

1. Record Nr.	UNINA9910964129203321
Titolo	Disposition of high-level waste and spent nuclear fuel : the continuing societal and technical challenges // Committee on Disposition of High-Level Radioactive Waste Through Geological Isolation, Board on Radioactive Waste Management, Division on Earth and Life Studies, National Research Council
Pubbl/distr/stampa	Washington, D.C. ; ; [Great Britain], : National Academy Press, c2001
ISBN	9786610185085 9780309170888 0309170885 9781280185083 1280185082 9780309567640 0309567645
Edizione	[1st ed.]
Descrizione fisica	1 online resource (214 p.)
Disciplina	621.4838
Soggetti	Radioactive waste disposal in the ground Radioactive waste repositories
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	DISPOSITION OF HIGH-LEVEL WASTE AND SPENT NUCLEAR FUEL -- Acknowledgments -- Preface -- Contents -- Executive Summary -- PRINCIPAL FINDINGS AND CONCLUSIONS -- PRINCIPAL RECOMMENDATIONS -- 1 Disposition of High-Level Waste and Spent Nuclear Fuel: An Overview of the Societal and Technical Challenges -- QUESTIONS TO BE ADDRESSED IN THIS REPORT -- How Can Safety Be Assured for HLW? -- How Can Safety and Security Against Human Actions Be Assured for HLW? -- What Are the Inherent Limits to Assuring Safety and Security by Geological Repositories or by Surface Storage? -- Why Has There Not Been More Progress Toward Geological Disposal? -- Are There Available Alternatives to Geological Disposition or Surface Storage? -- Do National Programs Have to Choose Now Between Geological Repositories and Surface Storage? -- Are New

Initiatives Needed in International Cooperation? -- 2 Principal Findings and Conclusions -- TODAY'S GROWING INVENTORY OF HLW REQUIRES ATTENTION BY NATIONAL DECISION MAKERS -- THE FEASIBLE OPTIONS ARE MONITORED STORAGE ON OR NEAR THE EARTH'S SURFACE AND GEOLOGICAL DISPOSITION -- GEOLOGICAL DISPOSAL REMAINS THE ONLY LONG-TERM SOLUTION AVAILABLE -- GEOLOGICAL DISPOSAL IS SCIENTIFICALLY AND TECHNICALLY SOUND, BUT IMPORTANT CHALLENGES REMAIN -- THE BIGGEST CHALLENGES ARE SOCIETAL -- WHETHER, WHEN, AND HOW TO MOVE TOWARD GEOLOGICAL DISPOSAL ARE SOCIETAL DECISIONS FOR EACH COUNTRY -- A STEPWISE PROCESS IS APPROPRIATE FOR DECISION MAKING UNDER TECHNICAL AND SOCIETAL UNCERTAINTY -- SUCCESSFUL DECISION MAKING IS OPEN, TRANSPARENT, AND BROADLY PARTICIPATORY -- SUCCESSFUL PROGRAM MANAGEMENT IS FLEXIBLE AND ADAPTIVE -- INTERNATIONAL COOPERATION CAN HELP ACHIEVE NATIONAL SOLUTIONS -- 3 Principal Recommendations -- PRINCIPAL RECOMMENDATION 1 -- PRINCIPAL RECOMMENDATION 2 -- PRINCIPAL RECOMMENDATION 3 -- Technical Actions -- Societal Actions. Common Requirements -- PRINCIPAL RECOMMENDATION 4 -- PRINCIPAL RECOMMENDATION 5 -- CLOSING COMMENTS -- 4 National Programs -- INVENTORIES OF HIGH-LEVEL WASTE AND SPENT NUCLEAR FUEL -- EXAMPLES OF NATIONAL WASTE MANAGEMENT PROGRAMS -- Belgium -- Canada -- China -- Finland -- France -- Germany -- Japan -- Netherlands -- Russia -- Spain -- Sweden -- Switzerland -- United Kingdom -- United States -- CONCLUSIONS -- 5 Societal Issues in Radioactive Waste Management -- THE ROOTS OF CONCERN -- A LEGACY OF DISTRUST -- VALUE JUDGMENTS AND ETHICAL ISSUES -- Intragenerational Equity -- Intergenerational Equity -- DISCUSSION: TOWARD AN EQUITABLE SYNTHESIS -- CONCLUSIONS -- RECOMMENDATIONS -- 6 Scientific and Technical Issues in Radioactive Waste Management -- GEOLOGICAL DISPOSAL -- SCIENTIFIC BASIS FOR MODELING -- The Behavior of the Waste Package -- The Behavior of the Host Rock in the Immediate Vicinity of the Waste Package (the "Near-Field") -- Transport of Radionuclides from the Near-Field Environment -- PERFORMANCE ASSESSMENT METHODOLOGY -- DISCUSSION: UNCERTAINTY AND CONFIDENCE BUILDING -- The Scientific and Technical Community -- The Regulators' Dilemma -- The Link Between Scientific and Societal Responsibility -- CONCLUSIONS -- Science, Technology, and Performance Assessment -- Confidence and Trust -- General Conclusions -- 7 Alternatives to Geological Disposition -- SURFACE STORAGE -- SOCIETY'S TWO AVAILABLE DISPOSITION OPTIONS: GEOLOGICAL REPOSITORIES AND SURFACE STORAGE FACILITIES -- ALTERNATIVES TO GEOLOGICAL REPOSITORIES AND SURFACE STORAGE -- Partitioning and Transmutation -- Extraterrestrial Disposal -- Geological Alternatives to Mined Repositories: Subseabed and Deep-Borehole Options -- CONCLUSIONS AND RECOMMENDATIONS REGARDING ALTERNATIVES -- 8 Improving Decision Making and Implementation -- THE NEED FOR A CONSISTENT POLICY THAT ENDURES. IMPROVING POLICY DECISIONS AND MANAGEMENT IMPLEMENTATION -- SITING: A CRUCIAL ASPECT OF SOCIETAL DECISION MAKING -- Goals and Objectives -- Appropriate Outcomes -- Appropriate Process -- Sweden -- France -- Canada -- Belgium -- Finland -- Summary -- LEARNING WHILE DOING-AND KEEPING OPTIONS OPEN -- 9 International Cooperation -- RADIOACTIVE WASTE MANAGEMENT ISSUES TRANSCEND NATIONAL BOUNDARIES -- SHARING KNOWLEDGE, EXPERIENCE, AND COSTS BETWEEN COUNTRIES -- Waste Management Information Is Freely Available -- International Organizations Provide a

Framework for Collaboration -- Joint Projects Are the Most Effective Vehicles for Collaboration -- The Role of Commercial Consulting as a Know-How Transfer Mechanism -- Some Problems Can Arise During Cooperation- But the Benefits Outweigh These -- COLLABORATION THROUGH USE OF COMMON WASTE MANAGEMENT FACILITIES -- Transboundary Shipments for Treatment or Storage of Wastes Are Difficult -- International Repositories-A Global Issue -- Long-Term Safety -- Nuclear Security -- Economic Issues -- Public Acceptability -- Political Issues -- CONCLUSIONS -- International Cooperation -- International Repositories -- References -- Appendix A Biographical Sketches of Committee Members -- Appendix B Workshop Program -- WORKSHOP FINAL AGENDA -- Appendix C List of Attendees -- Appendix D Acronyms.

---

Sommario/riassunto

Focused attention by world leaders is needed to address the substantial challenges posed by disposal of spent nuclear fuel from reactors and high-level radioactive waste from processing such fuel. The biggest challenges in achieving safe and secure storage and permanent waste disposal are societal, although technical challenges remain. Disposition of radioactive wastes in a deep geological repository is a sound approach as long as it progresses through a stepwise decision-making process that takes advantage of technical advances, public participation, and international cooperation. Written for concerned citizens as well as policymakers, this book was sponsored by the U.S. Department of Energy, U.S. Nuclear Regulatory Commission, and waste management organizations in eight other countries.

---