

Hydrometallurgical treatment of solid wastes and wastewaters towards an environmental protection

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This study addresses environmental pollution problems associated with solid and liquid wastes/effluents produced by ferrous metallurgy in the European countries and by non-ferrous metallurgy in Western Balkan area, in order to develop preventive and remedial technologies aiming at waste minimization, remediation of waste disposal sites and ultimately prevention of the regional water resources contamination.

The hydrometallurgical processing of EAF steelmaking dust (Paul Wurth S.A., Luxembourg) was investigated under the high pressure leaching in autoclave. The behaviour of zinc and iron with sulphuric acid as leaching agent is discussed. The dependencies of temperature and liquid : solid ratio were investigated. The main goal was to transfer zinc into solution while iron should stay as solid precipitate.

Treatment of industrial wastewaters and leachates from RTB Bor will be considered using neutralization process. This investigation targets at the recovery of metals or groups of metals in a marketable form and at the recycling of pure water in the industrial activities where possible. Especially the cascade line of three reactors of 10 liter will be shown in order to present one continuous process for the purification of solution.

It is envisaged that the application of the proposed technologies at an industrial scale will improve working conditions at mining/metallurgical sites and therefore the quality of life and the ecology at the affected regions.