Contents

METCALFE, R. & ROCHELLE, C. A. Chemical containment of waste in the geosphere vii

The place of chemical containment in regulatory frameworks
YONG, R. N. Overview of partitioning and fate of contaminants: retention, retardation and regulatory requirements 1
FRANK, E. Regulatory objectives and safety requirements for the disposal of radioactive wastes in Switzerland 21

The chemical containment properties of the deep geosphere
SAVAGE, D., ARTHUR, R. C. & SAIITO, S. Geochemical factors in the selection and assessment of sites for the deep disposal of radioactive wastes 27
ALEXANDER, W. R. & MCKINLEY, I. G. The chemical basis of near-field containment in the Swiss high-level radioactive waste disposal concept 47
IWATSUKI, T. & YOSHIDA, H. Characterizing the chemical containment properties of the deep geosphere: water–rock interactions in relation to fracture systems within deep crystalline rock in the Tono area, Japan 71
BANWART, S. A., WIKBERG, P. & PUIGDOMENECH, I. Protecting the redox stability of a deep repository: concepts, results and experience from the Åspö hard rock laboratory 85
ROCHELLE, C. A., PEARCE, J. M. & HOLLOWAY, S. The underground sequestration of carbon dioxide: containment by chemical reactions in the deep geosphere 117

The role of chemical containment in clay barriers
SPOONER, A. J. & GIUSTI, L. Geochemical interactions between landfill leachate and sodium bentonite 131
THORNTON, S. F., BRIGHT, M. I., LERNER, D. N. & TELLAM, J. H. The geochemical engineering of landfill liners for active containment 143
HURST, E. L. & HOLMES, S. P. Metal retention from landfill leachate by glacial clays: laboratory experiments 159
DE WINDT, L., CABRERA, J. & BOISSON, J. Y. Radioactive waste containment in indurated shales: comparison between the chemical containment properties of matrix and fractures 167

The chemical containment properties of cementitious engineered barriers
BATEMAN, K., COOMBS, P., NOY, D. J., PEARCE, J. M., WETTON, P., HAWORTH, A. & LINKLATER, C. Experimental simulation of the alkaline disturbed zone around a cementitious radioactive waste repository: numerical modelling and column experiments 183
HODGKINSON, E. S. & HUGHES, C. R. The mineralogy and geochemistry of cement/rock reactions: high-resolution studies of experimental and analogue materials 195
CONTENTS

Containment of metalliferous wastes
BOWELL, R. J., WILLIAMS, K. P., CONNELLY, R. J., SADLER, P. J. K. & DODDS, J. E. 213
Chemical containment of mine waste

Investigative methods
REEDER, S. & CAVE, M. R. Evaluation of the containment properties of geological and engineered barriers by pore-water extraction and characterization 265
PLIMMER, B. R., PRINGLE, A. B. & MONCASTER, S. J. A probabilistic risk assessment methodology for landfills, with particular reference to the representation of chemical containment 275

Index 281