



Monitoring of Soil Remediation Process in the Metal Mining Area

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Stabilization using proper additives is an effective soil remediation technique to reduce As mobility in soil. Several researches have reported that Fe-containing materials such as amorphous Fe-oxides, goethite and hematite were effective in As immobilization and therefore acid mine drainage sludge (AMDS) may be potential material for As immobilization. The AMDS is the by-product from electrochemical treatment of acid mine drainage and mainly contains Fe-oxide.

The Chungyang area in Korea is located in the vicinity of the huge abandoned Au-Ag Gubong mine which was closed in the 1970s. Large amounts of mine tailings have been remained without proper treatment and the mobilization of mine tailings can be mainly occurred during the summer heavy rainfall season. Soil contamination from this mobilization may become an urgent issue because it can cause the contamination of groundwater and crop plants in sequence. In order to reduce the mobilization of the mine tailings, the pilot scale study of in-situ stabilization using AMDS was applied after the batch and column experiments in the lab.

For the monitoring of stabilization process, we used to determine the As concentration in crop plants grown on the field site but it is not easily applicable because of time and cost. Therefore, we may need simple monitoring technique to measure the mobility or leachability which can be comparable with As concentration in crop plants. We compared several extraction methods to suggest the representative single extraction method for the monitoring of soil stabilization efficiency. Several selected extraction methods were examined and Mehlich 3 extraction method using the mixture of NH_4F , EDTA, NH_4NO_3 , CH_3COOH and HNO_3 was selected as the best predictor of the leachability or mobility of As in the soil remediation process.