

DOE 1540.3A  
7-8-92

THIS PAGE MUST BE KEPT WITH DOE 1540.3A, BASE TECHNOLOGY FOR RADIOACTIVE MATERIAL TRANSPORTATION PACKAGING SYSTEMS.

DOE 1540.3A, BASE TECHNOLOGY FOR RADIOACTIVE MATERIAL TRANSPORTATION PACKAGING SYSTEMS, HAS REVISED DOE 1540.3 TO REFLECT ORGANIZATIONAL TITLE, ROUTING SYMBOL, AND OTHER EDITORIAL REVISIONS REQUIRED BY SEN-6. NO SUBSTANTIVE CHANGES HAVE BEEN MADE. DUE TO THE NUMBER OF PAGES AFFECTED BY THE REVISIONS, THE ORDER HAS BEEN ISSUED AS A REVISION.



# U.S. Department of Energy

Washington, D.C.

## ORDER

DOE 1540.3A

7-8-92

**SUBJECT:** BASE TECHNOLOGY FOR RADIOACTIVE MATERIAL TRANSPORTATION  
PACKAGING SYSTEMS

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1. PURPOSE. To establish Department of Energy (DOE) policies and responsibilities for coordinating and planning base technology for radioactive material transportation packaging systems.
2. CANCELLATION. DOE 1540.3, BASE TECHNOLOGY FOR RADIOACTIVE MATERIAL TRANSPORTATION PACKAGING SYSTEMS, of 2-29-88.
3. SCOPE. The provisions of this Order apply to all Departmental Elements and contractors performing work for the Department as provided by law and/or contract involving responsibility for packaging radioactive materials for transport, and as implemented by the appropriate contracting officer.
4. REFERENCES.
  - a. DOE 1330.1D, COMPUTER SOFTWARE MANAGEMENT, of 5-18-92, which establishes responsibilities, policies, and guidelines for automated information systems management and the administration of data for use within automated information systems.
  - b. DOE 1540.1A, MATERIALS TRANSPORTATION AND TRAFFIC MANAGEMENT, of 7-8-92, which establishes policies and procedures for the management of materials transportation activities, including traffic management.
  - c. DOE 1540.2, HAZARDOUS MATERIAL PACKAGING FOR TRANSPORT - ADMINISTRATIVE PROCEDURES, of 9-30-86, which establishes administrative procedures for the certification and use of radioactive and other hazardous materials packaging by DOE.
  - d. DOE 5480.3, SAFETY REQUIREMENTS FOR THE PACKAGING AND TRANSPORTATION OF HAZARDOUS MATERIALS, HAZARDOUS SUBSTANCES, AND HAZARDOUS WASTES, of 7-9-85, which establishes requirements for packaging and transporting hazardous materials, substances, and wastes.
  - e. Title 10 Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material," which establishes Nuclear Regulatory Commission (NRC) safety standards for radioactive material packaging;

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**DISTRIBUTION:**

All Departmental Elements

**INITIATED BY:**

Assistant Secretary for  
Environmental Restoration  
and Waste Management

- f. Title 49 Code of Federal Regulations, Parts 171-179, "Hazardous Material Regulations," which prescribe DOT requirements governing the transportation of hazardous materials in interstate and foreign commerce.

5. DEFINITIONS.

- a. DOE and Nuclear Regulatory Commission Certificate of Compliance is a certificate issued by DOE or the Nuclear Regulatory Commission (NRC), as appropriate, approving for use, with identified limitations, a specific packaging for quantities of radioactive materials exceeding A<sub>1</sub>/A<sub>2</sub> quantities as defined in 49 CFR Part 173 and 10 CFR Part 71.
- b. Package, for radioactive materials, is the packaging, together with its radioactive contents, as presented for transport.
- c. Packaging, for radioactive materials, is the assembly of packaging components necessary to ensure compliance with the packaging requirements of DOE 1540.2 and DOE 5480.3. It may consist of one or more receptacles, absorbent materials, spacing structures, thermal insulation, radiation shielding, and devices for cooling or absorbing mechanical shocks. The conveyance, tie-down system, and auxiliary equipment may sometimes be designated as part of the packaging.
- d. Radioactive Material is any material having a specific activity greater than 0.002 microcuries per gram (micro Ci/g).
- e. Base Technology is all technology underlying the design, development, and testing of nuclear materials packaging systems and operations. Base technology elements include: generic design concepts and components with potential for future systems applications; maintenance and benchmarking of test facilities; activities related to increased understanding of materials and their applications; authorized package contents characterization; risk and accident analysis methods; environmental impact analysis methods; standards development; technical investigations underlying regulations, development, and application of computer codes for design and system analysis; modeling; development and application of data bases; and supporting research in the physical, chemical, mathematical, and engineering sciences, which is fundamental to radioactive materials transportation packaging systems development.
- f. Lead DOE Field Office is a DOE Field Office having special expertise and capability to manage the implementation of DOE activities in a given transportation base technology program area(s).

6. BACKGROUND.

- a. As defined in the Hazardous Materials Transportation Act, the Department of Transportation (DOT) has broad regulatory responsibility for safety in the transportation of all hazardous materials, including radioactive materials. This responsibility extends to all modes of transportation that would be considered for shipping radioactive materials.
- b. The DOE derives its regulatory authority in part from regulations promulgated under the aforementioned Act and also from the Atomic Energy Act, as amended, and the Department of Energy Organization Act of 1977.
- c. The Nuclear Regulatory Commission (NRC) is an independent regulatory agency established by Congress to regulate commercial entities that possess and use radioactive materials. The DOE employs the same standards as the NRC for accident resistant packaging designs.
- d. The Office(s) of the Assistant Secretary of Defense Programs (DP-1), Assistant Secretary for Nuclear Energy (NE-1), Director of Civilian Radioactive Waste Management (RW-1), Assistant Secretary for Environmental Restoration and Waste Management (EM-1), and Director of Energy Research (ER-1) have major and diverse responsibilities for the development and use of radioactive material transportation packaging systems.
- e. These DOE Elements have a need to be consistent with the technical bases that demonstrate compliance with regulatory requirements.
- f. For organizations identified in paragraph 6d, there is a need to improve the planning of base technology activities intended to support the development of packaging with either a DOE Certificate of Compliance, an NRC Certificate of Compliance, or both.
- g. The Secretary of Energy (S-1) has assigned the Assistant Secretary for Environment, Safety and Health (EH-1) responsibility for establishing and maintaining an integrated management and administrative program for certification of applicable DOE radioactive material packaging.
- h. The Under Secretary (S-3) established the certification of DOE radioactive material packaging by a Headquarters Certifying Official. The Headquarters Certifying Official is responsible for the management and administration of the program for certification of DOE radioactive material packaging and the establishment of an independent technical evaluation staff, except as provided for in DOE 1540.2, paragraph 10.

7. POLICY. It is Departmental policy to ensure that the development of radioactive material packaging systems shall be accomplished in a manner commensurate with:
  - a. Operational and programmatic requirements for radioactive material packaging;
  - b. Compliance with all applicable safety regulations of DOE, the Department of Transportation, NRC, and other appropriate agencies;
  - c. Planning, acquisition, and utilization of radioactive materials packaging in the most efficient and effective manner; and
  - d. Delegation of responsibility for the design, development, control, and use of specific packaging to individual DOE Field Offices to support their assigned programs.
8. RESPONSIBILITIES AND AUTHORITIES.
  - a. Assistant Secretary for Environmental Restoration and Waste Management (EM-1) shall:
    - (1) Prepare and update annually an integrated Departmentwide base technology plan for radioactive material transportation packaging systems. The plan will delineate objectives, milestones, resource requirements, and schedules. The plan will summarize roles of participating field elements, laboratories/contractors, and other DOE organizations that will be served by the base technology program.
    - (2) Coordinate preparation of the plan with the Director of Civilian Radioactive Waste Management (RW-1), the Director of Energy Research (ER-1), the Assistant Secretary for Defense Programs (DP-1), the Assistant Secretary for Nuclear Energy (NE-1), the Assistant Secretary for Environment, Safety, and Health (EH-1), and the Headquarters Certifying Official.
    - (3) Ensure that procedures are established to obtain the necessary data for the plan.
    - (4) Periodically issue progress reports on the status of research, packaging development, results of demonstration and testing, and additions to the fleet of Departmental packaging.
    - (5) Establish a formula for equitable sharing of Departmental transportation packaging base technology costs among the appropriate program offices. In the case of base technology activities undertaken by one program office at the request of and for the exclusive benefit of another program office,

the formula shall provide for reimbursement of a fair share of the costs of such activities. In the case of base technology support supplied to the Office of Civilian Radioactive Waste Management by other program offices, the formula shall allow for an appropriate share of the costs of such support to be offset against charges that might otherwise be incurred for waste disposal services provided such program offices by the Office of Civilian Radioactive Waste Management.

- (6) With the concurrence of the Assistant Secretary for Nuclear Energy, the Assistant Secretary for Defense Programs, Director of Civilian Radioactive Waste Management, and Director of Energy Research, designate one or more lead DOE Field Offices and lead laboratories for radioactive materials packaging systems base technology as determined by program needs and existing capabilities.

b. Assistant Secretaries, NE-1 and DP-1, and Directors, RW-1 and ER-1, shall:

- (1) Designate a senior management official(s) responsible for assisting EM-1 in the preparation of the plan.
- (2) Concur in and promulgate the Departmental base technology plan and program guidance to their respective Departmental Elements and contractors.
- (3) Approve acquisition of base technology for radioactive material packaging systems in accordance with the Departmental plan and program guidance.
- (4) Conduct periodic program reviews of base technology activities for radioactive material packaging systems under their purview, and participate in Departmentwide base technology program reviews.
- (5) Grant such alternatives to the base technology plan as necessary to meet specific requirements of programs under their direction; notice of such alternatives and their rationale shall be transmitted promptly to the Heads of Headquarters Elements identified in paragraph 8b.

c. Managers of DOE Field Offices shall:

- (1) Review field site radioactive material transportation packaging system base technology programs and maintain records of these reviews.

- (2) Ensure by means of audits that contractors comply with Departmental plan and program guidance with regard to packaging systems base technology, quality assurance, and safety and security safeguards.
- (3) Be responsible for the design, development, control and use of specific packaging to support assigned programs.
- (4) Provide timely notice to Headquarters of the need for associated base technology for use in development of packages.

d. Managers of Lead DOE Field Offices shall:

- (1) Establish and maintain radioactive material transportation packaging system technical capability that is available to support all Departmental Elements as well as other agencies.
- (2) Sustain national radioactive certification testing capability and technology for testing transportation hardware.
- (3) Respond to programmatic requests to help ensure:
  - (a) The availability of cost-effective, operational, and environmentally adequate packaging hardware when needed in support of DOE programs; and
  - (b) The efficient development of transportation data bases and access for appropriate users.
- (4) Support the development of the transportation base technology plan described in this Order.

e. Headquarters Certifying Official shall:

- (1) Establish and maintain base technology for the review and evaluation of Safety Analysis Reports for Packaging which are submitted for certification.
- (2) Request specific research and base technology be undertaken in support of DOE certification responsibilities.

f. Deputy Assistant Secretaries for Military Application (DP-20) and for Naval Reactors (NE-60) shall:

- (1) Assume the responsibilities assigned in this Order to the Managers of DOE Field Offices.

- (2) Assume the responsibility for all aspects of base technology for radioactive material transportation packaging systems under their jurisdiction in lieu of the program and responsibilities set forth in paragraphs 8a and 8b.
- (3) Determine, where appropriate, DP-20 and NE-60 participation in the transportation base technology measures set forth in this Order.

BY ORDER OF THE SECRETARY OF ENERGY:



DOLORES L. ROZZI  
Director of Administration  
and Human Resource Management

