

NUREG-0179

**REGULATORY AND  
OTHER RESPONSIBILITIES AS RELATED  
TO TRANSPORTATION ACCIDENTS**



Office of Standards Development  
U. S. Nuclear Regulatory Commission

8007280038

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TO TRANSPORTATION ACCIDENTS**

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Manuscript Completed: June 1977

Date Published: June 1977

Division of Engineering Standards  
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U.S. Nuclear Regulatory Commission  
Washington, D. C. 20555

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## 1. INTRODUCTION

This report has been prepared in response to numerous inquiries concerning the functional responsibilities of the different parties involved in dealing with transportation accidents. In it are presented the views and understandings of the Transportation and Product Standards Branch of the Division of Engineering Standards, originators of this report, based on present practices, existing regulations, discussions with many of the groups involved, and available formal opinions. This report is not intended to establish or assign responsibility for activities not already established or assigned or to circumvent due process in establishing or making such assignments. It is intended to encourage consideration of the programs and procedures necessary to deal with those few transportation accidents involving radioactive materials that may be expected to occur each year. Comments and suggestions are invited on this report.

## 2. REGULATORY RESPONSIBILITIES

### 2.1 Background

Goods in transport are divided into two broad categories: hazardous and nonhazardous materials. As defined in the regulations of the Department of Transportation (DOT),<sup>1</sup> any material in which the radioactivity exceeds 0.002 microcurie per gram is classified as radioactive material and belongs to the category of hazardous materials. Radioactive materials include byproduct, source, and special nuclear material, as defined in Section 11 of the Atomic Energy Act of 1954 and in the regulations of the Nuclear Regulatory Commission,<sup>2</sup> and naturally occurring and accelerator-produced radioactive materials.<sup>3</sup>

Persons engaged in transportation generally fall into three main groups: shippers, carriers, and warehousemen. *Shippers* are those who offer goods for transport. *Carriers* are those who transport such goods.

<sup>1</sup>49 CFR Parts 170-179.

<sup>2</sup>10 CFR Parts 20, 30, 40, 70, 71, and 150.

<sup>3</sup>As defined in the "Suggested State Regulations for Control of Radiation," prepared by the Council of State Governments in cooperation with the U.S. Nuclear Regulatory Commission and the Bureau of Radiological Health. Copies are available from the Bureau of Radiological Health, Food and Drug Administration, 5600 Fishers Lane, Rockville, Maryland 20856.

*Warehousemen* are those who store goods for the general public, acting as bailees for the owner.

Under DOT regulations, shippers are responsible for packaging, marking, and labeling the goods to meet the regulatory requirements for delivery to a carrier for transport and, in the case of hazardous materials, for certifying to that effect on the shipping papers. Some companies act as the *shipper's agent* and complete the transportation arrangements on behalf of the shipper. This is of special significance for imported shipments because a company located in the U.S. must obtain DOT approval for significant shipments<sup>4</sup> of radioactive materials that originate outside the U. S.

Carriers are responsible for handling, stowing, and storing shipments; placarding vehicles in accordance with the regulations; and exercising due care in transporting the goods to the consignee. *Freight forwarders* are persons who accept goods from shippers for transport as a carrier, arrange carriage, and often consolidate shipments from more than one shipper as a shipper. Although a freight forwarder is both shipper and carrier, he has the same legal status as a carrier and like other carriers he only acts as bailee of the goods; that is, even though the goods are in the hands of the carrier, the originating shipper maintains effective control over the goods insofar as their disposition is concerned. As a general rule, carriers cannot unpackage or repackage goods (although carriers and freight forwarders often do combine several smaller shipments onto pallets or into freight containers for transport), change the final destination of goods, or do other than carry the goods from one point to another for the shipper while exercising due care.

## 2.2 Economic Regulation of Transportation by Land and Water

The Interstate Commerce Commission (ICC) regulates the economic aspects of transportation of goods, both hazardous and nonhazardous, in interstate and foreign commerce by land, i.e., by truck or rail, and by barge on inland waterways. The Federal Maritime Commission (FMC) regulates the economic aspects of ocean transport. Basically, the ICC and the FMC regulate carriers. The ICC regulations define three types of carriers: *private carriers*, who transport their own goods; *contract carriers*, who selectively transport other people's goods under specific contracts; and *common carriers*, who transport goods for the general public in accordance with certificates of public convenience and necessity issued by the ICC. Those for-hire common or contract carriers who operate solely within a state and who are not subject to ICC regulations because they are not operating in interstate or foreign commerce are normally subject to "certification" or "permit" requirements of the state within which they operate.

<sup>4</sup>Quantities exceeding type A quantities, as defined in 49 CFR 173.389(l).

### 2.3 Economic Regulation of Transportation by Air

The Civil Aeronautics Board (CAB) regulates the economic aspects of transportation by air in civil aircraft. CAB regulations define public aircraft as aircraft operated by a public agency (Federal, State, or local) and transporting only its own goods or personnel. Except for military aircraft, all other aircraft, including those operated by a public agency but transporting other person's goods or personnel, are defined as civil aircraft. The CAB establishes routes and rates for all U.S. flag carriers operating civil aircraft in the U.S. and abroad. However, the administrator of the Federal Aviation Administration issues airworthiness certificates.

Civil aircraft operate as common carriers if they transport goods for the general public in accordance with an operating certificate issued by the CAB and as contract carriers if they selectively transport other people's goods in charter service, dedicated aircraft contract service, etc.

### 2.4 Safety Regulation of Transportation of Hazardous Materials

The Department of Transportation (DOT) regulates the safety aspects of transportation of hazardous materials in interstate and foreign commerce by land, on civil aircraft by air, and on other than public vessels (i.e., those operated by public agencies) in navigable waters. DOT includes the Federal Highway Administration (FHWA), which regulates safety in transport by truck, bus, taxi, or other vehicular transport; the Federal Railroad Administration (FRA), which regulates safety in transport by rail; the Federal Aviation Administration (FAA), which regulates safety in transport by civil aircraft; the U.S. Coast Guard, which regulates safety in transport by water; and the Materials Transportation Bureau, which promulgates the safety regulations for the above DOT agencies. Water transport by other than public vessels in navigable waters is regulated by the U.S. Coast Guard. Vessels carrying more than 12 or 16 passengers, cargo vessels, and barges are included.

DOT regulates both shippers and carriers of hazardous materials (including, specifically, radioactive material) transported by air on civil aircraft, on navigable waters by vessel, and in interstate and foreign commerce by land. DOT safety regulations apply to *shippers, freight forwarders, warehousemen, and private, contract, and common carriers*. DOT also regulates pipeline safety, but except as "tags" for interfaces between products, radioactive materials are not transported by this mode.

## 2.5 Regulation of Transfer and Transportation of Radioactive Materials

The Nuclear Regulatory Commission (NRC) regulates persons who possess, use, or transfer (including transport) radioactive materials that are byproduct, source, or special nuclear material. 10 CFR Part 71, "Packaging of Radioactive Material for Transport and Transportation of Radioactive Material Under Certain Conditions," specifically applies to shippers (those who prepare and deliver packages to a carrier for transport) and private carriers of such materials; in the latter case, the carrier has both possession of and effective control over the material during transportation.

Exempt from NRC regulations are common and contract carriers, freight forwarders, warehousemen, and the U.S. Postal Service when transporting or storing, as a part of the transportation process, a shipper's byproduct, source, or special nuclear material and when subject to DOT regulations. The basis for the exemption is that the carrier acts as bailee of the material and the licensee maintains constructive possession while the material is in the hands of the carrier (Sec. 202 hearings, 1956). The Energy Research and Development Administration operations and contractors also are exempt from NRC licensing and regulations.

## 2.6 Regulation of International Transportation

The safety regulations of certain international organizations may be applicable to international transportation of radioactive materials; for example, the Intergovernmental Maritime Consultative Organization (IMCO) for transport by sea; the International Air Transport Association (IATA) or the International Civil Aviation Organization (ICAO) for transport by air; and the Office Central des Transports Internationaux par Chemins de Fer (OCTI/RID) for transport by European rail.

For safety in both domestic and international transport, the U.S. follows as closely as possible the International Atomic Energy Agency (IAEA) recommended regulations,<sup>5</sup> which are also the bases for the regulations for transport of radioactive materials of most of the other international organizations.

## 2.7 Conclusion

Byproduct, source, or special nuclear material while in transport (that is, from the time it is delivered to a carrier for transport until

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<sup>5</sup>IAEA Safety Series No. 6, "Regulations for the Safe Transport of Radioactive Materials," 1967 edition and 1973 revised edition, International Atomic Energy Agency, Vienna.

it is received by the consignee) may be, but need not be, considered to be in the constructive possession of the shipper. Carriers, other than private carriers, act as bailees in that they cannot redirect, process, or dispose of the material. Any manipulations of the material itself, other than that required for transportation and associated storage, is prohibited except under a specific license issued by the NRC. Authority for emergency actions to protect the health and safety of the public stems from the DOT regulations<sup>6</sup> that require that actions be taken by carriers in cases of emergency, i.e., accidents or leaking packages or suspected leakage from packages of radioactive material. The requirements that carriers take emergency actions have been in effect for many years, were established after DOT consultation with the former Atomic Energy Commission (now NRC), and have never been challenged.

### 3. RESPONSIBILITY FOR PREPARATION OF GOODS FOR TRANSPORT

Under DOT, NRC, and State regulations, the shipper is responsible for complying with all applicable regulations in packaging, labeling, marking, and otherwise preparing any goods for transport. For hazardous materials, DOT regulations require that the shipper certify on the shipping papers that the goods are properly identified, packaged, and prepared for carriage. Also under DOT regulations, the shipper must inform the carrier of any special precautions that must be taken in the transport of his goods.

### 4. RESPONSIBILITY FOR GOODS IN TRANSPORT

Congressional recognition that the shipper-licensee bears the responsibility for the transportation of radioactive material is apparent since the Price-Anderson Liability Coverage available to NRC licensees under the Atomic Energy Act of 1954, as amended, includes transportation to and from indemnified facilities. Under an "omnibus" concept, this ancillary protection is extended to carriers engaged in the transportation of nuclear materials to or from indemnified facilities.

We would propose to interpret the actions and provisions to be taken by the shipper in fulfilling his responsibility for radioactive material during transport to include:

(1) Being knowledgeable as to the nature and amount of radioactive material he has in transit,

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<sup>6</sup> See, for example, 49 CFR §§ 171.15, 171.16, 174.700, 174.715, 174.750, 175.700(b), 176.710, and 177.861.

(2) Being prepared to inform carriers as to the nature of the material in the package and any special precautions to take in case of radioactive material releases,

(3) Knowing where radiological assistance can be obtained (e.g., from State agencies such as the Emergency Preparedness Division, the State Highway Patrol, and the Health Department or the Interagency Radiological Assistance Program (IRAP)<sup>7</sup>) or offering a radiological capability of his own to carriers of his goods on request, and

(4) Knowing to whom this information should be communicated and under what circumstances.

## 5. RESPONSIBILITIES IN EMERGENCIES IN TRANSPORT

The responsibilities for dealing with an emergency in transport are divided among several agencies and persons. For purposes of this discussion, we have divided the transportation emergency into the initial phase, containment or confinement, final cleanup, and cost recovery.

### 5.1 Initial Phase

During the first 15 minutes after the accident occurs, emergency action is required for saving lives, attending to the injured, and identifying and classifying the emergency as to the type of threat and the action required to prevent further damage to life or property. Local public safety officials invariably exercise this responsibility.

#### Responsibility

The carrier has the responsibility for action in this initial phase as in all phases, including, at the earliest practicable moment, notifying the DOT,<sup>8</sup> State and local authorities, the shipper, and the driver's own management. However, the driver and helper often are victims in the accident and may or may not be able to act. Furthermore, in some cases, they may not have immediately available sufficient knowledge of the details about the cargo to permit assessing the potential hazard.

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<sup>7</sup>Under a radiological assistance program administered by the U.S. Energy Research and Development Administration, radiological emergency assistance teams, advice, and information are available on request from any person or organization in any incident believed to involve a radiation hazard. See Interagency Radiological Assistance Plan, ERDA-10, Revised April 1975, and ERDA Radiological Assistance Plan, ERDA-60, July 1975.

<sup>8</sup>49 CFR §§ 171.15, 171.16, 174.45, 175.45, 175.46, 394.5, 394.7, and 176.45.

State and local police and emergency crews are usually recognized as responsible for emergency action. They have authority and responsibility for protecting the health, safety, and welfare of the citizens and will take necessary actions to do that, e.g., stop traffic, put out the fires, rescue the injured. At this early stage, State and local capabilities to handle radiation incidents are often tested because assistance from persons with special radiological knowledge or competence is not on hand during the first few minutes following an accident. For this reason, State and local plans must provide for the initial emergency action. Some State and local police and fire and emergency crews are trained and equipped with radiation detection instruments. DOT is required<sup>9</sup> to provide information and advice for meeting emergencies connected with the transportation of hazardous materials to all interested parties.

The packaging standards for radioactive material are such that the danger or threat from radiation should be a minimal worry in any transportation emergency. The likelihood of a release of any radioactive material in a transportation accident is very small and the probability of the release of hazardous quantities, so small as to be considered negligible.<sup>10</sup> Emergency crews should be instructed to disregard radioactive material signs in the initial phase of every traffic accident and to deal with the emergency as it appears, with no special concerns for the possibility of the presence of radioactive material, i.e., taking only normal precautions such as avoiding smoke inhalation and not entering the immediate area or handling cargo unnecessarily.

After any injured have been removed and any fire placed under control, those responsible must deal with any radioactive material that might be present. It is important to note, at this point, that the FAA, FRA, FHWA, Coast Guard, and the National Transportation Safety Board have responsibilities for investigating transportation accidents,<sup>11</sup> and the appropriate agency may become involved at any time.

## 5.2 Containing or Confining the Hazard

During the next hour or so, the cargo and any associated hazards are to be confined, other residue from the accident removed, and, as far as possible, normal traffic patterns restored.

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<sup>9</sup>Pub. Law 93-633, Sec. 109(d)(2).

<sup>10</sup>This is based on consideration of the results of almost 30 years of shipping experience and detailed assessment of the risk in "Final Environmental Statement on the Transportation of Radioactive Material by Air and Other Modes," which is under development by the NRC staff.

<sup>11</sup>Pub. Law 93-633, Sec. 301.

### Responsibility

Again, the carrier has the basic responsibility for containing or confining any threat associated with his cargo, whether or not radioactive materials or other hazardous materials are involved. DOT regulations require the carrier to notify DOT immediately after an accident. Also, the carrier is required to take action to limit the spreading of radioactive material. Contacting the IRAP is encouraged, and, if needed, radiological assistance teams can be available within an hour or so at most locations. The State and local police, equipped and trained to do radiation monitoring, could prove valuable in identifying and classifying the location and degree of radiation hazard, if such a hazard exists.

The shipper is required by DOT regulations<sup>12</sup> to provide to the carrier, when shipment is made, information that should include any special precautions required for dealing with his shipment. If called in case of an accident, the shipper is also required to provide whatever details about his shipment that are necessary and helpful. Since the shipper may be involved in a liability suit later, he may wish to offer assistance in confining and cleaning up any accident involving his shipment.

In the highly unlikely event that a release of radioactive material in transportation would require evacuation of persons from an area, the decision for taking such action presumably would be made by the same responsible local public safety officials and in the same way that the decision has been made in emergencies in which chemicals, toxic agents, explosives, and combustibles have required evacuation.

### 5.3 Final Cleanup

This phase requires the removal of any radioactive material, contamination, or other residue of the incident to restore, as nearly as possible or practical, the scene of the incident to its original state.

### Responsibility

The carrier has the basic responsibility to see that the cleanup is completed. Since in most cases involving any release of radioactive material there must be some assumption of responsibility for manipulation of the radioactive material, e.g., repackaging, disposal, or removal, NRC expects that, during cleanup, a person be present who is experienced and equipped to handle the radioactive material involved as evidenced by his having a license for such cleanup or for handling such materials. That person must have authority to take necessary and appropriate actions at

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<sup>12</sup> 49 CFR §§ 172.202 and 172.203.

the scene. That licensee can be the shipper-licensee, the consignee-licensee, or a person or persons licensed for such activity and contracted for by the carrier or shipper or consignee to perform the cleanup.

General standards for cleanup are being developed by the Environmental Protection Agency (EPA). Some contamination limits are given in DOT regulations<sup>13</sup> for vehicles, facilities, and equipment. Also, general standards for exposure control and contamination limits are given in NRC's regulations and regulatory guides.<sup>14</sup>

In most cases, State and local authorities, EPA, DOT, and NRC will consider each instance on its own merits to determine when adequate cleanup has been achieved. Fortunately, the number of instances involving any releases outside the vehicle has been, and we believe will continue to be, very small, fewer than 10 in any year.

#### 5.4 Cost Recovery

In terms of financial responsibility there is a fourth phase, cost recovery. The cost of cleanup and any liability for damages to life or property resulting from the incident are borne, in most cases, initially by the carrier. Furthermore, in most cases, the fixing of such costs and the real responsibility for them will be determined in the courts. The frequency and extent of such costs in the transport of source and special nuclear material, including nuclear fuels, have been small. In 20 years of insurance coverage of nuclear energy liability, there have been only 27 incidents reported under that insurance coverage. Eleven of those incidents were in transportation, 5 of the 11 involving no claims and 4 of the 11 involving property damage totaling \$7,500.<sup>15</sup> One claim was that of a transport worker involved in an incident in January 1963 and was settled out of court for \$300,000, although causal connection was not established. Other nontransportation claims totaled about \$200,000. Over a period of 20 years, the total losses, including settling and defending third party liability claims, are about \$600,000. In some cases, indemnity coverage would be provided under private insurance or under Price-Anderson Liability Coverage, mentioned earlier.

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<sup>13</sup> 49 CFR 173.397.

<sup>14</sup> 10 CFR Part 20, "Standards for Protection Against Radiation," and Regulatory Guide 1.86, "Termination of Operating Licenses for Nuclear Reactors."

<sup>15</sup> Marone, Joseph, Nuclear Energy Liability--Property Insurance Association, "Summary Report 1976 Conference on Transportation for the Nuclear Industry," February 1977, pp. 74-77.

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