

The identification and treatment of radioactive ions including iodide and cobalt in a post-decontamination liquid waste

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Post-decontamination radioactive wastes especially in a liquid form were treated by chemical sedimentation through the coagulation-flocculation. The simulated post-decontamination liquid wastes containing various ionic components such as iron, chromium, nickel, sulfate as well as inactive radioisotopes of cobalt and iodide were tested by the mixture of barium hydroxide/strontium hydroxide/lead hydroxide. The different results in terms of precipitates size, sedimentation speed, and removal efficiency were observed by the composition changes of each hydroxide. Based on the experimental observance, we propose an empirical model to predict the removal efficiency of radioisotopes and the amount of secondary waste. The qualified removal efficiency up to 99% and significant volume reduction of 30% compared to ionic exchange was obtained in the model expectation.