

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Future Space Transportation Systems (4)

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DEVELOPMENT OF CONCEPT OF RADIOACTIVE WASTE DISPOSAL IN SPACE. STATUS,
PROSPECTS

Abstract

The paper presents a research into the capability and feasibility of nuclear-power-plant long-half-life radioactive waste disposal in space. The paper demonstrates a capability to dispose of long-half-life radioactive waste in space using space launch systems. The paper analyzes a ratio between costs of long-term storage of radioactive waste on Earth and costs required to release the waste into space. This ratio depends on perfection of a space launch system that can be described by a ratio of a released radioactive-waste weight to a launch vehicle weight, i.e. by K-coefficient. The paper proposes the K-coefficient starting from which utilization of space launch systems for disposal of radioactive waste will be economically sound. The paper shows technological areas of improvement of launch vehicle design and radioactive waste capsule design, enabling to create such hardware in the nearest future.