.

Key words: arsenic, co-precipitation, ferric arsenate, leaching toxicity, wastewater

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