

# TRENDS IN FEDERAL, STATE AND LOCAL ACTIVITIES RELATIVE TO TRANSPORTATION OF RADIOACTIVE MATERIALS IN THE UNITED STATES OF AMERICA

*Old problems and new solutions*

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## Abstract

TRENDS IN FEDERAL, STATE AND LOCAL ACTIVITIES RELATIVE TO TRANSPORTATION OF RADIOACTIVE MATERIALS IN THE UNITED STATES OF AMERICA: OLD PROBLEMS AND NEW SOLUTIONS.

The paper describes the current legal and regulatory structure for transporting nuclear fuel cycle materials in the United States of America, particularly as this structure applies to irradiated reactor fuel. The respective responsibilities of the cognizant federal agencies, states and localities are discussed. Recent decisions affecting the division of authority among governmental bodies are examined to illustrate emerging trends in the resolution of institutional issues concerning indemnification, emergency response, routing, choice of transportation modes and imposition of fees. The crucial role of the United States Department of Energy in resolving these and other issues is discussed, specifically with respect to the design of new casks for transporting irradiated reactor fuel to a repository. Principles are suggested to help determine the appropriateness of suggested solutions to institutional issues.

## 1. INTRODUCTION

Those responsible for worldwide transportation of radioactive materials over the past forty years -- in private industry and the government -- have done an outstanding job in assuring that the public and transport workers have been protected against the risks inherent in this activity. Notwithstanding this excellent record and the many studies by reputable scientists showing that the risks of transporting radioactive materials are extremely low, particularly compared with the risks of transporting other essential commodities that are classified as hazardous, this activity continues to attract an extraordinary degree of attention by the news media, elected representatives, regulatory authorities and members of the public. Moreover, international shipments as well as those

made within the U.S.A. continue to be threatened with disruption as a result of activities by state and local officials.

In the U.S.A. there is intensified interest in the prospect of a much larger number of shipments of irradiated reactor fuel ( spent fuel or fuel ) associated with the efforts of the U.S. Department of Energy ( DOE ) to develop a geologic repository for storing such fuel. The DOE currently estimates that some 70 000 metric tons of spent fuel will be stored in the first repository. Of course, shipments to the repository would take place over a period of about 30 years and the number of such shipments is miniscule compared to the approximately 100 million shipments of all hazardous materials that take place every year in the U.S.A. Moreover, the number of shipments that are likely to be required in order to transport spent fuel to a repository may be much lower than has been forecast in the past due, for example, to the redesign of casks to accommodate fuel that has been cooled for a minimum of 5 years.

It was the recognition of the significance of 'institutional', e.g. regulatory, legal and public acceptance, issues to the safe, reliable and economic transportation of nuclear fuel cycle materials that led to the formation in the U.S.A. of the Electric Utility Companies' Nuclear Transportation Group ( Group ), consisting of 37 utilities that are constructing or operating 100 power reactors. The Group's mission is (i) to participate in regulatory, judicial and related activities where necessary to ensure that electric utilities' interests are adequately presented to administrative agencies and the courts and (ii) to promote the successful implementation of the transportation-related provisions of the Nuclear Waste Policy Act of 1982 ( NWPA ). The conclusions and perspective of the authors of this paper reflect their experience in directing and carrying out the Group's activities.

## 2. CURRENT LEGAL AND REGULATORY STRUCTURE FOR REGULATING TRANSPORTATION IN THE U.S.A.

Acting primarily pursuant to its authority under the Commerce Clause of the U.S. Constitution, the U.S. Congress has enacted several laws which create a comprehensive federal system for the regulation of transportation of radioactive materials in the U.S.A. Under the Supremacy Clause of the U.S. Constitution, these laws and their implementing regulations enacted by the cognizant federal agencies, particularly the U.S. Nuclear Regulatory Commission ( NRC ) and the U.S. Department of Transportation ( DOT ), preempt inconsistent or

conflicting state and local regulations. In addition to establishing these two regulatory agencies, Congress assigned responsibilities to the DOE and to the Federal Emergency Management Agency to carry out essential functions associated with transportation of radioactive materials. All these agencies' activities are thus part of the inclusive federal program for addressing the safe transportation of radioactive materials.

The authority of state and local governments to regulate the transportation of radioactive materials stems from their inherent police powers to protect the health and safety of their citizens and from the provisions of the U.S. Constitution which reserve to the states those powers not delegated to the federal government. However, state and local regulatory authority is defined largely by the scope of exercise of federal regulatory authority, because states and localities may not enforce laws or regulations that restrict the flow of international or interstate commerce or are preempted by federal laws or regulations.

The tension inherent in the concurrent exercise of federal, state and local authority over transportation of radioactive materials has been present since the development of nuclear energy for peaceful purposes. In a federal republic such as the U.S.A., with its relatively large land mass and strong tradition of decentralized government particularly as this applies to highway transportation, continuing problems exist in accommodating the need for centralized control over matters of national interest and demands for regional autonomy.

In recent years, however, the interaction of federal, state and local authority has become more complex. The byproducts of generating electricity with nuclear power plants must eventually be transported to permanent storage locations. There are a relatively few committed opponents of nuclear power who are prepared to use every tactic available to them to prevent spent fuel from moving through their communities. For such persons, the goal is an absolute ban on transportation through their jurisdictions. However, the majority of state and local governmental officials and members of the public are willing to accept a reasonable accommodation of the national interest and more parochial concerns. In the next section of this paper we describe recent developments in the continuing search for a proper balance among the competing interests.

### 3. EMERGING TRENDS IN FEDERAL, STATE AND LOCAL ACTIVITIES

The nature of intergovernmental relationships in the U.S.A. has led to the identification of several key problems relative

to transportation of radioactive materials. These include indemnification against risks, emergency response, routing and choice of modes of transportation and imposition of fees on movements of radioactive materials.

### 3.1 Indemnity Coverage for Transportation Accidents

Some have questioned the adequacy of insurance and indemnity coverage for an accident occurring during transportation of spent fuel. The coincidence of the implementation of the NWPA and the expiration of the Price-Anderson indemnity legislation in the U.S.A. in 1987 has led to renewed examination of this subject. The attention of commentators has been focused on the following issues:

- Are evacuation costs covered by the indemnity requirement if there were no release of radioactivity?
- Will indemnity coverage be available if spent fuel were diverted by terrorists who sabotage the cask and cause a release of radioactivity?
- Will states and localities be able to recover their costs in responding to an event occurring during transportation of spent fuel?
- Will rail carriers be protected against loss due to blockage of their tracks if an accident occurred while the railroads were carrying a cask?

It is too early to know how these questions will be resolved in the U.S.A. since Congress continues its consideration of proposals to amend the Price-Anderson legislation. In any event, it is important that state and local authorities have a clear understanding of available indemnity coverage.

### 3.2 Emergency Response

Responsibility for response to emergencies involving transportation of spent fuel is divided among carriers, shippers, state and local governments and the federal government. However, emergency preparedness is innately a governmental responsibility and the initial response to an emergency necessarily must come from state and local personnel, such as police and firefighters. Although the initial response must be by states and localities, the nature of this response is very similar to what would be called for if the accident involved other hazardous materials. Moreover, the federal government has provided guidance and training to state and

local officials and has also established a powerful network to assist states and localities, on request, in the event of a transportation emergency involving radioactive materials.

The possibility that shipments of spent fuel will impose substantial burdens for emergency response remains one of concern to many state and local officials. However, recent judicial decisions in the U.S.A. reinforce the principle that the interlocking nature of the federal regulatory scheme prevents state or local efforts to impose onerous requirements on shippers or carriers related to emergency response.

### 3.3. Routing and Choice of Modes

Questions concerning choice of routes and modes of transportation for spent fuel shipments are among the most enduring of the institutional issues since these choices directly affect the proximity to particular communities of movements of large amounts of radioactivity. There continues to be controversy over the extent to which detailed safety or environmental analyses must be performed before a particular route or transportation mode is chosen. One of the most important proceedings currently pending before the DOT involves New York City's assertion that it should be allowed to enforce a ban on highway transportation of spent fuel through the city in favor of a combination of barge and highway transportation through neighboring jurisdictions. The DOT has preliminarily ruled against the city, but the outcome will likely need to be resolved in the federal courts.

### 3.4 Imposition of Fees on Transportation by States and Localities

Another important proceeding that has just been decided by the U.S. Department of Transportation concerns the validity of a \$1000 fee assessed by the State of Illinois per cask of spent fuel shipped. On June 4, 1986 the U.S. Department of Transportation ruled that the Illinois fee is not inconsistent with one of the governing Federal statutes in the U.S.A., the Hazardous Materials Transportation Act. According to the Department of Transportation, the fee does not effectively cause rerouting, restrictions, or delays in spent fuel shipments by highway or rail. The Department of Transportation distinguished its latest ruling from an earlier one by the Department, in which a fee imposed by the State of Vermont had been determined to be invalid, on the grounds that the Vermont fee was an integral part of an invalid state permit system. The Department of Transportation also concluded that since preparedness for transportation emergencies, including those involving spent fuel shipments, is a shared responsibility of

federal, state and local governments Illinois was within its legal rights in requiring payment of a fee to cover its costs of providing for emergency preparedness.

No doubt this decision by the Department of Transportation needs to be carefully examined to determine whether it is likely that fees can legally be imposed on spent fuel shipments to cover a variety of costs allegedly incurred by other jurisdictions in the U.S.A. In this connection, it is important to note that the Department of Transportation stated that it was not prepared to accept the proposition that fees imposed by other governmental bodies would also be found to be valid. The Department of Transportation called attention to the fact that the present proceeding involved a fee which is part of a state program for emergency preparedness, the different role of municipalities in nuclear safety preparedness and the possibility that other fee programs might, in effect, be illegal bans. The Department of Transportation also noted that fee provisions may be illegal under other federal statutes or under the provisions of the Constitution of the U.S.A. Thus, although this decision will have an important bearing on intergovernmental authority to assess fees for transporting spent fuel, the long term effects of this decision by the Department of Transportation remain to be determined.

#### 4. DOE'S IMPLEMENTATION OF THE NWPA

DOE's plans to implement the NWPA will have the greatest long-term influence on the resolution of institutional issues affecting transportation. The NWPA established the responsibility of the DOE to dispose of spent fuel and associated high level radioactive waste from commercial nuclear power plants beginning in 1998. The success of DOE in accomplishing its statutory mandate is dependent upon the siting and construction of a suitable repository and the establishment of a transportation system that can safely, efficiently and economically transport these materials from power reactors to the repository. The Group is vitally interested in ensuring that a suitable transportation system is planned and built.

The DOE has issued a Transportation Business Plan that delineates DOE's program for designing, acquiring and operating the transportation system. The DOE's program for addressing institutional issues is addressed in its Transportation Institutional Plan. One of the principal issues addressed in the Transportation Business and Institutional Plans is the redesign of the casks that will be needed to transport the relatively large volume of spent fuel that is accumulating at power reactor sites. The new casks will be designed for a

variety of reasons, including development of dual purpose casks and in order to increase the amount of fuel transported per shipment. This does not mean that the use of existing casks is inappropriate. In many studies by the responsible regulatory agencies, it has been confirmed that the radiological risk of transportation in casks designed to the current international standards poses an extremely low level of risk.

Nevertheless, criticism continues to be voiced by some special interest groups that the current international safety standards are inadequate and that full-scale proof testing of casks is necessary to dispel public doubts. The NRC is currently conducting a research program to evaluate the international standards against real-world accident conditions. If there are any such accident conditions that could cause a release from the cask the probability of such an event occurring will be evaluated and a determination made of the consequences of the release for those events that are of concern.

It is highly desirable to utilize casks as part of a program to describe to the public how spent fuel can be safely transported. Nevertheless, the desirability of additional full-scale proof testing by the DOE is questionable. In principle it is possible to devise a test that will satisfy all but the most committed opponents of nuclear transportation that the casks are invulnerable. In practice, and considering the tendency by some special interest groups to question the results of the tests conducted by the Central Electricity Generating Board in the U.K. and by Sandia National Laboratories in the U.S.A., it is by no means clear that such a result is likely. In the absence of a clear definition of the objectives of the tests and evidence that such tests would be cost-effective in addressing the public's perception of the safety of the casks, a case has not been made for more full-scale proof testing of casks.

## 5. CONCLUSION

The amount of radioactive materials being shipped, particularly those associated with the 'back-end' of the nuclear fuel cycle, will increase substantially over ensuing decades. Public interest in this subject is growing, particularly along the likely routes of large-scale shipments of spent fuel. The institutional issues that must be resolved are reasonably well identified. What is called for is a sustained, coordinated effort to fashion widely acceptable solutions to these issues. From the perspective of the Group, these solutions should conform to the following basic principles:

- Transportation regulatory requirements must have a sound technical justification.
- Analyses of the risks of and need for transportation should normally be performed generically rather than on a shipment-by-shipment basis.
- There must be uniform, preemptive federal standards for transportation of nuclear fuel cycle materials, subject to appropriate state and local participation within the framework of applicable law.
- Shippers must be able to use any or all available modes of transportation in order to be able to choose the most advantageous and economical one as individual circumstances dictate.
- Carriers must not be allowed to impose their own requirements upon nuclear fuel cycle transportation that differ from federal standards.
- States should be integrated into efforts to enforce the federal regulations, particularly those relating to highway safety. Regional cooperative efforts by states should be encouraged. State inspection efforts should not be duplicative and should be reasonably related to the schedules and other operational features of shipments.
- The assessment by states and localities of fees for transporting spent fuel is objectionable for legal and practical reasons.
- The safety and environmental risks of transportation are a relatively minor factor in selecting a repository for storing spent fuel. However, the economic costs of transportation are a substantial part of the total cost of disposing of spent fuel and should be treated accordingly.