























process liquor is above the suggested cut-off concentration of 240 mg/l, indicating a possibility for economic extraction of Ga from the circuit.

The accumulation of V in process liquors is comparable to previous analyses. It is effectively controlled as a side benefit of lime added to the process, that precipitates excess V and thus avoids its unwanted transfer to alumina product. Since the range of V concentrations in Bayer liquors was 300 – 400 mg/l, it can be concluded that the accumulation of V into process liquor is not affected by its relatively higher abundance in karstic bauxite.

Although Ga and V are found and known to accumulate in Bayer liquor, no presence of liquor Ce, Y or Th was detected. Almost the entire mass of V, Ce, Y and Th entering the process from the bauxites are separated with the balance of bauxite residue at the end of the cycle. Combining this property and the stability of iron oxide phases during the Bayer process, a simple method for predicting trace element concentration in bauxite residue based on iron oxide concentration in bauxite and derived residue as well as average trace element concentration of the bauxite feed is proposed. The given mass balances of trace elements in the Bayer cycle that were previously absent from the open literature can be used as inputs to availability and resource estimations.

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