Fly Ash as a Potential Scrubber for Low Activity Radioactive Wastes

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ABSTRACT

Recently it has been observed that Class F fly ash can serve as an excellent chemical scrubber and fixation reagent for acidic wastes containing a variety of trace elements. The fly ash produced in Israel has a highly basic reaction when exposed to water. That is a result of the very low sulfur content restrictions imposed on coal imports due to strict environmental regulations. Thus, it is feasible to use the ash as a chemical scrubber for acidic wastes. It was also found that the fixation product can be used as a good aggregate in concrete production. Bricks produced using the aggregate as a sand substitute have proved to be strong enough according to the concrete standards and furthermore, the leaching rate of the trace elements was reduced appreciably when compared to that of the scrubbed product. Thus the fly ash might be a potential fixation reagent for radionuclides.

The possibility to use the fly ash as a potential fixation reagent has been studied through simulation experiments in aqueous solutions containing cesium cations, Cs^{+}, divalent strontium, Sr^{2+} and $Ce^{3/4+}$ as a simulation reagent to the actinides. It has been found that indeed the fly ash serves as a good fixation reagent to these metal ions. The mechanism of the fixation processes will be discussed in detail.

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