U.S. Department of Energy Orders Self-Study Program

DOE O 460.1C

PACKAGING AND TRANSPORTATION SAFETY

DOE O 460.2A

DEPARTMENTAL MATERIALS TRANSPORTATION AND PACKAGING MANAGEMENT

DOE O 460.1C
PACKAGING AND TRANSPORTATION SAFETY
DOE O 460.2A
DEPARTMENTAL MATERIALS TRANSPORTATION AND PACKAGING MANAGEMENT
FAMILIAR LEVEL

OBJECTIVES

Given the familiar level of this module and the resources, you will be able to perform the following:

1. What are the objectives of U.S. Department of Energy (DOE) O 460.1C?
2. What is the DOE/National Nuclear Security Administration (NNSA) exemption process in DOE O 460.1C?
3. What are the onsite safety requirements specified by DOE O 460.1C?
4. What are the objectives of DOE O 460.2A?
5. What actions should be taken if a delivery conveyance is contaminated?

Note: If you think that you can complete the practice at the end of this level without working through the instructional material and/or the examples, complete the practice now. The course manager will check your work. You will need to complete the practice in this level successfully before taking the criterion test.

RESOURCES

10 CFR 71, "Packaging and Transportation of Radioactive Material." 1/1/11.
49 CFR 107, "Hazardous Materials Program Procedures." 10/1/10.
49 CFR 100-185, Pipeline and Hazardous Materials Safety Administration, Department Of Transportation. 10/1/10.
49 CFR 173, "Shippers—General Regulations for Shipment and Packagings." 10/1/10.
DOE G 460.1-1, *Implementation Guide for Use with DOE O 460.1A, Packaging and Transportation Safety.* 6/5/97.
DOE G 460.2-1, *Implementation Guide for Use with DOE O 460.2, Departmental Materials Transportation and Packaging Management.* 11/15/96.
DOE M 460.2-1A, *Radioactive Material Transportation Practices Manual.* 6/4/08.
DOE O 460.1C, *Packaging and Transportation Safety.* 5/14/10.
DOE O 460.2A, *Departmental Materials Transportation and Packaging Management*. 12/22/04
49 USC Chapter 51, "Transportation of Hazardous Material." 2/1/10.

INTRODUCTION

The familiar level of this module is divided into two sections. The objectives and requirements of DOE O 460.1C and DOE O 460.2A will be discussed in the first and second sections, respectively. Several examples and practices throughout the module are provided to help familiarize you with the material. The practices will also help prepare you for the criterion test.

Before continuing, you should obtain a copy of the Orders and implementation guides and manuals for this module. Copies of the Orders are available on the internet at http://www.directives.doe.gov or through the course manager. You should also be familiar with the Federal Regulations although it is not necessary to copy all of the CFRs listed as resources. Spend some time reviewing the documents so that you are familiar with the sections each contains. You will need to refer to these documents to complete the examples, practice, and criterion test.

SECTION 1, DOE O 460.1C, PACKAGING AND TRANSPORTATION SAFETY

Objectives

To establish safety requirements for the proper packaging and transportation of DOE offsite shipments and onsite transfers of radioactive and other hazardous materials for modal transportation.

Equivalencies/Exemptions for DOE O 460.1C

An exemption from the requirements of DOE O 460.1C may be granted for DOE or NNSA packaging and transportation activities to the extent that an aspect is not regulated by the U.S. Nuclear Regulatory Commission (NRC), an agreement state, or the U.S. Department of Transportation (DOT), provided the proposed exemption

- is not prohibited by law;
- does not present an undue risk to public health and safety, the environment, or workers;
- will achieve an equivalent level of safety to the requirements in DOE O 460.1C from which the activity is being exempted; and
- is determined to be necessary and appropriate to address national security or other critical interests.

Applications for DOE or NNSA exemptions must be prepared in accordance with the procedures in 49 CFR 107.105, "Application for Special Permit," and submitted to the headquarters qualifying official (HCO) or NNSA certifying official (CO), as appropriate, by the head of the responsible operations office or field office/site office manager.

All exemption decisions must be set forth in writing, including 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 DOE O 460.1C.

Central technical authority (or designee) concurrence is required for exemptions and equivalencies to DOE O 460.1C for nuclear facilities.

- Equivalency. In accordance with the responsibilities and authorities assigned by Executive Order 12344, codified at 50 USC sections 2406 and 2511 and to ensure consistency through the joint Navy/DOE Naval Nuclear Propulsion Program, the Deputy Administrator for Naval Reactors (Director) will implement and oversee requirements and practices pertaining to this directive for activities under the Director's cognizance, as deemed appropriate.
- Exemption. Operations conducted under DOE O 461.1A, *Packaging and Transfer or Transportation of Materials of National Security Interest,* dated 4-26-04.

Requirements

In this section, we will discuss some of the requirements included in DOE O 460.1C and the implementation guide. Requirements related to the following elements will be discussed:

- Offsite hazardous and radioactive materials packaging and transportation safety
- Onsite safety requirements

Offsite Safety

Packaging and Transportation Safety

Each entity subject to DOE O 460.1C must perform packaging and transportation activities in accordance with the Department of Transportation (DOT) Requirements of the Hazardous Materials Regulations (49 CFR 171-180).

Special Requirements for Radioactive Material Packagings

Use of type B or fissile materials certified packagings. Each entity that offers for transportation or transports radioactive material in a type B or fissile material packaging, as appropriate, certified by the HCO, NNSA CO or the NRC, must

- meet the conditions specified in the certificate of compliance (CoC) or offsite transportation certificate (OTC), as appropriate, for the package issued by the HCO, NNSA CO or NRC; and
- register in writing with the HCO or the NNSA CO prior to use.

Use of DOT International Atomic Energy Agency (IAEA) certified packagings. For an import or an export shipment pursuant to 49 CFR 173.471, 173.472 or 173.473, each entity must use a packaging certified by the U.S. competent authority (DOT) where

- the DOE or NNSA has been registered with the DOT as a user; and
- the entity has the required documentation for the use and maintenance of the packaging and makes the shipments in accordance with the terms of the certificate issued by the DOT.

Application for NRC-or DOT-certified packagings. For a new NRC or DOT packaging certificate, each entity must file a request for a new certificate with the HCO or NNSA CO, as appropriate.

When DOE or NNSA is the holder of a packaging certificate issued by the NRC or DOT, each entity must file a request for revisions to or renewal of existing NRC or DOT certificate with the HCO or NNSA CO, as appropriate.

In all cases the HCO or NNSA CO will review and forward, if appropriate, the request to the NRC or DOT.

Application for other type B or fissile materials certified packagings. For a new DOE or NNSA type B or fissile material packaging each entity must submit an application to the HCO or NNSA CO, as appropriate, that includes a safety analysis report for packaging (SARP) and any other supporting documentation to demonstrate that the packaging meets the requirements of 10 CFR 71 standards for certification prior to use.

Quality Assurance (QA)

Each entity that participates in the design, fabrication, procurement, use, or maintenance of a hazardous materials packaging must meet the following requirements:

- Have a QA program approved and audited by
  - the HCO or NNSA CO, as appropriate, for certified type B and fissile radioactive materials packagings satisfying the requirements of 10 CFR 71, or
  - the head of operations office or field office/site office manager, as appropriate, for all other radioactive and hazardous materials packagings satisfying the requirements of DOE O 414.1C, *Quality Assurance.*
- Report deviations from the applicable requirements in compliance with DOE O 231.1A, *Environment, Safety, and Health Reporting.*
- Additionally, report deviations to the HCO or the NNSA CO within 30 days in any
  - instance in which there is significant reduction in the effectiveness of any approved type B or fissile packaging during use,
  - discovery of any defects with safety significance in type B or fissile packaging after first use, with details of the means employed to repair the defects and prevent their recurrence, or
  - instance in which the conditions of approval in the CoC were not observed in making a shipment.

International Shipments

For use of the International Civil Aviation Organization's (ICAO) *Technical Instructions,* the International Maritime Organization's (IMO) *International Maritime Dangerous Goods (IMDG) Code,* Transport Canada's *Transportation of Dangerous Goods Regulations,* and/or the IAEA's *Regulations for the Safe Transport of Radioactive Material (TS-R-1)* for domestic segments of international transportation by air, vessel, rail, or highway, adherence to 49 CFR 171 is required.

Onsite Safety

Onsite transfer of hazardous materials, substances, and wastes must be conducted in accordance with one of the following:

- 49 CFR 171-180 and the Federal Motor Carrier Safety Regulations (49 CFR 350-399), or
- A transportation safety document (TSD) approved by the head of operations office or field office/site office manager, as appropriate.
  - The TSD must describe the methodology and compliance process to meet equivalent safety for any deviation from 49 CFR 171-180 and 49 CFR 350-399.
  - For onsite transfers subject to 10 CFR 830, "Nuclear Safety Management," the TSD must comply with the safety basis requirements of 10 CFR 830, to identify the conditions, safe boundaries, and hazard controls necessary to protect workers, the public, and the environment from adverse consequences.
  - For multiple-tenant DOE/NNSA sites, safety documents for several contractor organizations may be combined into a single document.
  - For onsite transfers not subject to 10 CFR 830, the TSDs must be approved and in effect no later than one year from incorporation of the contractor requirements document of DOE O 460.1C into contracts.

Note: You do not have to do example 1 on the following pages, but it is a good time to check your skill and knowledge of the information covered. You may do the example 1 or go to section 2.

EXAMPLE 1

Using the familiar level of this module and the resources, answer the following questions.

1. What is the purpose for DOE O 460.1C?

2. What are the conditions under which an exemption can be requested and the regulation describing the DOE/NNSA exemption procedures?

3. What are the basic requirements for onsite safety specified in DOE O 460.1C?

Note: When you are finished, compare your answers to those contained in the example 1 self-check. When you are satisfied with your answers, go to section 2.

EXAMPLE 1 SELF-CHECK

1. What is the purpose for DOE O 460.1C?
   To establish safety requirements for the proper packaging and transportation of DOE/NNSA offsite shipments and onsite transfers of hazardous materials and modal transport.

2. What are the conditions under which an exemption can be requested and the regulation describing the DOE/NNSA exemption procedures?
   - Is not prohibited by law
   - Does not present an undue risk to public health and safety, the environment, or workers
   - Will achieve an equivalent level of safety to the requirements in DOE O 460.1C from which the activity is being exempted
   - Is determined to be necessary and appropriate to address national security or other critical interests
3. What are the basic requirements for onsite safety specified in DOE O 460.1C?
   Onsite transfer of hazardous materials, substances, and wastes must be conducted in accordance with one of the following:
   - 49 CFR 171-180 and the Federal Motor Carrier Safety Regulations (49 CFR 350-399)
   - A transportation safety document (TSD) approved by the head of operations office or field office/site office manager, as appropriate

SECTION 2, DOE O 460.2A, DEPARTMENTAL MATERIALS TRANSPORTATION AND PACKAGING MANAGEMENT

This section will address the objectives, requirements, and responsibilities contained in DOE O 460.2A.

Objectives

To establish requirements and responsibilities for management of DOE materials transportation and packaging.

To ensure the safe, secure, efficient packaging and transportation of materials, both hazardous and nonhazardous.

Requirements

This section includes a summary of the major requirements in DOE O 460.2A. The following components of materials transportation and packaging management will be discussed:

- Materials shipment
- Receipts of materials shipments
- Consignee notifications
- Transportation services and rates
- Rail transport
- Compliance evaluations
- Emergency notification response

Materials Shipment

DOE organizations must conduct operations in compliance with all applicable international, Federal, state, local, and tribal laws, rules, and regulations governing materials transportation that are not inconsistent with Federal regulations. It is DOE policy that, notwithstanding the exemptions available through the national security provisions, shipments under this provision will comply with the requirements of 49 CFR 100-185, except those that infringe on maintenance of classified information.

DOE organizations must use the following shipment management procedures:

- To the maximum extent practicable, an automated management system will be used to perform transportation tasks, and all sites will ensure that shipment data is reported through this automated system.
- Consistent with the government's self-insurance policy, DOE organizations must ensure that government funds will not be expended to insure property against loss, damage, or destruction while in transit, unless the shipment qualifies as a special circumstance.
- All commercial bills of lading, air bills, and other commercial documents covering shipments made by or to DOE and/or NNSA contractors on DOE's and/or NNSA's behalf must provide for consignment of the shipments as follows:

- TO: U.S. Department of Energy in care of (name of DOE contractor)
  OR
- TO: U.S. National Nuclear Security Administration in care of (name of NNSA contractor)
  AND
- FROM: (name of DOE contractor) on behalf of the U.S. Department of Energy
  OR
  FROM: (name of NNSA contractor) on behalf of the U.S. National Nuclear Security Administration

DOE organizations that require military air transportation must send requests to the Air Force and provide copies of the requests to the appropriate program secretarial office. Requests will include the DOE organization's certification that military air transport is in the national interest and that commercial air transportation is not readily obtainable or capable of meeting program requirements.

DOE derives explosives hazard classification authority from 49 CFR 173.56, "New Explosives—Definition and Procedures for Classification and Approval." Testing of explosives and articles is prescribed in 49 CFR 173.56. DOE also derives interim hazard classification authority from DoD Joint Technical Bulletin TB 700-2, for developmental explosives and articles to allow shipment pending final testing for permanent classification. Before transporting new explosive substances and articles made by DOE or under the direction or supervision of DOE

- DOE organization must test the materials and obtain explosive hazard classification from the Office of Technical Services, NNSA Service Center; and
- DOE must provide two copies of the approval and supporting documentation for registration with the Department of Transportation.

Receipt of Materials Shipments
DOE organizations must ensure that all shipments are inspected upon receipt for damage or loss and evidence of leakage.

- Radioactive material shipments shall be inspected for external contamination and radiation levels.
- Claims must be filed according to the provisions of the DOE Accounting Handbook and facility procedures.

If a delivery vehicle is contaminated as a result of radioactive cargo or surveys indicate potential exposure above acceptable limits, the vehicle must be detained and the carrier immediately notified so that other potentially contaminated vehicles can be surveyed. Release limits are specified in 49 CFR 177.843, "Contamination of Vehicles." Specific response activities will follow facility procedures.

Consignee Notifications
For each shipment of fissile material or more than type A quantity of radioactive material

- the shipper must notify the consignee of the date of the shipment, the expected date of arrival, and any special loading or unloading instructions;
- the consignee must notify the shipper by the end of the first working day after the estimated arrival date if the shipments have not been received.

Transportation Service and Rates
All carriers who transport highway route controlled quantities of radioactive material in less-than-truckload or truckload (TL) quantities, any TL quantities of radioactive material, and any quantity of hazardous waste must be evaluated for safety, financial status, security, and compliance with applicable regulations. A copy of the evaluation document will be provided to the Office of Environmental Management within 45 days of completion of the carrier evaluation.

Only carrier rates on file with DOE organizations, other Federal agencies, or a state commission will be used for shipments by common carriers on behalf of DOE.

When other than a low-cost carrier or mode of transportation is used for any shipment other than overnight express, DOE organizations must ensure that a written justification or management approval statement is retained in the appropriate transportation record indicating the carrier or mode selected was necessary to meet the requirements of the shipment and to obtain safe, expeditious, and economical delivery.

Rail Transport
DOE rates and tenders will be negotiated and accepted only from railroads that demonstrate compliance with applicable Federal Railroad Administration requirements, DOT hazardous materials regulations, and Association of American Railroads interchange standards.

Special train services must be approved by the DOE field office or program traffic manager.

Compliance Evaluations
DOE organizations evaluate contractor/subcontractor transportation and packaging operations at each facility at least every 3 years.

Evaluations may be conducted using existing site/facility processes or an established transportation and compliance review program. Copies of evaluation reports must be provided to the lead program secretarial offices within 45 days of the evaluation.

Emergency Notification Response
DOE organizations must ensure that shipping papers include a 24-hour emergency response phone number and must perform periodic tests/drills to ensure the 24-hour emergency response system is operable.

Note: You do not have to do example 2 on the following page, but it is a good time to check your skill and knowledge of the information covered. You may do the example 2 or go directly to the practice.

EXAMPLE 2

1. What actions should be taken if a delivery conveyance is contaminated?

2. Where would you find Federal regulations related to DOT packaging and transportation requirements for hazardous materials?

3. Who approves the quality assurance program for certified type B and fissile radioactive materials packaging?

Note: When you are finished, compare your answers to those contained in the example 2 self-check. When you are satisfied with your answers, go on to the practice.

EXAMPLE 2 SELF-CHECK

1. What actions should be taken if a delivery conveyance is contaminated?
   If a delivery conveyance is contaminated, the transport vehicle shall be detained and the delivering carrier immediately notified.

2. Where would you find Federal regulations related to DOT packaging and offsite transportation requirements for hazardous materials?
   49 CFR 171-180.

3. Who approves the quality assurance program for certified type B and fissile radioactive materials packaging?
   Headquarters or NNSA certifying official

PRACTICE

This practice is required if your proficiency is to be verified at the familiar level. The practice will prepare you for the criterion test. You will need to refer to the resources to answer the questions in the practice correctly. The practice and criterion test will also challenge additional analytical skills that you have acquired in other formal and on-the-job training.

1. What are the conditions under which an exemption from the requirements of DOE O 460.1C may be granted?

2. What are the special requirements for radioactive material packagings for a new NRC or DOT packaging certificate?

3. Who approves the quality assurance program for radioactive and hazardous materials packagings other than certified type B and fissile materials?

4. What type of deviations must be reported to the certifying official within 30 days?

5. What are all incoming shipments to DOE inspected for?

Note: The course manager will check your practice and verify your success at the familiar level. When you have successfully completed this practice, go to the general level module.

DOE O 460.1C
PACKAGING AND TRANSPORTATION SAFETY
DOE O 460.2A
DEPARTMENTAL MATERIALS TRANSPORTATION AND PACKAGING MANAGEMENT
GENERAL LEVEL

OBJECTIVES

Given the familiar level of this module, a scenario, and an analysis, you will be able to answer the following questions:

1. What are the key elements you would look for in the contractor's action plan to correct the situation described in the scenario?
2. What are the requirements, sections, or elements of DOE O 460.1C and DOE O 460.2A that apply to the situation described in the scenario?

Note: If you think that you can complete the practice at the end of this level without working through the instructional material and/or the examples, complete the practice now. The course manager will check your work. You will need to complete the practice in this level successfully before taking the criterion test.

RESOURCES

10 CFR 71, "Packaging and Transportation of Radioactive Material." 1/11/11.
49 CFR 173, "Shippers—General Regulations for Shipment and Packagings." 10/1/10.
49 CFR 107, "Hazardous Materials Program Procedures." 10/1/10.
49 CFR 171-180, Department of Transportation Requirements of the Hazardous Materials Regulations. 10/1/10.
DOE O 460.1C & O 460.2A, DOE Self-Study Module, Familiar Level. June 2011.
DOE O 460.1C, *Packaging and Transportation Safety.* 5/14/10.
DOE O 460.2 A, *Departmental Materials Transportation and Packaging Management.* 12/22/04.
49 USC Chapter 51, "Transportation of Hazardous Material." 2/1/10

INTRODUCTION

The familiar level of this module introduced DOE O 460.1C and 460.2A. Several requirements from the Orders were discussed. In the general level of this module, students are presented with a scenario that depicts a work situation related to the Orders. The example scenario includes a situation, the actions taken to remedy the situation, and the requirements related to the situation. Students will be asked to review the contractor's actions and decide if they are correct. Students will also be asked to decide if the correct requirements were cited in each situation. Please refer to the Orders, implementation guides and the other resources as necessary to make your analysis and answer the questions. You are not required to complete the example. However, doing so will help prepare you for the criterion test.

Note: You do not have to do the example on the following page, but it is a good time to check your skill and knowledge of the information covered. You may do the example or go on to the practice.

EXAMPLE SCENARIO

The following is an incident involving transportation of explosives.

Sandia National Laboratories (SNL) inadvertently shipped explosives in an explosive shipping pipe labeled empty through SNL's non-explosive shipping process to Mound Lab in Dayton, Ohio. This was part of a large shipment of pipes, all presumed empty, that had been sent to Mound on February 1, 1995. On March 13, 1995, Mound personnel opened the pipes in preparation for shipping explosive material and components to SNL and found eight explosive test units (approximately 100 milligrams explosive each) in pipes labeled empty. These test units may have originated in area II from department 2654 or they may have arrived at SNL in shipping pipes labeled empty. Department 2654 staff had tested similar units in April 1994; it was believed that all untested units had been returned to the program sponsor in May-June, 1994, through the proper SNL shipping channels.

Facility management initiated the following corrective actions:

- Develop procedures to inspect received empty hazardous material containers within two days of receipt.
- Request that explosive material container shippers send containers to Mound with no material inside.
- Facility personnel will treat empty hazardous material container shipments as potentially occupied until proven otherwise.
- Procedures will be developed to address the receipt of such shipments.
- Although a training program for the safe packaging transfer and transportation of hazardous materials does not exist, Sandia personnel were provided training.

The requirements related to this scenario are:

- DOE field elements shall ensure that shipments are inspected upon receipt for damage or loss, and evidence of leakage. (DOE O 460.2A, page 4)
- Before transporting new explosive substances and articles, including devices, made by DOE or under its direction or supervision, the DOE field element shall test them and obtain a classification approval from the appropriate site office. The DOE field element shall provide a copy of the approval and supporting documentation to EM-1 for registration with U.S. Department of Transportation (DOT). (DOE O 460.2A, page 4)

Take some time to review the example scenario and the actions the contractor took to correct the situation. Then decide if the contractor's actions were complete and correct. Finally, determine if the requirements, sections, or elements of DOE O 460.1C and DOE O 460.2A that were cited in this scenario are correct.

Write your answers on the next page and then compare your answer to the one contained in the example self-check.

EXAMPLE SELF-CHECK

Your answer does not have to match the following exactly. You may have added more corrective actions or cited other requirements from the Order that apply. To be considered correct, your answer must include, at least, the following:

- The contractor's actions were incomplete.
- A training program and procedures for transfer and transport of hazardous materials must be developed and implemented.
- The second requirement, DOE O 460.2A not appropriate. The pipe was labeled empty. Therefore there would be no reason to test any explosive substances.
- The other two requirements cited were correct.
- The following DOE citation is missing: Ensure that all personnel who support and/or perform packaging, transfer, and transportation operations are appropriately trained and qualified. (DOE O 460.1C, page 6)

PRACTICE

This practice is required if your proficiency is to be verified at the general level. The practice will prepare you for the criterion test. You will need to refer to the Orders and the resources to answer the questions in the practice correctly. The practice and criterion test will also challenge additional analytical skills that you have acquired in other formal and on-the-job training.

Please review the scenario and answer the following questions.

1. Was the situation handled correctly? If not, what should have been done?
2. Was the list of requirements, sections, and elements complete and correct? If not, state the correct or omitted requirements.

SCENARIO

During a DOE review of the inspection and packaging procedure used to prepare the model DU (type 20-WC-2A) overpack container, a concern was raised that the existing facility procedure did not include an adequate visual inspection for corrosion of the wooden overpack body threaded rods. It was determined that the only means of completing this inspection would require a total disassembly of the container internal and external packages.

The packages were completely disassembled and a visual inspection completed. It was discovered that the wooden cask protective jacket would not allow a complete removal of the threaded rods for visual inspection. It was also noted that the wooden protective jacket had cracks and significant separation of the plywood body discs in the lower area of the package. In one case the plywood separated completely when the package was disassembled. This damage is not permitted for use of this type of overpack container. The damaged areas had not previously been visible without complete disassembly of the package. A review of the supporting documents and previous usage was conducted. The documentation on hand was for a 20-WC-2 overpack configuration and it was assumed to be acceptable as a specification 20-WC-2A overpack, since they were recently used by other DOE laboratories in this capacity.

The review indicated that there were no provisions for use of a 20-WC-2A overpack in the Code of Federal Regulations, 49 CFR. The CFR specifications were for a 20-WC-2 only and did not address a 20-WC-2A overpack. It was discovered that the 20-WC-2A designation was intended to refer to a cask/overpack combination licensed under competent authority certification for a type B (U) radioactive materials package design certificate USA/9098/D (U) and was not applicable for iridium shipments.

Eleven domestic shipments had been completed using these 20-WC-2A overpacks. The previous use of these overpacks constituted a shipping violation since they do not meet DOT specifications for a 20-WC-2 overpack.

An investigation of the incident revealed the following.

The documentation necessary to ensure that the overpacks were satisfactory for their intended use could not be located. The hazardous material shipper had relied upon the assurance of other DOE laboratories, and the previous use of these containers by that laboratory, as a confirmation that these containers were satisfactory for shipment of iridium radioisotope material. The other laboratory had provided some documentation to substantiate this conclusion. However, a more thorough review of the documents could not substantiate the claim that the overpacks were approved as specification jackets.

The shipping containers had been provided by another laboratory. There were no procedures on hand for maintenance of the overpacks. The defects identified when the containers were disassembled could have been identified at an earlier date had an active maintenance program and procedure been in place. External visual examination of the overpacks had been completed as part of the loading procedure. However, the lack of a requirement to disassemble the overpacks precluded finding hidden material defects.

Management involvement, including clear determination of the responsibilities of various elements of the contractor organization to maintain containers, establish current document files, and meet other container requirements, had not been established.

Corrective actions taken by the contractor:

- Complete a review of all supporting documents for the licensing and use of radioisotope shipping containers.
- Establish a controlled document file for the maintenance of supporting documentation.

The requirements related to this scenario are:

- Each person who offers for transportation or transports a package of hazardous materials shall comply with the requirements of the hazardous materials regulations (49 CFR 171-180) and applicable tribal, state, and local regulations not otherwise preempted by the U.S. DOT. [DOE O 460.1B, Section 4, paragraph a.(1)].

Write your answers to questions 1 and 2 on the next page and then bring the completed practice to the course manager for review.

Note: The course manager will check your practice and verify your success at the general level. When you have successfully completed this practice, the course manager will give you the criterion test.