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(54) **RECOVERY/REMOVAL OF METALLIC ELEMENTS FROM WASTE WATER USING OZONE**

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(58) **Field of Search** **423/50, 140, 92, 423/93, 42, 43, 22, 87, 122, 124, 35, 141, 142, 123, 127; 210/709, 721, 722, 760**

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(57) **ABSTRACT**

Ozone is used to rapidly oxidize specific metallic elements. The insoluble oxidized compounds of the metals formed by the ozonation are then recovered for industrial use in a conventional sedimentation/filtration tank or pool. There is no requirement for pre-treating or neutralizing the acid mine discharge, even when iron is the dominant metal. If the pH of the untreated acid mine discharge is less than about 2.5, metals other than iron precipitated first. After that, the pH is raised and the iron is precipitated as ferric hydroxide. Aluminum is removed as hydrated aluminum compounds after removal of the iron prior to discharging the acid mine discharge to streams. Both the ozonation and neutralization processes are monitored and controlled using electrochemical sensors and feedback controllers.

10 Claims, 9 Drawing Sheets

