

### **13. Dry Classification of Radioactive Cesium Contaminated Soil by Magnetic Separator - Usage of Ground Granulated Blast-Furnace Slag as a Magnetic Material -**

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Finer soil particles tend to be associated with greater contamination density by radioactive cesium. Classification treatment, which means separating fine-grained contaminated soil from coarse grained soil satisfying reference values, allows reuse of coarse-grained soil. Before, wet classification of contaminated soil using water was conducted. However, cohesion precipitation processing of the turbid water generated by wet classification becomes difficult as the particle sizes of the fine particles become smaller. As the properties of the turbid water change, cohesion precipitation processing becomes unstable.

Using simulated cesium contaminated soil, we explored a dry classification testing method that does not produce any wastewater. Using ground granulated blast-furnace slag as a magnetic material, after magnetic separation using a two-step lattice type magnet, we found that the magnetized sample (fine fraction) had about 2.7 times the cesium concentration compared to preclassification, with about 20% weight concentration compared to preclassification. Subsequent tests assessed radioactive cesium contaminated soil using a drum-type magnetic separator to separate fine and coarse fractions. The results indicated the radioactive cesium density in the coarse fraction samples had dropped by between 39% and 46%.

**Key words:** radioactive cesium contaminated soil, ground granulated blast-furnace slag, dry classification, magnetic sorting, drum-type magnetic separator