Investigation of corrosion behaviors in a decontamination agent by means of potentiodynamic method

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Chemical decontamination is an important means of preventing or limiting the spread and diffusion of radioactive contaminants. In chemical decontamination processes, the chemical reaction for dissolution of metal oxides in chelating agents such as oxalic acid and EDTA as an actual decontamination step. It is importance to investigate corrosion behaviors associated with decontaminating agents. In this study, electrochemical methods were used in a solution containing metal complexes with EDTA in order to investigate the corrosion behaviors of SS 316, SS 304 and Inconel 600 during the chemical decontamination process containing EDTA. In experiments performed using potentiodynamic method, it was found that Inconel 600 had the highest corrosion potentials. The corrosion behaviors observed in the experiments performed using the electrochemical method were clearly shown that the corrosion effects were negligible in the newly developed chemical decontamination process.