



“Gheorghe Asachi” Technical University of Iasi, Romania



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

Yongliang Wang^{1*}, Peiwei Han¹, Yonggang Lu¹, Li Xiao^{1,2},
Yingchao Du^{1,2}, Xiang Liu^{1,2}, Shufeng Ye¹

¹State Key Laboratory of Multiphase Complex System, Institute of Process Engineering,
Chinese Academy of Sciences, Beijing 100190, China

²School of Chemistry and Chemical Engineering, University of Chinese Academy of Sciences, Beijing 100049, China

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 the molar ratio of 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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* Author to whom all correspondence should be addressed: e-mail: jakese@163.com