

Process improvement for arsenic removal from dirty acid wastewater

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The aim of this study is to reduce the gross weight of As-containing hazardous waste in the process of treating dirty acid wastewater. Research focused on arsenic removal from gypsum by washing. With washing solution pH being 3.0 and solid liquid ration being 1:5, arsenic leaching concentration of gypsum after the washing process reduced from 40 mg/L to 2.1 mg/L. In pickling condition, As(III) was oxidized to As(V) and the size of gypsum crystal was reduced. The above are reasons for decreased arsenic leaching concentration. In addition, comparing to one-stage treatment process by using Ca(OH)₂, the three-stage counter current treatment process showed several advantages. First of all, arsenic concentration of filtrate was reduced from 5 mg/L to 0.2 mg/L, which is below discharge limit (0.3 mg/L) (GB26132-2010). Secondly, it also avoided the production of ferrous arsenate slag. With the use of this novel process, gypsum could become nontoxic and arsenic concentration could be effectively reduced to 0.2 mg/L by adding Ca(OH)₂. Therefore, such process has great potential in various industrial applications.

Biography

Dongyun Du has abundant theoretical knowledge and practical experience in arsenic wastewater treatment. He has developed three novel methods for the disposal of dirty acid wastewater and two kinds of absorbent material for removal of arsenic from groundwater. He has developed these technologies after years of experience in research, teaching and administration in university. Recently, he studied on the recovery of valuable metals from waste residues in metallurgical industry and the stabilization/solidification technology about high arsenic content of solid waste.

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