

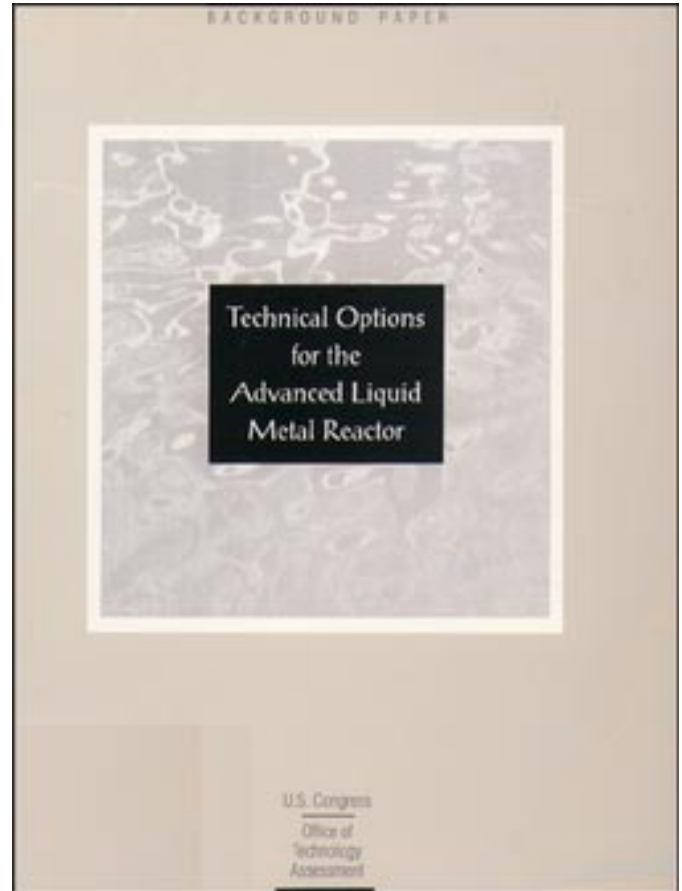
*Technical Options for the Advanced Liquid  
Metal Reactor*

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# Foreword

In this post-Cold War era, scientists and engineers have focused much research on the development of technologies to address the legacy of the nuclear arms race. One of the more intractable problems currently is how to dispose of excess plutonium from retired nuclear weapons and how to manage radioactive plutonium waste. The Office of Technology Assessment covered this issue in its 1993 assessment *Dismantling the Bomb and Managing the Nuclear Materials*. The House Committee on Energy and Commerce, Subcommittee on Energy and Power, asked OTA to expand the technical analysis of the advanced liquid metal reactor (ALMR).

This background paper discusses the history and status of the ALMR research program. It presents applications of this technology to the plutonium disposition problem and the possible advantages and disadvantages of its future development and deployment. It also discusses related issues such as waste management and concerns about proliferation of plutonium material.

With regard to its application to the plutonium disposition problem, ALMR technology will require a decade or more of research and testing before the performance of a complete system could be ensured. Even though complete elimination of the plutonium isotope within the reactor is theoretically achievable with this technology, other aspects of full-scale deployment must be considered in setting goals and objectives for a development program.

OTA appreciates the assistance and support it received for this effort from many contributors and reviewers, including the Argonne National Laboratory, the General Electric Company, the Department of Energy, other independent research organizations and public interest groups, and many individuals. They provided OTA with valuable information critical to the completion of this paper and important insights about its technical evaluations and projections. OTA, however, remains solely responsible for the contents of this report.

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