

## World Congress and Expo on **Recycling**

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### **Melt decontamination for recycle and reuse of radioactively contaminated decommissioning metal waste**

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**D**econtamination and decommissioning (D&D) has become one of the most important nuclear industries in developed countries including the USA, UK and France where D&D for retired nuclear facilities have been carried out at a large scale. Large quantities of contaminated metal waste have been generated from decommissioning projects. Contaminated metal waste represents a considerable storage volume as well as significant cost since it must be maintained and monitored indefinitely in secure storage. The high cost of either disposal or storage requires that the volume of the material be minimized. Melt decontamination can be used to achieve three aims as size or volume reduction of wastes, decontamination through binding of the contaminants in the slag phase (U), decontamination through volatilization (Cs, Sr) and homogeneous distribution of contaminants within the bulk metal (Co). In addition, cost reductions may be possible because melting will create ingots that homogeneous the waste form which makes waste characterization simpler and easier and stable the final waste package. Therefore, there may not be a requirement for additional packing of the waste. In Korea, two decommissioning projects have been carried out owing to the retiring of nuclear research facilities (KRR-1 & KRR-2) and a uranium conversion plant (UCP). More than 400 tons of radioactive metal waste was generated during the decommissioning project. For the purpose of the volume reduction and reuse, KAERI was selected melt decontamination technology using high frequency induction furnace with 350 kg/batch. The ingot samples were taken by molten metal.  $^{60}\text{Co}$  remained in the ingot and  $^{137}\text{Cs}$  was not detected into the ingot. The level of specific activity in the ingot was found to be very low level below  $10^{-3}\text{Bq/g}$ .

#### **Biography**

Byung Youn Min has completed his PhD from Chung-nam National University and Postdoctoral studies from Korea Atomic Energy Research Institute (KAERI). He is a Senior Researcher of Decontamination and Decommissioning Technology Development in KAERI. He has published more than 30 papers in reputed journals. His Research interest is in thermal hydraulic safety, decontamination & decommissioning technology R&D, radioactive waste disposal and melt decontamination for metal recycle and combustible waste incineration.

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