

U.S. Department of Energy
Washington, D.C.

ORDER

DOE O 460.1B

Approved: 4-4-03

SUBJECT: PACKAGING AND TRANSPORTATION SAFETY

1. OBJECTIVES. To establish safety requirements for the proper packaging and transportation of Department of Energy (DOE)/National Nuclear Security Administration (NNSA) offsite shipments and onsite transfers of hazardous materials and for modal transport. (Offsite is any area within or outside a DOE site to which the public has free and uncontrolled access; onsite is any area within the boundaries of a DOE site or facility to which access is controlled.)
2. CANCELLATION. DOE O 460.1A, PACKAGING AND TRANSPORTATION SAFETY, dated 10-2-96, is canceled. Cancellation of an Order does not, by itself, modify or otherwise affect any contractual obligation to comply with such an Order. Canceled Orders that are incorporated by reference in a contract shall remain in effect until the contract is modified to delete the reference to the requirements in the canceled Orders.
3. APPLICABILITY.
 - a. DOE/NNSA Elements. Except for the exclusions in paragraph 3c, below, this Order applies to DOE/NNSA Elements shown in Attachment 1.
 - b. Contractor Requirements.
 - (1) The Contractor Requirements Document (CRD), Attachment 2, sets forth requirements of this Order that will apply to site/facility management contracts that include the CRD.
 - (2) The Office identified in the responsibilities paragraph is responsible for ensuring that the CRD is included in site/facilities management contracts that identify implicitly or explicitly that transportation activities will be conducted on site or offsite. Specifically, the CRD applies to the following.
 - (a) Contractors who are subject to 49 USC Chapter 51, Transportation of Hazardous Materials; and

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Office of Environmental Management

- (b) Contractors who are agencies of a State government and not otherwise subject to 49 USC Chapter 51, Transportation of Hazardous Material.
- (3) This Order does not apply to other than site/facility management contracts. Any application of any requirements of this Order to other than site/facility management contracts will be communicated separately from this Order.
- (4) The official identified in the Responsibilities paragraph is responsible for notifying the contracting officer of which site/facility management contracts are affected. Once notified, the contracting officer is responsible for incorporating the CRD into the affected site/facility management contracts via the laws, regulations, and DOE directives clauses of the contracts.
- (5) As the laws, regulations, and DOE directives clause of site/facility management contracts states, regardless of the performer of the work, site/facility management contractors with the CRD incorporated into their contracts are responsible for compliance with the requirements of the CRD. Affected site/facility management contractors are responsible for flowing down the requirements of this CRD to subcontracts at any tier to the extent necessary to ensure the site/facility management contractors' compliance with the requirements. Except for the exclusions in paragraph 3c, below, the Contractor Requirements Document (CRD) sets forth requirements that are to be applied to the universe of contractors awarded contracts for managing and operating DOE/NNSA facilities. Contractor compliance with the CRD will be required to the extent set forth in a contract. Contractors shall be directed to continue to comply with the requirements of Orders canceled by this Order until their contracts are modified to delete the reference to the requirements of the canceled Orders.

c. Exclusions.

Excluded from this Order are the following:

- (1) Activities that are regulated through a license by the U.S. Nuclear Regulatory Commission (NRC) or a State under an Agreement with the NRC, including activities certified by the NRC under section 1701 of the Atomic Energy Act, as amended.

- (2) Facilities and packaging, transfer or transportation activities and any other activity related to shipments to a repository mandated by and constructed pursuant to the provisions of the Nuclear Waste Policy Act, as amended, by the Office of Civilian Radioactive Waste Management to the extent such activities are regulated or controlled by the NRC or the United States Department of Transportation.
- (3) Operations conducted under DOE O 461.1, PACKAGING AND TRANSFER OR TRANSPORTATION OF MATERIALS OF NATIONAL SECURITY INTEREST.
- (4) Facilities and activities of the Naval Nuclear Propulsion Program (see Executive Order 12344).

4. REQUIREMENTS.

a. Offsite Safety.

- (1) Packaging and Transportation Safety. Each person who offers for transportation or transports a package of hazardous materials shall comply with the requirements of the Hazardous Materials Regulations (Title 49 Code of Federal Regulations (CFR) Parts 171-180) and applicable tribal, State, and local regulations not otherwise preempted by the U.S. Department of Transportation (DOT).
- (2) Special Requirements for Radioactive Material Packagings.
 - (a) Strong, Tight Containers and Industrial Packagings. Each person who offers for transportation or transports low specific activity (LSA) materials or surface contaminated objects (SCO) pursuant to 49 CFR 173.427 may use a strong, tight container or industrial packaging in accordance with the Hazardous Materials Regulations.
 - (b) Type A Radioactive Material Packagings.

Except for materials specified in subparagraph 4.a.(2)(a) of this Order and excepted quantities as defined in the Hazardous Materials Regulations, each person who offers for transportation or transports quantities of radioactive materials not exceeding A_1 or A_2 , as appropriate, shall use a Type A package that is authorized by 49 CFR 173.415 or a Type B package authorized by subparagraph 4.a.(2)(c) of this Order.

(c) Fissile or Type B Radioactive Material Packagings.

- 1 Each person who offers for transportation or transports quantities of radioactive materials exceeding A_1 or A_2 , as appropriate, or fissile material shall use a packaging that is certified by the Assistant Secretary for Environmental Management or a Secretarial Officer/Deputy Administrator, NNSA pursuant to 49 CFR 173.7(d) or is otherwise authorized by 49 CFR 173.416 or 49 CFR 173.417.
- 2 Each person who offers for transportation quantities of radioactive materials exceeding A_1 or A_2 or fissile quantity of radioactive material in a package certified by the Assistant Secretary for Environmental Management or another Secretarial Officer/Deputy Administrator, NNSA, shall:
 - a Meet the conditions specified in the certificate for the package issued by the Assistant Secretary for Environmental Management or a Secretarial Officer/Deputy Administrator, NNSA or NRC, and
 - b Register in writing with the Assistant Secretary for Environmental Management or the responsible Secretarial Officer/Deputy Administrator, NNSA prior to using the certificate.
- 3 An application for a package certification must include a Safety Analysis Report for Packaging, which demonstrates that the packaging conforms with the standards of 10 CFR Part 71, Subparts E, F, G, and H, and any other applicable standards that the Assistant Secretary for Environmental Management or a Secretarial Officer/Deputy Administrator, NNSA may determine applicable for granting an certificate.

(d) Additional Requirements for Plutonium Packagings.

- 1 Each person who offers for transportation or transports quantities of plutonium in excess of 20 Curies per package may only use a packaging approved by the Assistant Secretary for Environmental Management or another

certificate of compliance were not observed in making a shipment.

- (4) International Shipments. For domestic segments of transportation by air, vessel, rail, or highway, use of international packaging and transportation regulations in lieu of DOT regulations is permitted, when appropriate. In all instances, adherence to 49 CFR 171.11 is required for use of International Civil Aviation Organization's (ICAO) Technical Instructions and 49 CFR 171.12(b) for use of the International Maritime Dangerous Goods (IMDG) Code.
- b. Onsite Safety.
- (1) Onsite hazardous materials transfers shall comply with, 49 CFR Parts 171-180 or the site- or facility-specific Operations or Field Office approved Transportation Safety Document that describes the methodology and compliance process to meet equivalent safety for any deviation from the Hazardous Materials Regulations. For multiple-tenant DOE/NNSA sites safety documents for several contractor organizations may be combined into a single document. DOE-operated sites may approve their own Transportation Safety Documents.
 - (2) Approved Transportation Safety Documents shall be in effect no later than one year from incorporation of this Order into contractor contracts.
- c. Motor Carrier Safety. Each person who operates a Government-owned or commercial motor vehicle for transporting hazardous materials offsite shall comply with Federal Motor Carrier Safety Regulations (49 CFR Parts 350-399) and applicable tribal, State, and local regulations not otherwise preempted by DOT.
- d. Pipeline Safety Requirements. All transport of hazardous materials by pipeline shall comply with 49 CFR Parts 190-193, 195, and 199.
- e. Railroad Safety Requirements. On site railroad operations shall be conducted in accordance with the applicable regulations of the Federal Railway Administration (49 CFR Parts 200-268) and applicable tribal, State, and local regulations not otherwise preempted by DOT.
- f. Exemptions.
- (1) DOT Exemptions. Any offsite hazardous materials packaging or shipment that is not prepared in compliance with the Hazardous Materials

Regulations, must be prepared in accord with a valid DOT Exemption. Applications shall be prepared in accord with the procedures in 49 CFR 107.105. This paragraph does not apply to DOE activities that are not subject to DOT jurisdiction.

(2) DOE/NNSA Exemptions.

(a) An exemption from these requirements may be granted provided that the proposed exemption—

1 Is not prohibited by law, and

2 Does not present an undue risk to public health and safety, the environment, or workers.

(b) Applications for DOE/NNSA exemptions shall be prepared in accord with the procedures in 49 CFR 107.105 (c) and (d) and submitted to the Head of the responsible Operations Office or Field Office/Site Office Manager, NNSA.

(c) This requirement for DOE/NNSA exemption applies only to transportation activities of DOE/NNSA that are not subject to DOT jurisdiction.

g. Training.

Each person who offers for transportation or transports or transfers hazardous materials, substances and wastes shall—

(1) Develop and implement a training program and procedures for the safe packaging, transfer and transportation of hazardous materials, substances and wastes;

(2) Assure that all personnel who support and/or perform packaging, transfer and transportation operations are appropriately trained and qualified; and

(3) Maintain auditable training records in accord with approved DOE or site-specific records schedule.

5. RESPONSIBILITIES.

a. Office of Environmental Management. The Office of Environmental Management, through the Headquarters Certifying Official, shall do the following.

- (1) Administer a DOE program for certification of fissile and Type B packagings, which includes—
 - (a) Providing guidance for the preparation of Safety Analysis Reports for Packaging;
 - (b) Reviewing and approving, in writing, packaging designs for fissile and Type B packages;
 - (c) Issuing DOE Certificates of Compliance to approved designs;
 - (d) Reviewing and recertifying, in writing, certificates;
 - (e) Curtailing and suspending the use of specific packages, if warranted; and
 - (f) Approving, in writing, quality assurance programs for Type B and fissile materials radioactive materials packagings.
- (2) Establish packaging standards for the transportation of hazardous materials, substances and wastes.
- (3) Support the development, adoption and use of voluntary consensus standards through a topical committee within the DOE Technical Standards Programs.
- (4) Approve, in writing, DOE contractor facilities for testing and evaluating Industrial Packagings and DOT Specification 7A Type A package designs for radioactive materials transportation.
- (5) Test and evaluate Industrial Packagings and DOT Specification 7A Type A performance requirements, and document qualified packagings.
- (6) Maintain records of all tests or evaluations conducted pursuant to 5.a.(4) and 5.a.(5) above.
- (7) Provide the point of coordination for DOE with DOT, NRC, Environmental Protection Agency, International Atomic Energy Agency, International Maritime Organization, International Civil Aviation Organization and other regulatory agencies concerning domestic and international transportation safety and packaging regulations, packaging certification, and modal safety regulations.

- (8) Review and process applications for DOT exemptions and exemption renewals.
- (9) Review and grant or deny requests for exemptions, in writing, to DOE elements from the requirements of this Order. All exemption decisions shall be set forth in writing, the reasons for granting or denying the exemption and, if granted, the basis for determining that the exempted activity achieves a level of safety equivalent to that required by this Order.
- (10) Reviews requests for DOT Certificates of Competent Authority for international transportation and NRC Certificates of Compliance and forwards requests to the appropriate agency.
- (11) Supports the sharing of packaging and transportation safety successes, problems, and corrective actions with other DOE/NNSA elements and the field through the use of an effective lessons learned program.
- (12) Provides technical assistance and training for packaging and transportation safety matters.
- (13) Represents DOE/NNSA in matters related to transportation and packaging safety with other Federal entities.
- (14) Coordinates DOE/NNSA review of, participation in, and comment on international, Federal, State, local, and tribal regulations relating to packaging and transportation safety.
- (15) Establishes policy and guidance for DOE transportation and packaging safety and assists DOE/NNSA elements and contractors on related matters.

b. Secretarial Officers/Deputy Administrators, NNSA.

Secretarial Officers/Deputy Administrators, NNSA may:

- (1) Administer a program for certification of fissile and Type B packagings, which includes—
 - (a) Providing guidance for the preparation of Safety Analysis Reports for Packaging;
 - (b) Reviewing and approving, in writing, packaging designs for fissile and Type B packages;

- (c) Issuing certificates to approved designs;
 - (d) Reviewing and recertifying, in writing, certificates;
 - (e) Curtailing and suspending the use of specific packages, if warranted; and
 - (f) Approving, in writing, quality assurance programs for Type B and fissile materials radioactive materials packagings.
- (2) Support the development, adoption and use of voluntary consensus standards through a topical committee within the DOE Technical Standards Programs.
 - (3) Review and grant or deny exemptions to DOE elements from the requirements of this Order. All exemption decisions shall be set forth in writing, the reasons for granting or denying the exemption and, if granted, the basis for determining that the exempted activity achieves a level of safety equivalent to that required by this Order.
 - (4) Support the sharing of packaging and transportation safety successes, problems, and corrective actions with other DOE/NNSA Elements and the field through the use of an effective lessons learned program.
 - (5) Provide technical assistance and training for packaging and transportation safety matters.
- c. Heads of Operations Offices or Field Offices/Site Office Manager, NNSA.
- (1) Implement the requirements of this Order and ensure that contractors under their purview fully implement and comply with the requirements of this Order.
 - (2) Review and approve, in writing, onsite Transportation Safety Documents and transportation and package quality assurance programs.
 - (3) Review and process through the responsible Secretarial Officer/Deputy Administrator, NNSA, requests for DOE exemptions, DOT exemptions and renewals, and NRC packaging certificates.
 - (4) Review and process Safety Analysis Reports for Packagings through the Secretarial Officer/Deputy Administrator, NNSA, responsible for the facilities or activities applying for package certification

- (5) Review existing contracts to determine whether existing requirements provide adequate safety protections. In contracts with inadequate protections, contact the contracting officer about having the CRD inserted into the contract.
- (6) Support development of programs to share packaging and transportation safety successes and problems.
- (7) Obtain waivers from tribal, State, and local transportation laws, rules, and regulations, as needed to meet safety requirements. Copies of all such requests and waivers shall be provided to the responsible Secretarial Officer/Deputy Administrator, NNSA.

6. CONTACT. Office of Safety and Engineering at (202) 586-0755.

BY ORDER OF THE SECRETARY OF ENERGY:



KYLE E. MCCLARROW
Deputy Secretary

DOE O 460.1B IS APPLICABLE TO THE FOLLOWING ORGANIZATIONS

Office of Civilian Radioactive Waste Management

Office of Energy Efficiency and Renewable Energy

Office of Environmental Management

Office of Fossil Energy

National Nuclear Security Administration

Office of Nuclear Energy, Science and Technology

Office of Science

Office of Security

Bonneville Power Administration

Southeastern Power Administration

Southwestern Power Administration

Western Area Power Administration

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CONTRACTOR REQUIREMENTS DOCUMENT(CRD) PACKAGING AND TRANSPORTATION SAFETY

Regardless of the performer of the work, the contractor is responsible for compliance with the requirements of this CRD. The contractor is responsible for flowing down the requirements of this CRD to subcontracts at any tier to the extent necessary to ensure the contractor's compliance with the requirements. In doing so, the contractor shall not unnecessarily or imprudently flow down requirements to subcontracts. That is, the contractor shall both ensure that it and its subcontractors comply with the requirements of this CRD and only incur costs that would be incurred by a prudent person in the conduct of competitive business.

1. Offsite shipment of hazardous materials on vehicles operated by contractors that are not otherwise subject to U.S. Department of Transportation (DOT) jurisdiction shall follow the Hazardous Materials Regulations of DOT and the applicable tribal, State, and local regulations not otherwise preempted by DOT.
2. Each contractor subject to the Hazardous Materials Regulations (49 CFR Parts 171-180) with a non-compliant package or shipment shall apply for a DOT exemption through the Field Element to the Office of Environmental Management or the NNSA for processing to DOT. Applications shall follow the directions in 49 CFR 107.105. Each contractor, who is not subject to DOT jurisdiction but who must comply with the 49 CFR requirements specified in this CRD, must prepare the package or shipment in accordance with a valid DOE exemption.
3. For specific radioactive material packagings the following shall apply:
 - a. Strong, Tight Containers and Industrial Packagings. Each contractor, who offers for transportation or transports low specific activity (LSA) materials or surface contaminated objects (SCO), may use a strong, tight container or Industrial Packaging pursuant to the Hazardous Materials Regulations. Documentation for evaluations or tests required by 49 CFR 173.411 for Industrial Packagings must be in the possession of the offeror.
 - b. Type A Radioactive Material Packagings. Except for materials specified in subparagraph 3.a. of this CRD and excepted quantities as defined in the Hazardous Materials Regulations, each contractor, who offers for transportation or transports quantities of radioactive materials not exceeding A_1 or A_2 , as appropriate, shall use a Type A package that is authorized by 49 CFR 173.415 or a Type B package authorized by subparagraph 4.a.(2)(c) of DOE Order 460.1B. Documentation of tests or evaluations required by 49 CFR 173.415 for DOT Specification 7A Type A packagings must be in the possession of the offeror.

- c. Fissile or Type B Radioactive Material Packagings. Each contractor, who offers for transportation or transports quantities of radioactive materials exceeding A_1 or A_2 , as appropriate, or fissile material, shall use a packaging that is certified by the Assistant Secretary for Environmental Management or a Secretarial Officer/Deputy Administrator, NNSA, pursuant to 49 CFR 173.7(d) or is otherwise authorized by 49 CFR 173.416 or 49 CFR 173.417. Each contractor, shall meet the conditions specified in the package certificate and shall register in writing with the Assistant Secretary for Environmental Management or the appropriate Secretarial Officers/Deputy Administrators, NNSA.
 - d. Additional Requirements for Plutonium Packagings. Each contractor, who offers for transportation or transports quantities of plutonium in excess of 20 Curies per packaging may only use a packaging approved by Environmental Management or a Secretarial Officer/Deputy Administrator, NNSA or the NRC as meeting the requirements of 10 CFR 71.63. Unless exempted for the purposes of national security pursuant to the provisions of 10 CFR Part 871, each contractor, who offers Type B quantities of plutonium for air transportation shall use a packaging approved by Environmental Management or a Secretarial Officer/Deputy Administrator, NNSA or the NRC as conforming to the requirements of 10 CFR 71.64.
 - e. DOT Specification Packagings. Each contractor, may continue to use DOT Specification 6L, 6M, 20WC and 21WC packagings pursuant to the Hazardous Materials Regulations.
4. Each contractor, who participates in the design, fabrication, procurement, use, or maintenance of a hazardous materials packaging, shall have an approved quality assurance program that, for Type B and fissile radioactive materials packagings, satisfies the applicable requirements of 10 CFR Part 71, Subpart H.
 5. Each contractor, who uses a Type B, fissile or plutonium packaging specified in subparagraphs 3.c or 3.d above, shall implement operating controls and procedures that satisfy the requirements of 10 CFR Part 71, Subpart G.
 6. Each contractor may follow international packaging and transportation regulations for domestic segments of transportation by air, vessel, rail, or highway of shipments in international traffic as authorized by the DOT regulations, as appropriate. In all instances, adherence to 49 CFR 171.11 is required for use of International Civil Aviation Organization's Technical Instructions and 49 CFR 171.12(b) for use of the International Maritime Dangerous Goods Code.

7. Each contractor, shall comply with 49 CFR Parts 171-180 for onsite hazardous materials transfers or comply with an approved site- or facility-specific Transportation Safety Document that describes the methodology and compliance process to meet equivalent safety for any deviation from these Parts. For multiple-tenant sites, safety documents for several contractor organizations may be combined into a single document. Approval shall be by the cognizant Operations Office or Field Office/Field Manager for Field Operations, NNSA. Approved Transportation Safety Documents shall be in effect no later than 1 year from the incorporation of this CRD into the contractor's contract.
8. Each contractor shall implement and/or expand lessons learned programs to include sharing transportation and packaging safety successes and problems throughout the site and with other DOE contractors. This information will be provided to the responsible Head of Operations Office or Field Office/Site Office Manager, NNSA.
9. Each contractor, who offers for transportation or transports or transfers hazardous materials, substances and wastes, shall develop and implement a training program and procedures for the safe packaging, transfer and transportation of hazardous materials; assure that all personnel who support and/or perform packaging, transfer and transportation operations are appropriately trained and qualified; and maintain auditable training records in accordance with site record retention requirements.

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