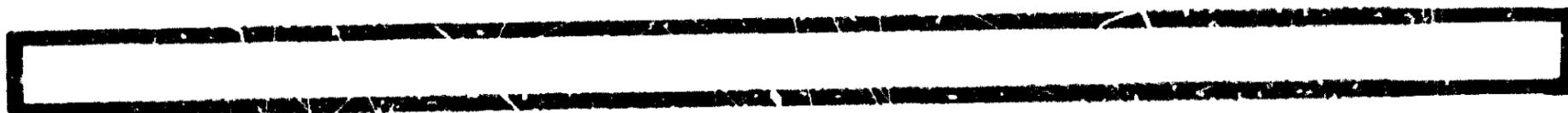
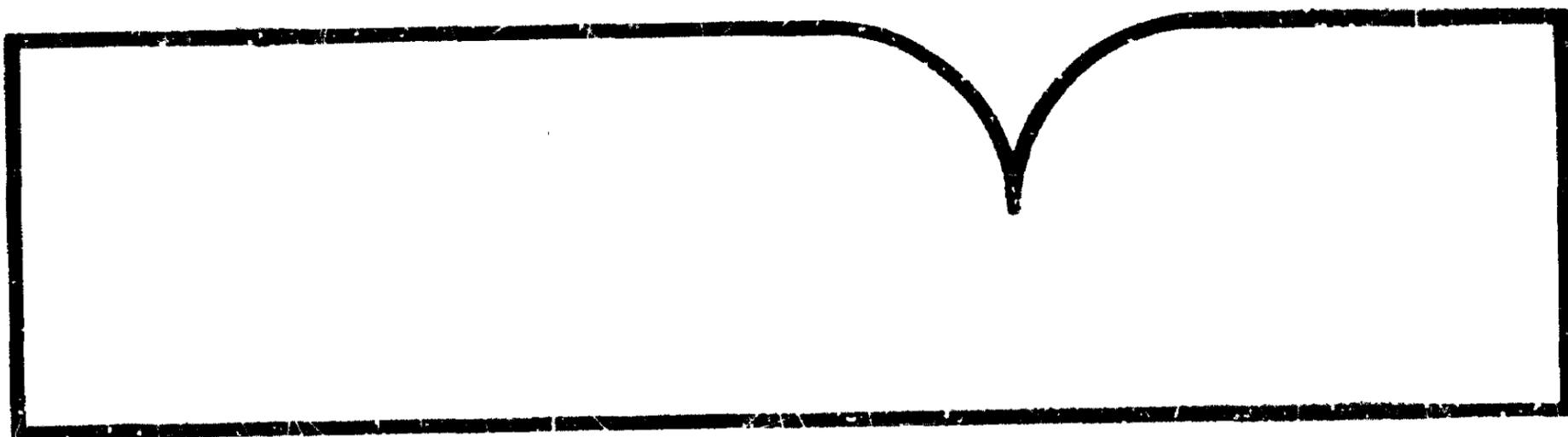


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Safety Effectiveness Evaluation - Federal and
State Enforcement Efforts in Hazardous Materials
Transportation by Truck

(U.S.) National Transportation Safety Board
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16. Abstract The National Transportation Safety Board, at the request of the Senate Appropriations Committee, has just completed a safety effectiveness evaluation of Federal and State enforcement efforts in the area of bulk hazardous materials transportation by commercial motor vehicle. As a result of this evaluation, the Board found that there are several improvements that should be made to the enforcement activities of the Bureau of Motor Carrier Safety (BMCS) in the Federal Highway Administration (FHWA). In its evaluation, the Board staff interviewed BMCS officials in the headquarters office and in eight of the nine FHWA Regions. In addition, the Board staff interviewed State enforcement officials in 24 States, including 3 of the 4 States participating in the BMCS "Commercial Motor Carrier Safety Inspection and Weighing Demonstration Program." Because the BMCS enforcement of the motor vehicle-related Federal Hazardous Materials Regulations is not separate from its enforcement of the Federal Motor Carrier Safety Regulations, the Board found that, in general, the same deficiencies undermine the effectiveness of both efforts. Thus, the major findings of the Board concerning BMCS enforcement apply equally to enforcement of the motor vehicle-related Federal Hazardous Materials Regulations and the Federal Motor Carrier Safety Regulations.			
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**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

SAFETY EFFECTIVENESS EVALUATION

Adopted: February 19, 1981

**FEDERAL AND STATE ENFORCEMENT EFFORTS
IN HAZARDOUS MATERIALS TRANSPORTATION BY TRUCK**

INTRODUCTION

The Independent Safety Board Act of 1974 authorizes the National Transportation Safety Board to "evaluate, assess the effectiveness, and publish the findings of the Board with respect to the transportation safety consciousness and efficacy in preventing accidents of other Government agencies." In an introductory section to the Act describing the need for an independent Safety Board, Congress indicates that the conduct of this and other Board responsibilities requires "continual review, appraisal, and assessment of the operating practices and regulations" of Federal agencies involved in transportation regulation. In order to fulfill these and other responsibilities, the Board conducts investigations and makes recommendations to appropriate agencies.

The Senate Appropriations Committee, in its report addressing the FY 1980 appropriations for the U.S. Department of Transportation (DOT) and related agencies, directed the Safety Board to evaluate the efforts of the DOT in the area of safe transportation of bulk hazardous materials by truck. ^{1/} Based on the authority described above, and in response to the Senate's request, the Safety Board has prepared this report.

Concern about the safety of transporting hazardous materials is increasing. It is part of a larger concern about the responsibility and ability of government and industry to protect people and the environment from the dangers inherent in a wide range of materials produced or used in manufacturing, farming, research, energy production, or other endeavors. This concern has been fed in recent years by a number of serious accidents in this country and elsewhere, some in transportation and others in production, storage, or disposal of the materials. Several incidents involving nuclear powerplants have raised public anxiety about the safe handling of radioactive materials, including the safety of their transportation.

Given the increasing level of public concern, it is not surprising that many organizations have studied the problem and in particular scrutinized the DOT's efforts to cope with the transportation aspects of the problem from a regulatory and enforcement point of view. In the preparation of this report, the Safety Board has reviewed the findings of several major recent studies of hazardous materials transportation and of the Bureau of Motor Carrier Safety (BMCS) and the Materials Transportation Bureau (MTB), two agencies within the DOT whose responsibilities and activities bear on the enforcement of hazardous materials regulations pertaining to transportation by truck. These include a 1978 study by the Secretary

^{1/} Senate Report No. 96-377; letter from National Transportation Safety Board to Birch Bayh, Chairman, Subcommittee on Transportation, Senate Appropriations Committee, November 11, 1979.

of Transportation's Hazardous Materials Task Force; 2/ a 1979 study of the BMCS by the DOT Inspector General; 3/ U.S. General Accounting Office (GAO) studies in 1973, 1977, and 1980 of the BMCS and the overall DOT hazardous materials program; 4/ a 1979 report by the National Highway Safety Advisory Committee on the BMCS' truck safety enforcement program; 5/ a 1980 study done for the DOT General Counsel about the DOT's hazardous materials sanctions system and its administration; 6/ a 1979 study by the Congressional Research Service of the DOT's hazardous materials regulatory program, done for the Senate Committee on Commerce, Science, and Transportation; 7/ and several documents prepared by the Intergovernmental Science, Engineering and Technology Advisory Panel of the White House Office of Science and Technology Policy.

The Safety Board has made the safe transportation of hazardous materials a concern for the past decade, and has issued recommendations to the DOT on many aspects of the Federal hazardous materials program. Two areas of long-standing interest to the Safety Board, and of particular pertinence to this study, are the adequacy of the DOT's hazardous materials data system and the need to use risk analysis for regulatory program planning and evaluation.

In 1969, the Safety Board's "Study of Uniform Reporting Systems for All Modes of Transportation in Reporting Incidents and Accidents Involving the Shipment of Hazardous Materials" recommended the establishment of a DOT data center for uniform hazardous materials accident/incident reporting and information. The Board has monitored subsequent developments in DOT's systems for data collection and analysis and has urged that the systems be expanded to include collection and use of information about emergency response actions and survival techniques.

Beginning with a 1971 Special Study, "Risk Concepts in Dangerous Goods Transportation Regulations," the Safety Board has repeatedly urged the use of risk analysis as a basis for systematically planning and evaluating hazardous materials regulations and for granting exemptions to the regulations.

A 1979 special study by the Safety Board, "Noncompliance with Hazardous Materials Safety Regulations," determined six basic reasons why those involved in hazardous materials shipments do not always comply with the Federal regulations:

2/ DOT, "Hazardous Materials Transportation Task Force Report" (September 1978).

3/ DOT, Office of Inspector General, "Special Study of Bureau of Motor Carrier Safety, Federal Highway Administration" (September 28, 1979).

4/ GAO: "Need for Improved Inspection and Enforcement in Regulating Transportation of Hazardous Materials" (B-164497, May 1, 1973); "The Federal Motor Carrier Safety Program: Not Yet Achieving What the Congress Wanted" (CED-77-62, May 16, 1977); "Programs for Ensuring the Safe Transportation of Hazardous Materials Need Improving" (CED-81-5, November 4, 1980).

5/ National Highway Safety Advisory Committee, "Task Force Report on Commercial Vehicle Maintenance and Safety Inspection Programs" (June 15, 1979).

6/ Colin S. Diver, "A Study of the Effectiveness and Fairness of DOT Hazardous Materials Enforcement Penalties" (June 1980).

7/ Congressional Research Service, Library of Congress, "Hazardous Materials Transportation: A Review and Analysis of the Department of Transportation's Regulatory Program" (April 1979).

the complexity of the regulations themselves, the complexity of the industry interrelationships, economic pressures, lack of awareness of the regulations by industry personnel, lack of personnel training, and indifference. The Board recommended that the DOT expand the MTB compliance program to work through shipping executives as a means of improving compliance through increased industry awareness and to elicit information on the regulations' effectiveness. The Board also recommended that the DOT expand the compliance assurance program by formalizing compliance policies and management systems that will serve as a model for other agencies with regulatory responsibility, and that ultimately will lead to the ability to measure the effectiveness of the program.

Among the many other areas that have been addressed by Safety Board recommendations are the need for improved regulation of cargo tank integrity, control of liquid surge in tank truck transportation, and regulation of routing to reduce the risks of hazardous materials transportation accidents.

In addition to the studies mentioned above, the Safety Board reviewed program documents supplied by DOT officials. Safety Board staff conducted extensive interviews with State officials in 11 States; DOT officials in DOT headquarters and in 8 regional offices and 12 States; members of the hazardous materials shipper and carrier industries; and several individuals knowledgeable about aspects of hazardous materials transportation. In addition, telephone interviews were conducted with officials of various State hazardous materials-related programs in 13 States. (Appendix A lists all persons interviewed by Safety Board staff.)

This study presents an overview of current efforts of the BMCS and the MTB to enforce the motor vehicle-related Federal Hazardous Materials Regulations. Major criticisms that have been leveled against these agencies' efforts in the past are discussed and the agencies' actions so far to respond to them are evaluated.

The report describes in some detail the programs undertaken by several States to regulate the transportation of hazardous materials by truck. The report also describes a program recently implemented by the BMCS in which four States are participating in a 3-year "demonstration" of the feasibility and effectiveness of the States conducting truck safety (and weight enforcement) programs. The report compiles detailed information about State truck safety and hazardous materials enforcement programs which will be of help in considering whether and how best to devolve more of this task to the States, a course recommended by many observers and contemplated in several recent Congressional bills.

On the basis of its evaluation, the Safety Board recommends several steps the DOT should take to improve the efficiency and, in time, the effectiveness of Federal truck and hazardous materials enforcement programs; and it provides insight into at least some of the problems to be considered in any attempt to establish Federal grants-in-aid for State enforcement programs.

Two points should be kept in mind in reading this report. First, the BMCS enforces two different sets of regulations that apply to trucks carrying hazardous materials in interstate commerce: the motor vehicle-related Federal Hazardous Materials Regulations (49 CFR 177) and the Federal Motor Carrier Safety Regulations (FMCSR) (49 CFR 390-397). The FMCSR's pertain to all drivers, carriers, and equipment involved in the interstate carriage of virtually any goods;

the Federal Hazardous Materials Regulations apply to drivers, carriers, shippers, and equipment involved in hazardous materials carriage. The BMCS has integrated its enforcement of these two sets of regulations; enforcement of both is carried out by the same personnel and largely through the same mechanisms: on-the-road truck inspections, audits of management practices, other formal and informal contacts with the trucking industry, and the imposition of fines for violation of the regulations. Thus, there is no BMCS "hazardous materials enforcement program" which is clearly distinguishable from the overall motor carrier safety enforcement program of the BMCS. To understand how the BMCS carries out its hazardous materials enforcement responsibility, one must understand the larger program of motor carrier safety enforcement, of which hazardous materials activities are merely a part.

Second, although the Senate's request for this study directed the Safety Board's attention particularly to the transportation of bulk hazardous materials by truck, the BMCS enforcement program does not lend itself to such a distinction. The enforcement of the Federal Hazardous Materials Regulations is handled by the BMCS in the same way whether the materials are being transported in bulk or in separate packages within a truck. For purposes of this study, "bulk" refers loosely to the carriage of hazardous materials by tank trucks.

The Hazardous Materials Problem

Even if one surveys only the area of hazardous materials transportation (leaving aside production, use, and disposal of these materials), the situation can best be described as complicated:

- o There are thousands of materials classified variously as "hazardous materials," "hazardous substances," and/or "hazardous wastes," depending on their destination and the nature of their dangers;
- o The transportation of these materials is governed by a large, complex body of Federal regulations, administered by several agencies, and an explosively proliferating assortment of State, municipal, and local laws and regulations, which are often inconsistent with each other and possibly with the Federal regulations. A wide array of State and local agencies administer these laws.
- o Surprisingly little is known with certainty about the amounts of these materials in transport, although it is believed to be very large and growing; their distribution among the various modes of transportation; the routes on which they are being moved; the numbers and types of shippers and carriers involved in their handling; the numbers of accidents involving hazardous materials or their costs to society; the risks to be assessed in developing hazard control strategies; and many other basic questions.
- o Although the losses associated with transportation of hazardous materials so far (since attempts at recordkeeping were instituted in 1971) are generally conceded to be low, the DOT does not know whether, and to what extent, their regulations and enforcement programs have anything to do with this generally good history.

The DOT itself acknowledges the inadequacies of the information available about hazardous materials transportation. A DOT study of its hazardous materials programs found recently:

. . . [No] firm data base about regulated materials and modal movement exists. Estimates vary widely on the total annual volume of hazardous materials transported in commerce. Despite isolated efforts by DOT elements, there is no centralized, cohesive information system for identifying such matters as where hazardous materials are produced [and] stored, the mode by which they are transported, and the geographic and physical nature and population density of the routes over which they move. 8/

The lack of reliable information extends beyond the matters mentioned above, however. The DOT does not know exactly how much it spends on its hazardous materials programs each year; for 1977, it estimated about \$8.4 million. 9/

The numbers of accidents involving hazardous materials in transportation each year are not known. From 1971 through 1979, 95,167 "incidents" were reported to the DOT, about 90 percent of them by motor carriers. However, the regulations require only carriers (not shippers) to report such incidents; the DOT does not require intrastate carriers to report them, and, in any case, "only 65 air carriers, 1,272 highway carriers, 84 railroads, 56 water carriers, and 18 freight forwarders have ever submitted incident reports since they were first required in 1971." 10/

Although the DOT does not know the exact number of companies subject to this requirement, agency officials concede that those reporting constitute only a small percentage of them. 11/ Furthermore, the DOT concedes that the information transmitted by these reports is not reliable. The DOT Hazardous Materials Transportation Task Force noted that "the adequacy and relevancy of much of the data [in the incident reports] are questionable" and "the credibility of available incident data is questionable, and there is no routine validation of the data [by the DOT.]" 12/

The DOT does not know how many companies are involved in hazardous materials transportation. In the area of truck carriage, for example, the BMCS' official list of hazardous materials shippers includes 12,000 firms; its official list of hazardous materials carriers includes 11,700 companies. The BMCS has acknowledged this list is incomplete, but it has no estimate of just how incomplete it might be.

8/ DOT, "Task Force Report," op. cit., pp. 39-40.

9/ Ibid., p. 11.

10/ GAO, op. cit. (1980), p. 17.

11/ Ibid.

12/ DOT, "Task Force Report," op. cit., pp. 41-42.

Keeping in mind the serious inadequacies of the information, a few further statistics may give some sense of the size of the enforcement task facing the DOT. The DOT estimates that there are:

- o At least 4 billion tons of hazardous materials shipped each year
- o At least 218 billion ton-miles of hazardous materials transported each year
- o At least 250,000 shipments (bulk and nonbulk) made each day (and expected to double in 10 years)
- o At least 4,370 locations from which bulk shipments originate
- o At least 50 suppliers of tank trucks
- o At least 413,000 tank trucks regularly transporting hazardous materials in bulk

The DOT estimates that somewhere between 5 and 15 percent of all trucks on the road at any time carry hazardous materials. In one State it was found that about 65 percent of the materials transported were flammable or combustible liquids; about 10 percent of the hazardous materials trucks were carrying amounts sufficient to require placarding (more than 1,000 pounds); 41 percent of these trucks either were not placarded or were improperly placarded; and 23 percent of the hazardous materials trucks failed to carry the required shipping papers. 13/

During a May 1979 inspection of trucks crossing the Mississippi River at several locations, the BMCS found that 17 percent carried hazardous materials; the 297 hazardous materials trucks inspected had 291 hazardous materials violations, 16 of them serious enough to put the truck out of service; 93 more of these hazardous materials trucks were put out of service for serious equipment violations (such as inadequate brakes, defective tires, driver hours-of-service violations, etc.).

Nearly 95 percent of the hazardous materials carriers surveyed in a 1978 study by the BMCS had violated the driver hours-of-service rules; in the same study, hazardous materials carriers had "the worst record [for] preventable accident frequency rate" (20 percent more involvement than expected). 14/

From 1971 through 1979, at least 183 people have been killed as a direct result of hazardous materials unintentionally released during transportation; at least another 3,941 have been injured under the same circumstances; and at least \$58,253,869 in property damage has resulted. 15/

13/ J. William Schmidt and Dennis L. Price, "Virginia Highway Hazardous Materials Flow: 1977 Survey," for the Virginia Department of Transportation Safety, Blacksburg, Virginia (1977).

14/ DOT, Federal Highway Administration, Bureau of Motor Carrier Safety, "Safety Effectiveness Evaluation Report" (December 1979). Although the BMCS concluded that this study had been flawed by weaknesses in the sampling plan and other data problems, these conclusions were published with no proviso.

15/ Figures supplied by the DOT, based on incident reports.

The dimensions of the problem are expanding with increases in hazardous waste generation, and the magnitude and gravity of the transportation and disposal problems are only gradually coming to be realized. Although this study does not focus on this area, some understanding of its impact is important to put the larger hazardous materials enforcement efforts in perspective.

It is estimated (again, no firm figures are available) that industry generates 10 million tons of nonradioactive hazardous waste each year, growing at a rate of 5 to 10 percent annually; 90 percent of it is liquid; almost all of it is toxic. ^{16/} At least for a time, transportation of this material is likely to increase substantially, partly as a result of the steady increase in waste produced, and partly as a result of some disposal sites being shut down. Sites are being closed due to more stringent controls on their operations, the unwillingness of site owners to accept increased liability, and increasing opposition from citizens to permitting their continued existence or to accepting new sites in their area. ^{17/}

Under the Resource Conservation and Recovery Act of 1976 (RCRA), ^{18/} the Environmental Protection Agency (EPA) and the DOT are attempting to bring hazardous waste handling under some kind of control to protect the public and the environment from the dangers of these substances. As with hazardous materials in general, however, the agencies know little about the industries involved, the size of the problem, and the kinds and extent of hazards involved. For example, in an attempt to start building up a solid data base about the nature of this problem and provide enforcement officials with lists of regulated companies, the EPA requires all generators, transporters, treaters, storers, and disposers of hazardous waste to

^{16/} Warren E. Isman and Gene P. Carlson, "Hazardous Materials" (Encino, California: 1980), p. 15. Another indication of the growing size of this problem was noted in the "Hazardous Materials Intelligence Report (HMIR)" of December 5, 1980: "When trading ended at the New York Stock Exchange on December 2, 1980, stock shares of the four largest U.S. hazardous waste management firms were selling at prices two or three times higher than they had earlier in the year. In recent weeks, stock market analysts have reported a rapid increase in institutional investment in the waste management industry. . . . [I]ndustry representatives and stock market analysts project a rapid growth in the waste management industry over the next 5 years. . . [A]nnual revenues in the industry, currently estimated at approximately \$300 million for 1980, could increase to \$1.5 billion by 1985. A recent EPA-funded study projected a 35 percent increase in the volume of hazardous wastes treated or disposed of in commercial facilities in 1981 over 1980."

^{17/} A recent Council on Environmental Quality opinion poll found that more than 50 percent of the respondents said they were unwilling to accept a hazardous waste landfill within 50 miles of their home. A Georgia citizens group is challenging the constitutionality of a provision of the Georgia Hazardous Waste Management Act which denies local governments the right to prevent a State-permitted waste facility from locating within their jurisdiction. Source: "HMIR," December 5, 1980.

^{18/} 49 U.S.C. 6901, et seq.

notify the EPA of their activities. 19/ Initially, the EPA estimated that there are about 400,000 such persons, businesses, and Federal agencies; 20/ later, it reduced the estimate to about 98,000. 21/ However, by the notification deadline, August 18, 1980, only about 35,000 notifications had been received. 22/

The situation is further complicated by the fact that most of the thousands of materials classified by the DOT as hazardous are, when handled as waste, also subject to the new hazardous waste regulations issued by the DOT and the EPA. 23/ Whereas the DOT's Hazardous Materials Regulations have been applied only to interstate commerce, the hazardous waste regulations apply equally to interstate and intrastate operations.

Although the RCRA authorizes States to establish hazardous waste enforcement programs, and some States are moving to do so, it is likely to be a long time before all States have such programs and there is reasonable uniformity and consistency among them. Until then, the BMCS will be largely responsible for ensuring that hazardous waste transporters and shippers are complying with the Federal Hazardous Materials Regulations, the hazardous waste regulations, and the FMCSR's (insofar as they apply). 24/ No Federal or State official interviewed for this report could estimate the size of this new responsibility.

For enforcement officials, hazardous waste transportation presents a difficulty that other hazardous materials do not, a difficulty that may require far more effort on their part to monitor. That is, nonwaste hazardous materials have an inherent value to those involved in their transportation and there is considerable inherent incentive to handle these materials in such a way that they arrive at the intended destination and in proper condition. This acts, to some degree, as an inducement to "voluntary compliance" with the hazardous materials transportation regulations, insofar as the regulations are directed to the same end. Hazardous waste, on the other hand, is a material which by definition has little or no inherent value. None of the parties involved in its transportation really has any incentive to handle it "safely" other than the incentives created by laws and his or her sense of public responsibility. Whereas enforcement officials have relied heavily on voluntary compliance by industry with the general hazardous materials transportation rules, the degree of such voluntary compliance with the hazardous waste rules is likely to be far less, and enforcement efforts will have to be

19/ This requirement is similar to the requirement that the DOT is authorized to impose on persons and businesses involved in hazardous materials transportation, although the information required by the EPA is less extensive than the registration statement outlined in the Hazardous Materials Transportation Act. The EPA's difficulties in successfully implementing this requirement may be similar to those the DOT might encounter if it implemented its registration authority.

20/ GAO, *op. cit.* (1980), p. 14.

21/ "HMIR," August 22, 1980.

22/ *Ibid.*

23/ 45 F.R. 33150 and 34560, May 19, 1980.

24/ The EPA will "bring enforcement action" against transporters when the transportation is ancillary to treatment, storage, or disposal, but the discovery of violations is likely to be accomplished by BMCS or State officials. Memorandum of Understanding Between the EPA and the DOT, 45 F.R. 51645, August 4, 1980.

commensurately greater if the public is to be protected. ^{25/} Indeed, the very nature of the enforcement programs will probably have to be different from the hazardous materials enforcement programs, involving much more active "detective work" to locate illegal dumping operations and trace their participants.

Finally, a word should be said about deregulation. Under the Motor Carrier Act of 1980, ^{26/} provisions have been made to substantially reduce the degree of Federal economic regulatory control over the trucking industry. In the discussions that preceded passage of the Act, concern was expressed about the possible effects of economic deregulation on truck safety (including hazardous materials trucks). Although the DOT assured Congress that "regulatory reform will not pose a safety problem," ^{27/} some of the BMCS officials interviewed for this report seemed less certain of it. The basis for the DOT's official assurances is unclear, since the study relied on by the DOT had concluded that it is not possible to determine from currently available data "whether the lack of a systematic relationship [between economic regulation and safety] occurs because economic regulation has no actual bearing on motor carrier safety, or because methodological defects in the data collection and preparation process obscure the relationship that exists." ^{28/}

In an attempt to prevent degradation of truck safety as a result of deregulation, the Act requires certain motor carriers to demonstrate "minimum levels of financial responsibility" to cover public liability, property damage and environmental restoration costs in the event of accidents. These requirements have not yet gone into effect and their impact on the safety of truck transportation (including hazardous materials transportation) will not be known for some time.

^{25/} See, for instance, "Gypsy Trucks Carry Poisonous Chemicals to Forests, Field," The Washington Post, April 11, 1980. The story describes the operations of a broker who provides maps, placards, and bogus shipping papers to truckdrivers who will haul hazardous wastes from industrial plants and dump them illegally in abandoned gravel pits, pastures, and other places. When the truckdriver leaves the shipping point, the placards are removed and a false manifest is substituted for that properly describing the shipment. The truckdriver later meets a contact who explains where to dump the load. The Post reports it "as common talk among truckers that the brokers represent organized crime." See also, "Toxic Wastes Challenging New Jersey" (March 25, 1980); "New Jersey Acts to Combat Toxic Wastes" (March 26, 1980); "New Jersey Chemical Firms Working to Combat Waste Disposal Problem" (March 27, 1980); and "New Jersey Tightens Rules on Transportation of Hazardous Waste" (March 28, 1980), The Journal of Commerce.

^{26/} P.L. 96-296, 94 Stat. 793, July 1, 1980.

^{27/} Secretary of Transportation Neil Goldschmidt to Howard W. Cannon, Chairman, Senate Committee on Commerce, Science and Transportation, April 14, 1980 (emphasis in original).

^{28/} Raven Systems & Research, Inc., "Review of Studies of the Relationship Between Motor Carrier Economic Regulation and Highway Safety" (DOT-OS-90048), prepared for the DOT, March 1980.

DOT Authority

The Hazardous Materials Transportation Act of 1974 29/ is the primary source of the DOT's current authority to regulate the transportation of hazardous materials in commerce. Its purpose was "to improve the regulatory and enforcement authority of the Secretary of Transportation to protect the Nation adequately against the risks to life and property which are inherent in the transportation of hazardous materials in commerce." It replaced several older laws, consolidating the Secretary's powers under them and extending his or her authority in several important ways.

Under the Act, regulations promulgated by the Secretary "may govern any aspect of the transportation of hazardous materials which the Secretary deems necessary. . ." Specifically, the Act authorizes the Secretary to:

- o Establish and revise "criteria for handling" hazardous materials
- o Require hazardous materials carriers, shippers, and "package" and "container" manufacturers to submit biannual "registration statements" 30/
- o Issue exemptions to the requirements of the Act and of the DOT regulations issued under it
- o Inspect "records and properties" relating to hazardous materials packages and containers or the transportation "by any person" of hazardous materials in commerce.

The Act provides civil penalties of up to \$10,000 per violation per day of violation for "knowing" violation of the Act or the DOT's regulations; and criminal penalties of up to \$25,000, 5 years imprisonment, or both, for "willful" violations. 31/

The Act required the Secretary to establish "facilities and technical staff" able to evaluate the "risks connected with the transportation of hazardous materials and materials alleged to be hazardous;" set up a central reporting system and data center for the facilitation of response to hazardous materials emergencies; and "conduct a continuing review of all aspects of the transportation of hazardous materials" so that he would be able to "recommend appropriate steps to assure the safe transportation of hazardous materials." Finally, the Secretary was directed to prepare an annual report to Congress on hazardous materials transportation, including an "evaluation of the effectiveness of enforcement activities and degree of voluntary compliance" exhibited by those involved in it.

29/ P.L. 93-633, 88 Stat. 2156, January 3, 1975.

30/ These statements would contain "such person's name; principal place of business; the location of each activity handling such hazardous materials; a complete list of all such hazardous material handled; and an averment that such person is in compliance with all applicable criteria established by the Secretary."

31/ In practice, the BMCS does not distinguish between "knowing" and "willful" violations, and rarely seeks criminal penalties.

Although the Act authorizes the Secretary to issue regulations applicable to both interstate and intrastate transportation of hazardous materials, the DOT does not currently exercise its intrastate authority. 32/

Under the combined authority of the Act and the laws that preceded it, the DOT has issued a complex body of regulations that address a wide range of activities involved in hazardous materials transportation. 33/ Many of these regulations are applicable to hazardous materials transportation in any mode of transportation such as those that designate what materials are "hazardous," the proper preparation of shipping papers, the required reporting of "incidents" or accidents involving hazardous materials, the proper marking, labeling, and placarding of shipments, specifications for containers used in several modes of transportation, and others. Others pertain to hazardous materials transportation by specific modes of transportation: the specifications for containers used in motor vehicle transportation, including tank trucks; specific rules on loading and unloading hazardous materials being carried by truck; and rules on steps to be taken in the event of an accident involving a motor vehicle carrying hazardous materials.

In regard to the carriage of hazardous materials by truck, the Motor Carrier Act of 1935 34/ provides a second source of authority to the DOT. This law authorized the Interstate Commerce Commission (ICC) to establish and enforce safety standards for motor carrier operations. In 1966 the Act creating the DOT transferred the ICC's responsibility for motor carrier safety and ICC's corresponding personnel to the new Department. The DOT assigned this responsibility to the BMCS within the Federal Highway Administration (FHWA) in April 1967.

Under the authority of this Act, the DOT has issued the FMCSR's which govern the safe operation of all interstate truck carriage. 35/ The rules address drivers' qualifications and their hours of service; general and specific items of truck equipment and their proper inspection, repair, and maintenance; the reporting of certain accidents; and special rules on driving and parking trucks carrying 1,000 or more pounds of hazardous materials.

32/ In practice, the DOT considers that a motor carrier is engaged in interstate commerce if, "in fact, any shipment aboard the particular vehicle originates from outside the State or is consigned to a destination outside the State; he is engaged in interstate. . . commerce at all times if his vehicles cross a State line with any significant frequency. . . . If the carrier is considered to be engaged in interstate. . . commerce, then all hazardous materials aboard his vehicles at all times are considered regulated by the DOT, even though some of those particular articles may only be moving in intrastate operations or that particular segment of transportation is only within a single State." Source: Lawrence Bierlein, "The Red Book on Transportation of Hazardous Materials," p. 138.

33/ 49 CFR 100-179.

34/ 49 U.S.C. 301, et seq.

35/ 49 CFR 390-397.

The following penalties apply to "knowing and willful" violations of these regulations by for-hire or private carriers: 36/

- o For violation of recordkeeping or reporting requirements by a for-hire interstate carrier, a civil fine of \$500 per offense may be assessed by the BMCS, and \$250 per day for each day of continuing violation;
- o For all other types of violation by a for-hire interstate carrier, and all types of violation by a private interstate carrier, a criminal fine of not less than \$100 nor more than \$500 for the first offense and for each day of continuing violation may be sought by a U.S. Attorney; for the second offense, and for each day of continuing violation, the minimum fine is \$200. 37/

In addition, the BMCS has several other methods of encouraging carriers' compliance with the hazardous materials and motor carrier safety regulations through its involvement in ICC proceedings. For example, the BMCS is asked by the ICC to determine the "safety rating" of carriers who apply for authority to operate; these ratings may determine whether or not the carrier is granted operating authority or may result in certain limitations being placed by the ICC on the operating authority granted to the carrier. If a carrier is subject to a Compliance Order imposed by the BMCS as part of an enforcement case, and the BMCS finds that the carrier has violated that Order, the BMCS may ask the ICC to suspend or revoke the carrier's operating authority.

Importantly, in 1978 the FMCSR's were incorporated by reference in the Federal Hazardous Materials Regulations. 38/ In effect, this means that a violation of the FMCSR's in connection with the transportation of hazardous materials subjects the offender to the Federal Hazardous Materials Regulations sanctions in addition to, or instead of, the FMCSR sanctions.

36/ "For-hire carriers are trucking firms which transport freight owned by another party. There are two distinct types of for-hire carriers--common carriers and contract carriers. Common carriers provide transportation services to the public in general. Contract carriers are in business to meet the needs of individual customers. With certain exceptions, common and contract carriers must have their specific services authorized by the Interstate Commerce Commission. Authorized for-hire carriers are also known as regulated or certificated carriers. . . . Private carriers are defined as manufacturers, wholesalers, retailers and others who use their own vehicles or leased vehicles to transport their own goods." Source: DOT, Federal Highway Administration, Bureau of Motor Carrier Safety, "1976-1978 Analysis of Motor Carrier Accidents Involving Vehicle Defects or Mechanical Failure," (November 1979), p. x.

37/ It is worth noting that violations of the Interstate Motor Carrier Noise Emission Standards (49 CFR 325), which the BMCS also enforces, may subject first offenders to fines of \$25,000 per day, imprisonment for 1 year, or both, and \$50,000 per day, 2 years imprisonment, or both, for subsequent offenses. (Noise Control Act of 1972, 49 U.S.C. 4910.)

38/ 49 CFR 177.804; 43 F.R. 4859, February 6, 1978.

Materials Transportation Bureau

Although the MTB of the DOT's Research and Special Programs Administration (RSPA) has no direct responsibility for enforcing the motor vehicle-related Federal Hazardous Materials Regulations, ^{39/} it was intended to play a considerable role as coordinator of all the modal administrations' hazardous materials activities, including enforcement. One of the major purposes of the Hazardous Materials Transportation Act of 1974 was to permit the Secretary of Transportation "to draw together the previously fragmented regulatory and enforcement powers over the movement of hazardous materials in commerce into one consolidated and coordinated effort." ^{40/} In 1977 the Secretary delegated this responsibility to the RSPA and the MTB, "with the MTB. . . serving as coordinator [of the modal administrations' activities] and the lead agency for promulgation of [hazardous materials] regulations." ^{41/}

The MTB issues all hazardous materials regulations promulgated by the DOT; however, regulations pertaining to one mode of transportation (such as motor vehicles) are usually developed by the appropriate DOT modal administration (such as the FHWA's BMCS).

In its role as overall coordinator of DOT hazardous materials programs, the MTB has been largely responsible for the collection and analysis of hazardous materials data. For example, hazardous materials "incident reports" are collected and analyzed by the MTB. The MTB also is developing the new DOT-wide Hazardous Materials Information System which will, in part, collate data collected by all the DOT modal administrations to help plan hazardous materials research, regulations, and enforcement activities by the MTB and the DOT modal administrations.

The full scope of the MTB's authority and responsibilities as overall DOT coordinator of hazardous materials programs has never been clearly defined. This report will discuss some of the efforts made by the MTB to carry out this task and evaluate its success so far.

The MTB is staffed by 85 professionals. Figure 1 shows the MTB organizational structure within the RSPA.

Bureau of Motor Carrier Safety

Primary responsibility for enforcement of the motor vehicle-related Federal Hazardous Materials Regulations rests with the BMCS. In general, this includes monitoring motor vehicle carriers and shippers for compliance with the Federal Hazardous Materials Regulations, and inspecting manufacturers, reconditioners,

^{39/} The MTB has direct responsibility for enforcing the Federal Hazardous Materials Regulations pertaining to multimodal shippers of hazardous materials, and for inspecting and enforcing against certain container manufacturers, reconditioners, repairers, rebuilders, and sellers, but not including containers used in bulk highway transportation. 49 CFR 1.48(v).

^{40/} DOT, "Sixth Annual Report of the Secretary of Transportation on Hazardous Materials Control" (1975), p. iii.

^{41/} DOT, "Task Force Report," op. cit., p. 72 (emphasis added).

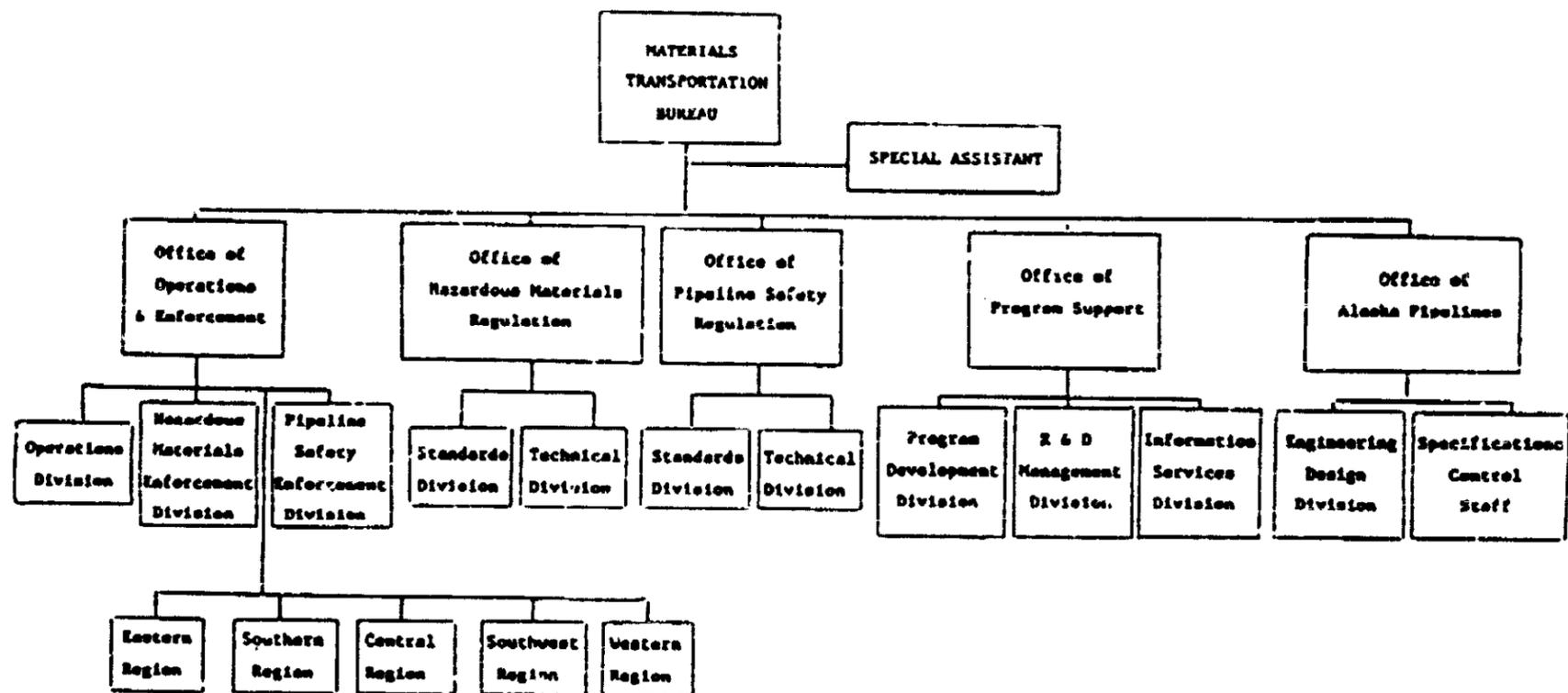


Figure 1.—Materials Transportation Bureau organization chart.

repairers, and retesters of containers used in the bulk transportation of hazardous materials by highway. The BMCS also conducts enforcement cases initiated against any of these entities.

The BMCS, like the other offices within the FHWA, carries out its activities through its Washington, D.C., headquarters and a field organization. In headquarters, the BMCS is headed by a director and deputy director, who report to the FHWA Associate Administrator for Safety. The Operations and Regulations Divisions are the two main divisions of the headquarters office. Under the Operations Division, the Field Programs Branch is responsible for general direction of the field programs, and the Compliance and Analysis Branch is responsible for data management and analysis. The Development Branch, the Hazardous Materials Branch, and the Evaluation and Analysis Branch are under the Regulations Division. Fifty-three professionals work in the headquarters office. Figure 2 depicts the BMCS organizational structure within the FHWA.

There are 187 BMCS personnel working in the field, managed by nine BMCS Regional Directors, one in each of the FHWA regional offices. (Table 1 shows the location of the FHWA regional offices and the States in each region.) The BMCS Regional Directors report to the FHWA Regional Administrators. Each director is assisted by a hazardous materials specialist and an accident investigation specialist. Under the FHWA Regional Administrator, these three persons provide the administrative guidance for the BMCS field personnel working in the several States within each region (also under the general guidance of the headquarters BMCS Field Programs Branch). The specialists are responsible for directing field activities in their areas of expertise. However, it is not uncommon for the specialists to spend a significant portion of their time working in the field, as well as administering the region's truck accident investigation and hazardous materials programs. They provide in-service training to other BMCS field personnel and, occasionally, for State personnel within their region.

The remainder of the BMCS field staff are distributed throughout the nine regions. Generally, there is at least one BMCS safety investigator in each State; administration is provided by officers-in-charge (OIC), who are investigators designated by the regional directors to administer BMCS activities within their State. The OICs' administrative responsibilities include assigning workloads to the other investigators and maintaining records. Figure 3 shows the BMCS field structure.

It is important to understand the relationship between BMCS headquarters and its field staff. The organizational link between BMCS headquarters officials and the field staff is indirect. The headquarters BMCS Director officially communicates with the field through the FHWA Associate Administrator for Safety (in headquarters), who in turn communicates with the nine FHWA Regional Administrators. The regional administrators, however, enjoy a high degree of autonomy in administering FHWA (and therefore BMCS) activities in their regions; they may delegate more or less authority to their BMCS Regional Directors. Most of the FHWA Regional Administrators do not involve themselves heavily in BMCS activities, giving BMCS headquarters considerable influence (via the FHWA Associate Administrator for Safety) over field work. Some regional administrators, however, exercise a higher level of supervision over BMCS activities and oversee field program administration rather closely.

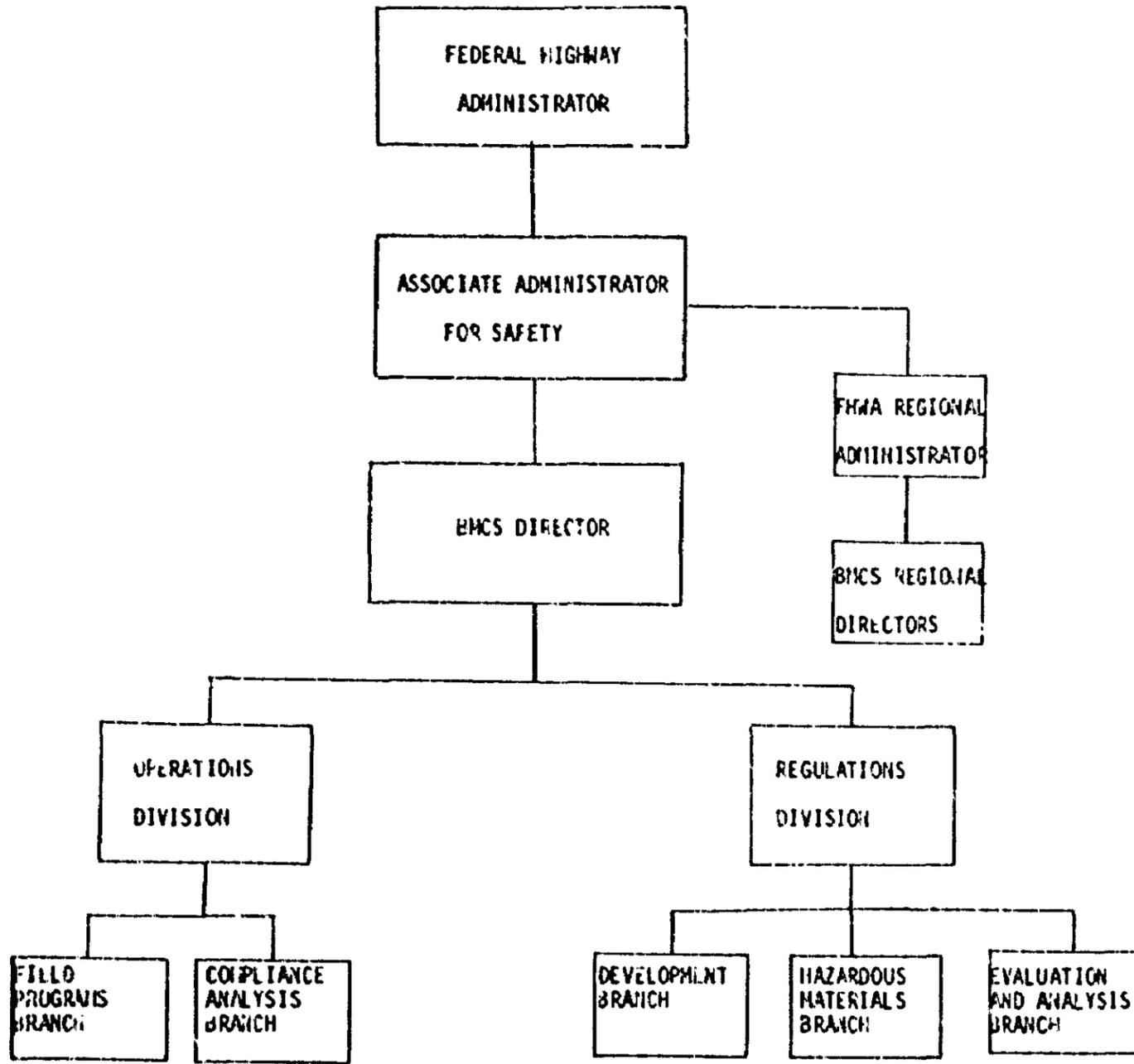


Figure 2.—Bureau of Motor Carrier Safety organizational chart.

Table 1.—FHWA/BMCS Regions

Region 1	Headquarters: Albany, New York States: Maine, Vermont, New Hampshire, New York, Massachusetts, Connecticut, Rhode Island, New Jersey, Puerto Rico
Region 3 <u>1/</u>	Headquarters: Baltimore, Maryland States: Pennsylvania, Maryland, Delaware, West Virginia, Washington, D.C.
Region 4	Headquarters: Atlanta, Georgia States: Kentucky, Tennessee, North Carolina, South Carolina, Mississippi, Alabama, Georgia, Florida
Region 5	Headquarters: Homewood, Illinois States: Minnesota, Wisconsin, Michigan, Illinois, Indiana, Ohio
Region 6	Headquarters: Fort Worth, Texas States: New Mexico, Oklahoma, Arkansas, Texas, Louisiana
Region 7	Headquarters: Kansas City, Missouri States: Kansas, Iowa, Nebraska, Missouri
Region 8	Headquarters: Denver, Colorado States: Montana, North Dakota, South Dakota, Wyoming, Utah, Colorado
Region 9	Headquarters: San Francisco, California States: Nevada, California, Arizona, Hawaii, Trust Territories
Region 10	Headquarters: Portland, Oregon States: Washington, Oregon, Idaho, Alaska

* There is no Region 2.

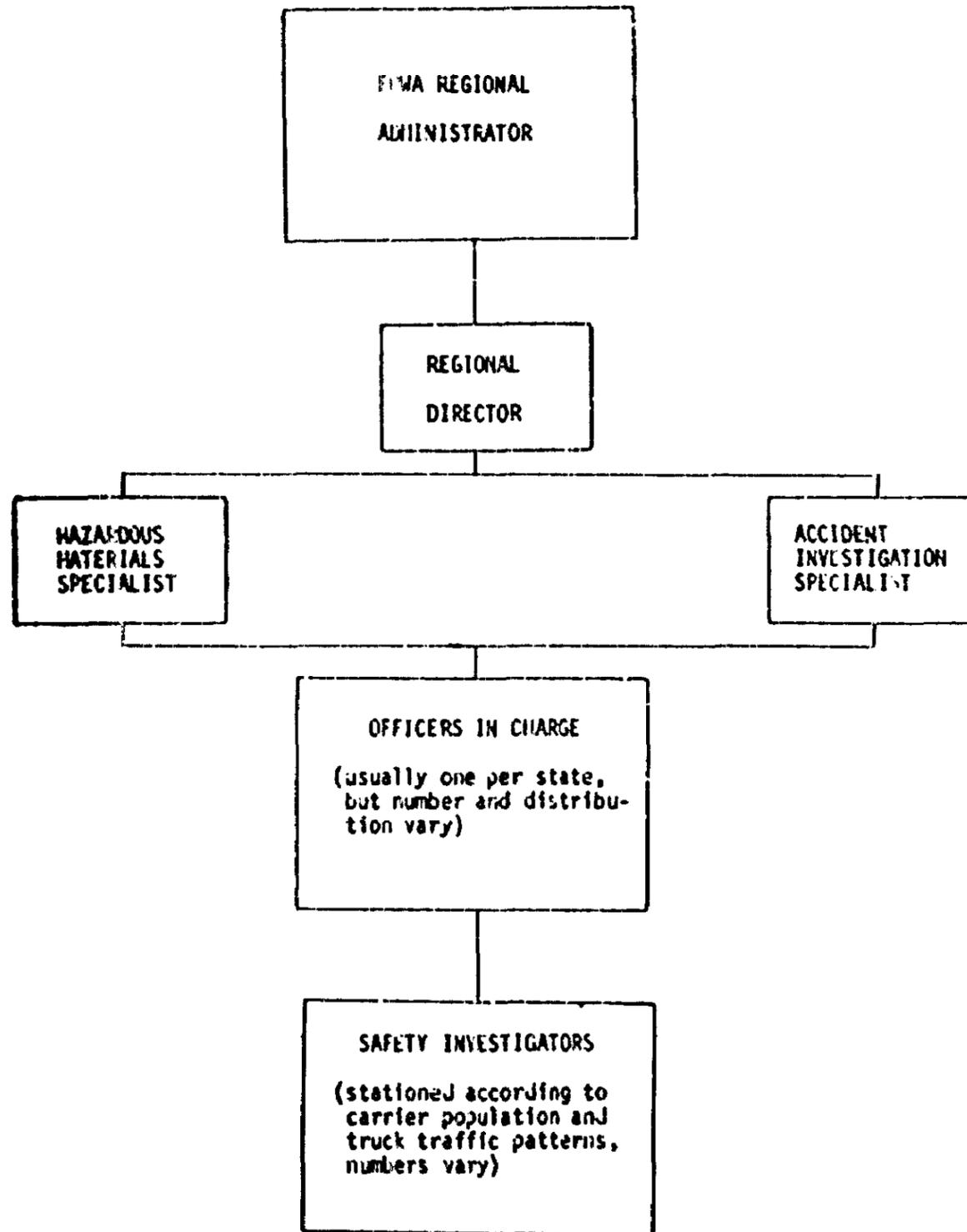


Figure 3.--Bureau of Motor Carrier Safety regional personnel chart.

MTB HAZARDOUS MATERIALS PROGRAM COORDINATION

As described earlier, the MTB does not have direct enforcement responsibilities in the area of bulk transportation of hazardous materials by truck. Although the MTB does have enforcement responsibility over "container" manufacturers, the manufacturers of the containers used in bulk truck carriage--tank trucks--are the responsibility of the BMCS. 42/

It is intended, however, that the MTB act to fulfill one of the primary goals of the Hazardous Materials Transportation Act, namely, the pulling together of the DOT's hitherto fragmented hazardous materials programs into a coordinated, carefully planned effort among all the DOT agencies. A DOT report in 1978 noted:

Because hazardous material transportation programs are an integral part of each mode's safety programs and are not centralized within the Department, greater reliance on coordination and cooperation among organizational units is required. Program oversight, including policy recommendations, resource allocations, and coordinated problem-solving, is needed for the Department to provide effective leadership in the administration of our hazardous material transportation program. 43/

The report went on to say that the RSPA (i.e., MTB) "should exert a more vigorous leadership role in planning the development of the hazardous material program within the Department." 44/

SAFETY BOARD ANALYSIS

On the basis of the Safety Board's review of the MTB's relationship with the BMCS, it appears that the MTB has little if any influence on the BMCS's enforcement program planning and implementation. The MTB Director told Safety Board staff that the MTB has some input into the BMCS enforcement program planning but that it is mainly through such processes as budget preparation or, informally, through monthly enforcement meetings. He noted that the MTB does not, as a matter of course, see the modal administrations' overall program plans for enforcement. He noted that enforcement activities are connected "at the attorney level"--the top enforcement personnel of the modal administrations and the MTB meet monthly, he said, to discuss "compliance problems" and administrative matters. He said that the MTB does not see its role in enforcement coordination as one of "telling the modes what to do." Rather, he said, it is one of "keeping the modes aware of emerging high-level interests or problems" (such as radioactive materials transportation).

The chief of the MTB's Hazardous Materials Enforcement Division said that, while communication among the modes is better than it was in earlier years, communication and cooperation still occur in an "unstructured" manner. Even in the area of data sharing, the MTB has not developed a system for coordination of

42/ 49 CFR 1.48(v). The BMCS apparently has not performed any inspection or enforcement activities in this area. The MTB, on the other hand, carried out two inspections of cargo tank manufacturers or retesters in 1980.

43/ DOT, "Task Force Report," op. cit., p. x.

44/ ibid., p. 73.

information among the modes. For example, data on faulty containers which are gathered by the DOT modal administrations through their enforcement activities are not automatically sent to the MTB. He said that, while the MTB is "likely to hear of it," there is no automatic procedure for reporting such data and sharing the information among all the enforcement personnel. As discussed further below, no one in the DOT, including the MTB, has devised a common identification system for hazardous materials shippers, so that enforcement personnel in each of the modal administrations can readily review other modes' enforcement experience with a given shipper.

In its review of the DOT hazardous materials program, the DOT Hazardous Materials Transportation Task Force concluded that the DOT-wide hazardous materials program coordination contemplated in the Hazardous Materials Transportation Act had not been accomplished. The task force recommended that a Standing Committee on Hazardous Materials should be formed, headed by the RSPA Administrator and including the administrators of the modal agencies and representatives of the Office of the Secretary. The committee was to "provide a Departmental focal point for execution of all hazardous materials programs," and "would serve as the Secretary's principal source of advice on all aspects of hazardous materials including policies, legislation, problems, and resource allocation." 45/ The committee "should have oversight responsibility for all hazardous material programs within the Department and ensure that the various operating modes are cooperating and coordinating where necessary." 46/ The "continuing purpose of the Standing Committee would be to provide a focal point at the senior management level for review of hazardous materials programs." 47/ The task force stressed that "care should be taken to prevent the Standing Committee from becoming a committee which discusses, but has no power to act, and gradually ceases to meet altogether." 48/

The committee met a few times after the Secretary ordered its establishment in September 1978. The most recent meeting that MTB officials could remember was held in December 1979. According to the meeting notes made available to the Safety Board, the committee's attention had been devoted to implementation of the DOT Hazardous Materials Transportation Task Force Report recommendations; as of the time when it apparently ceased to meet, the committee had not dealt with the larger questions of overall DOT coordination of all its hazardous enforcement activities. The director of the MTB's Office of Hazardous Materials Regulations said that by the December 1979 meeting, the "senior management level" was no longer attending committee meetings; they were represented by staff "several levels down."

The MTB's Hazardous Materials Enforcement Division has been making an effort to develop "cooperative agreements" among the DOT enforcement agencies, including the BMCS. A division report issued in July 1980 described early meetings among the DOT modal administrations for this purpose:

45/ Ibid., p. xi.

46/ Ibid., p. 75.

47/ Ibid., p. 74.

48/ Ibid., pp. 74-75.

In initial meetings it became apparent that the Administrations involved carry out various types of work activities on all or part of the types of entities which are assigned to them by the Secretary's delegation of responsibility under the Hazardous Materials Transportation Act of 1974. Particularly, shipper activities are covered by some modal elements and not by others. It also became apparent that a large problem was one of information sharing. The group agreed that this was a problem which could not be solved merely by the signing of an "agreement." It was agreed that a cooperative agreement defining the roles of each "player" and a procedure to coordinate with each other in enforcement matters would be beneficial. The Chief (of the MTB's Hazardous Materials Enforcement Division) will draft an initial agreement and hold additional meetings. 49/

The chief of the Hazardous Materials Enforcement Division, interviewed on November 3, 1980, said that development of the cooperative agreements had not yet been completed.

At least insofar as the hazardous materials-related activities of the BMCS are concerned, it seems clear that the MTB has not succeeded in fulfilling its role as overall DOT coordinator of hazardous materials programs. The MTB has little influence over the BMCS's enforcement program planning and implementation, allocation of resources, or program evaluation. This fact implies also that the DOT has not yet united its fragmented hazardous materials enforcement efforts into a consolidated, coherent program. Although truck transportation accounts for about 30 percent of all hazardous materials transportation, truck "incidents" account for 90 percent of all hazardous materials transportation incidents, including 64 percent of the reported injuries and 80 percent of the reported fatalities. The MTB's lack of influence over the BMCS's program means a large part of the DOT's program is not coordinated with the other parts of the DOT's overall program. The measure recommended by the DOT's own task force to remedy this problem--the Standing Committee on Hazardous Materials--seems also to have failed so far in its overriding purpose of overseeing the entire DOT hazardous materials program and ensuring modal coordination and cooperation.

There are two fundamental problems which may largely account for these failures. First, there are serious deficiencies in the DOT's data concerning the basic facts about hazardous materials transportation--deficiencies acknowledged by the DOT. Until the DOT decides what data it needs in order to plan, implement, and evaluate its hazardous materials programs and develops systems for collecting and analyzing these data, it will not have a coherent program, well-coordinated among the MTB and the modal administrations. The MTB is working to put together such a data program (the Hazardous Materials Information System), and one of its goals, according to the RSPA Administrator, is "the creation of a capability within the Department for measuring the effectiveness of its inspection and enforcement programs, and thus the level of compliance in the regulated

49/ DOT, Research and Special Programs Administration, Materials Transportation Bureau, Hazardous Materials Enforcement Division, "Inspection and Enforcement Activities Report," July 1980.

community." 50/ However, this data system's completion is still some years away; it seems unlikely that, in the meantime, the DOT's program for enforcing the motor vehicle-related Federal Hazardous Materials Regulations will be a coordinated part of the overall DOT hazardous materials program.

The second fact that probably prevents the MTB from truly coordinating the modal administrations' hazardous materials programs is that the modes have substantial autonomy within the DOT and it is unlikely that a relatively small line agency such as the MTB can effectively exert any real influence over them. The FHWA, for instance, is a long-established, large agency with considerable power within the DOT. The RSPA, of which the MTB is only a part, is a small, new DOT agency with fragmented responsibilities. Unless there is continued clear, strong direction from the Secretary that the MTB is to be responsible for coordinating all of the modes' hazardous materials programs to ensure that the overall DOT effort is properly directed, the MTB will not have the influence to attempt anything more than very general liaison with each of the modes' enforcement programs.

BMCS ENFORCEMENT OF HAZARDOUS MATERIALS REGULATIONS

The BMCS carries out its enforcement responsibilities through monitoring compliance by carriers and hazardous materials shippers and through assessing fines against violators. 51/ Its work in accident investigation, data collection and analysis, and industry education supports these efforts. The field staff performs all motor carrier safety and hazardous materials enforcement work, including the handling of motor carrier safety enforcement cases; hazardous materials enforcement cases are handled by the FHWA headquarters' Office of the Chief Counsel, Motor Carrier and Highway Safety Law Division. It should be noted again that hazardous materials inspection and enforcement activities are not carried out separately from the inspections and other activities associated with enforcement of the FMCSR's.

Safety Management Audits

Monitoring of carrier and shipper compliance with the regulations and the development of evidence for enforcement cases are accomplished through Safety Management Audits of carriers and shippers and on-the-road inspections of trucks and drivers. The audits involve a comprehensive management review of a carrier's or shipper's safety procedures. BMCS investigators usually perform this review at the carrier's or shipper's principal place of business, auditing records and discussing safety procedures with responsible company officials. According to the

50/ Howard J. Dugoff to the Chairman of the National Transportation Safety Board, May 13, 1980.

51/ The BMCS also is responsible for inspection of companies who manufacture, recondition, or test containers used to transport hazardous materials in bulk by highway and any resultant enforcement activity. However, the BMCS could not supply the Safety Board with figures on BMCS activity in this area; the Chief of the Compliance Analysis Branch indicated that the BMCS has not been performing these inspections. MTB records indicate that the MTB inspected one cargo tank manufacturer and one cargo tank retester in 1980.

DOT's Transportation Safety Institute 52/ training text for performing carrier and shipper audits, "the Safety Management Audit is the primary tool used in policing motor carriers and shippers for compliance with the Federal Motor Carrier Safety and Hazardous Materials Regulations." 53/

Carrier and shipper audits are conducted only at companies domiciled in the region conducting the survey, at least partly because company records for all terminals are maintained at the domicile address. 54/

Selection of domiciled carriers and shippers to be audited is based on a number of factors, some analytical and some practical, according to regional personnel interviewed by the Safety Board. These factors include:

- o suspected noncompliance with regulations, as evidenced by on-the-road inspections, information received from another region, or information gathered during an investigation;
- o little or no previous contact with the carrier or shipper (e.g., a newly-identified company or a company which has not been surveyed for a number of years);
- o carrier application to the ICC for operating authority;
- o carrier correspondence to BMCS enforcement emphasis areas;
- o convenience of physical location of the carrier or shipper facility. 55/

When a facility has been selected for audit, the BMCS investigator first reviews the carrier's or shipper's BMCS file (this is typically a manually stored file maintained by the investigator, although more use is now being made of automated files; see discussion of the Management Information System on page 35). This provides the investigators with information concerning the company's recorded compliance history, specific safety or compliance problems, and prior actions by the BMCS (and possibly State or local agencies) with regard to the company. When the file has been reviewed, the investigator travels to the terminal and begins the audit.

To begin the audit, the investigator conducts an opening interview with a responsible company official, during which the audit's purpose and procedures are explained. Following this opening interview, procedures for carrier and shipper audits differ slightly.

52/ The Transportation Safety Institute in Oklahoma is the DOT's training center. All BMCS investigators receive their formal training there.

53/ DOT Transportation Safety Institute, "Motor Carrier Safety Training Text," Volume 2, "Compliance," Chapter 7, "Safety Management Audits," p. 1.

54/ For this reason, a violation pattern discovered in a region other than the one in which the carrier is domiciled is to be reported to the region in which the carrier is domiciled.

55/ Regional personnel say that this procedure saves travel funds and cuts down on time spent in travel.

Carrier Audits. When a carrier is being audited, the investigator inquires into the carrier's driver selection, qualification, training, and evaluation procedures, by interviewing a company representative responsible for driver oversight. Carrier control procedures for monitoring drivers' compliance with hours-of-service regulations are discussed, and carrier records covering drivers are examined for at least the 3 months prior to the date of the audit.

Vehicle maintenance procedures are discussed with a company representative, and at least 3 months of vehicle records are examined. The carrier's accident reporting procedures and accident recordkeeping procedures are audited as well.

Trucks at the terminal are also inspected. These inspections are referred back to carrier maintenance records to determine whether the carrier is detecting and repairing faulty equipment. The investigator attempts to inspect at least one of each type of truck which the carrier operates.^{56/} For example, if the carrier being audited specializes in the bulk transportation of hazardous liquids, the investigator will attempt to inspect trucks incorporating at least one of every different kind of DOT-specification tank truck in the carrier's fleet.

In addition to the regular audit procedures employed for any carrier, the investigator uses the following procedures when auditing a hazardous materials carrier:

- o examination of shipping papers
- o examination of records covering unintentional releases of hazardous materials ("incident reports")
- o examination of accident records
- o examination of manufacturers' certificates and retest data for truck cargo tanks used to transport hazardous materials
- o checking the loading dock and observing hazardous materials handling procedures, placarding procedures, and dockworkers' familiarity with the Federal Hazardous Materials Regulations.

When the audit has been concluded, the investigator's findings are discussed with carrier management officials. The investigator explains the findings, and makes recommendations for improving the safety and compliance procedures. One copy of the audit report (BMCS form MCS-32; see appendix C) is left with the carrier, one is sent to the headquarters Compliance Analysis Branch for entry into the BMCS Management Information System, and one is retained in the region's manual files. In 1980, the BMCS audited 1,642 hazardous materials carriers out of a total population known to the BMCS of about 12,000.

^{56/} This inspection is not identical to BMCS on-the-road truck inspections. The purpose of this inspection is to relate a carrier's stated maintenance practices with the condition of the trucks in the terminal. Data concerning terminal truck inspections are not reported on the truck inspection form, but on the audit form.

Shipper Audits. Shipper audits begin with an introductory interview with the highest company management official available. 57/ The purposes and procedures of the audit are explained, and the official is told that the results of the audit and recommendations for improvements will be discussed with him or her.

After the introductory interview, the shipper's procedures for classifying, packaging, marking, labeling, and describing (i.e., preparing shipping papers) shipments are investigated. Procedures for supplying appropriate vehicle placards to carriers are determined.

The investigator checks outgoing shipments and notes any violations. For example, Region 10 investigators discovered a shipper who was using non-DOT specification containers to ship hazardous materials; further, the containers had one DOT specification number stamped on them and another handwritten on them. When such violations are discovered, the investigator works backwards through the shipper's procedures with company representatives to determine the point at which the error occurred, and explains the error to the company representatives. In the case of Region 10's noncomplying shipper, it was discovered that the container manufacturer had assured the shipper that the containers were appropriate and that a manufacturing error resulted in the wrong specification number being stamped on them. Region 10 began an investigation of the container manufacturer as a result of this audit.

In the final step of the audit, a list of carriers used by the shippers is obtained. This list is useful in identifying carriers previously unknown to the BMCS, identifying carriers accepting shipments in violation of the regulations (if the shipper has been violating regulations), and in determining potential reshippers of hazardous materials (i.e., the consignees of the shipments being carried).

The results of the audit are discussed with the shipper management representative and a copy of the audit form is left with the company. Distribution of other copies is identical to distribution of carrier audit forms. Recommendations for improving shipper safety practices are made at this time. In 1980, the BMCS conducted 1,410 audits of hazardous materials shippers (out of a total population known to the BMCS of about 12,000).

On-the-Road Truck Inspections

BMCS roadside inspections are used to identify vehicle defects and driver conditions "which could cause accidents and to remove vehicles and drivers from the highway that are deemed imminently hazardous." 58/ Because the BMCS has the authority to inspect trucks but not to stop them, the investigators work with State officials who can stop the trucks--sometimes inspectors from State agencies

57/ The BMCS authority to inspect shippers extends only to hazardous materials shippers; all shipper audits deal exclusively with hazardous materials cargoes.

58/ DOT, Federal Highway Administration, Bureau of Motor Carrier Safety, "Roadside Vehicle Inspections," Berwick, Pennsylvania, May 21-23, 1979, p. 2.

responsible for truck safety enforcement 59/ and sometimes with State Police who pull trucks over but do not inspect them. They may be conducted by one BMCS investigator in company with State officials or on a larger scale, with several Federal personnel concentrated in one or more locations.

Most BMCS inspections are "probable cause" inspections; that is, an informal screening process is used to choose those trucks for inspection which the investigator thinks are likely to be in violation of the FMCSR's and/or Federal Hazardous Materials Regulations. Investigators look for defects as trucks pull into the inspection site and listen for indications of defects (such as air escaping from leaking brake hoses). Other trucks may be pulled over because the investigator knows the carrier by reputation or through prior experience and has a particular interest in the carrier. If defects are noted during the preliminary "audio-visual" check, a truck is given the "full" BMCS inspection. Trucks which appear to be defect-free during the preliminary check are allowed to resume their trips.

The "full" BMCS inspection requires examination of the truck for mechanical defects and the driver's required credentials and documents. 60/ Trucks carrying hazardous materials are examined, in addition, for proper shipping papers and placards and, possibly, for obvious hazardous materials violations such as leaking cargo or damage to the tank of a bulk carrier. A "full" inspection takes approximately 1 hour, according to the BMCS.

A steady stream of trucks may be audiovisually checked by investigators at a site; the actual number of trucks will vary depending on the site chosen for inspections and on the traffic density of the road or highway.

The criteria used by the BMCS during truck/driver inspections to determine whether a truck or driver should be put "out of service" are detailed and explicit. (See figure 4.) The out-of-service criteria include specific problems with the steering mechanism, brake systems, lighting devices and reflectors, tires, wheels and rims, exhaust systems, fuel systems, coupling devices, suspension, safe loading, engine power train, mirrors, and windshield wipers. Potential out-of-service defects range in scope from defective airbrake hoses to missing portions of windshield wiper blades, and they apply to all trucks under BMCS jurisdiction. Additionally, the following out-of-service criteria apply specifically to vehicles carrying hazardous materials:

- o loss or leakage of hazardous materials, visible on the outside of the vehicle;

61/ BMCS investigators often use these joint inspections to train State personnel in the truck inspection procedures and Federal Hazardous Materials Regulations enforcement.

60/ "All drivers are required by Federal regulation to have a valid operating license issued by the State authority, a valid medical certificate, and a current driver's daily log. The driver's log is the document to be used to record the hours the driver has been driving or on duty. . . . The driver's log requires entries showing the number of hours and the types of duty performed, the mileage traveled, and other identifying information." (DOT, "Roadside Vehicle Inspections," op. cit., pp. 3-4.)

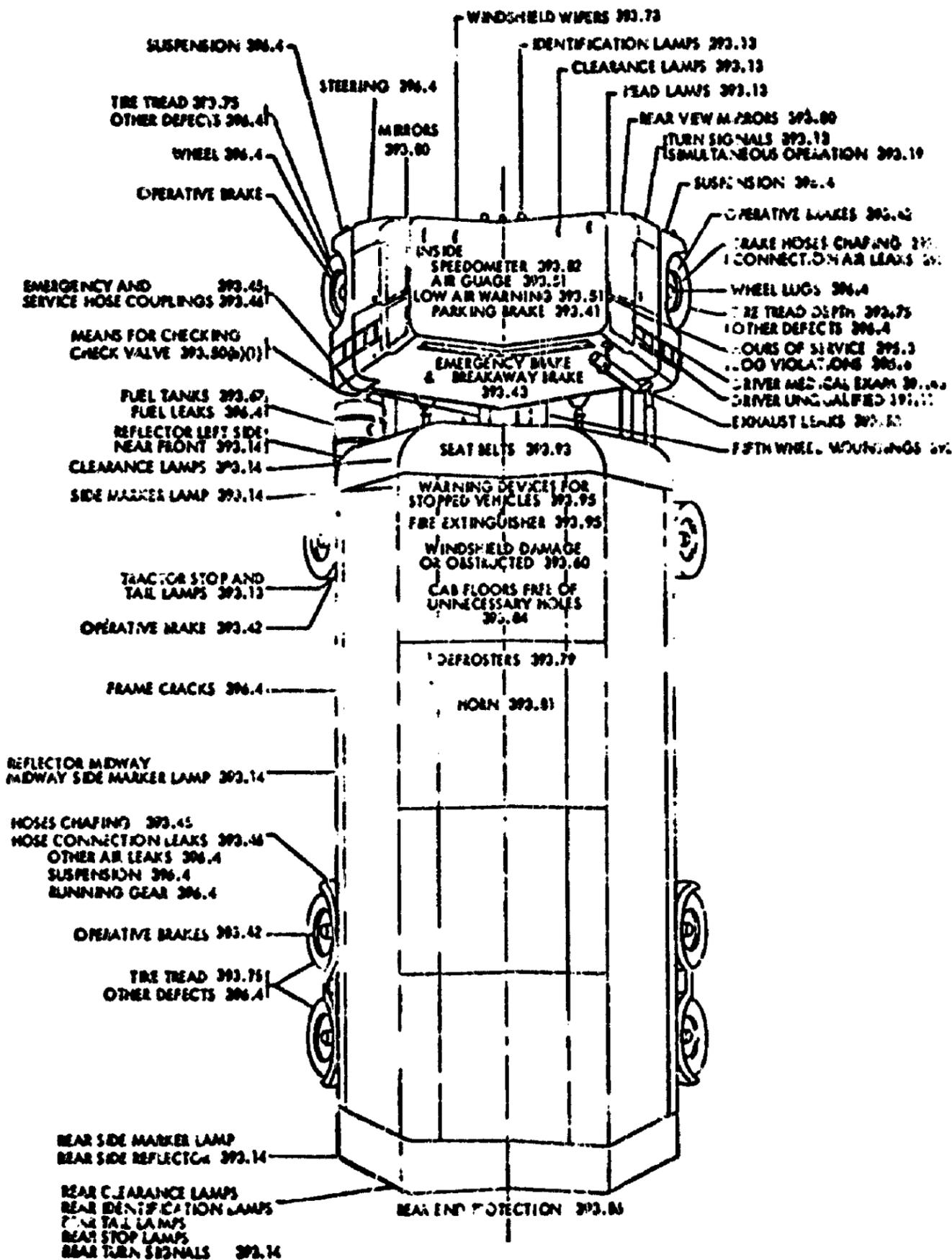


Figure 4.—Out-of-service criteria shown in figure from BMCS training manual.

- o loaded cargo tanks or portable tanks having loose dome covers or other openings not securely closed;
- o vehicles transporting hazardous materials in such quantity as to require placards and no placards are installed on sides, rear, and front;
- o vehicles transporting hazardous materials in such quantity as to require placards having bare electrical wiring or evidence of burning or short circuiting. 61/

If a driver has violated the Federal hours-of-service regulations, he or she is put out of service and is not allowed to drive until he or she has been off duty for the required number of hours.

Results of the inspections are recorded on BMCS Form MCS-63 (see appendix C). A copy of the form is put in the BMCS file on the carrier, and its contents may be used to develop a case against the carrier if a pattern of violations becomes obvious. A copy of the form is also given to the driver to pass on to the carrier management. If the inspected truck belongs to a carrier not previously known to the BMCS, the truck inspection initiates a series of activities to acquire information about the carrier (see page 30).

Approximately 30 percent of the trucks inspected each year are placed out of service, although some years the percentage is higher (in 1978, 40 percent were placed out of service), and some concentrated inspections put a larger percentage out of service (three separate concentrated inspections at Berwick, Pennsylvania, put 51 percent, 57 percent, and 58 percent of the trucks out of service).

During 1978, 27,601 vehicles were inspected by the BMCS. Service brake defects accounted for 19 percent of all the violations found; 17,293 brake defects were found, 8,128 (47 percent) serious enough to put the truck out of service.

Of 1,597 accidents reported 62/ as having resulted from mechanical defects, 41 percent were caused by defective brake systems, 27 percent by defective tires, and 5 percent each by defects in the steering system, wheels, and coupling devices. These accidents resulted in 124 fatalities, 1,305 injuries, and \$19,983,560 in property damage. The five most common mechanical defects which caused accidents (brakes, tires, steering, wheels, and coupling devices) accounted for 31 percent of the total number of defects discovered in roadside inspections, and resulted in 70 percent of the out-of-service actions. Between 1976 and 1978, the average number of defects found per truck inspected was between 3 and 3.5. Since 1975 the percentage of vehicles inspected by the BMCS and found to have imminently hazardous mechanical defects has increased approximately 3 percent each year.

61/ DOT, Federal Highway Administration, "Motor Carrier Safety State Enforcement Officer's Training Manual" (February 1980).

62/ 49 CFR 394 requires all accidents involving a death, treated injury, or more than \$2,000 of property damage to be reported to the BMCS.

It is not known what percentage of the mechanical defects and out of service citations mentioned above involved hazardous materials trucks. In FY 1980, BMCS investigators conducted 3,489 inspections of hazardous materials trucks. The most frequently cited hazardous materials violations involved shipping papers or placarding. ^{63/} In May 1979, the BMCS conducted a concentrated roadside inspection of trucks at Berwick, Pennsylvania. Twenty of the 291 trucks inspected were hazardous materials trucks; on them, four times as many shipping paper violations were cited as any other hazardous materials violation. No figures were developed by the BMCS on the types and numbers of general truck safety violations on these hazardous materials trucks.

A review of 43 selected case reports on hazardous materials carriers (FY 1980) showed 42 violations of the FMCSR's; 25 of them were driver-related (qualification of driver, hours of service, no logs, false logs); 11 of them were serious truck safety violations (inspection and maintenance, brakes, emergency equipment, tires, low air warning, steering). The same reports showed 74 violations of the Federal Hazardous Materials Regulations. Thirty-seven of the violations involved shipping papers, placarding, or labeling errors. Nineteen of the violations related to the qualification of the cargo tank or cargo tank defects.

Occasionally, the BMCS conducts random truck/driver inspections. That is, the investigators "are instructed to perform thorough inspections on vehicles in accordance with a preplanned vehicle selection procedure designed to insure that the vehicles are selected on a random basis," ^{64/} rather than the "preselection procedure" most commonly used, in which only trucks suspected of violations are inspected. The random selection inspections are done "to provide statistically valid data for use in determining Federal Motor Carrier Safety Program emphasis areas, and for statistical reports." ^{65/} According to the BMCS Director, only one or two truly random truck inspections have been performed by the BMCS. In these, the BMCS put 10 to 15 percent of the trucks out of service. Thus, the director does not consider the much higher rates of out-of-service trucks found in "probable cause" inspections to be necessarily representative of the overall fleet.

Less formal, random inspections are held occasionally for data-gathering purposes. In these, simple selection methods (such as taking every third truck) are employed rather than a rigorous sampling method. In a random inspection of this sort, a Utah investigator put 22 percent of the trucks he inspected out of service. He told the Safety Board staff that Utah's average "probable cause" inspection percentage was 35. The regional director of Region 6 noted that such "informal" random on-the-road inspections are not truly random, because hazardous material trucks and obviously unsafe trucks tend to be overrepresented in the sample. He said the investigators are often more concerned with putting unsafe vehicles out of service than they are with maintaining the purity of the random sample.

^{63/} This does not necessarily mean that shipping papers are, in fact, the most frequent hazardous materials violation on trucks. For example, since no DOT agency is inspecting companies who manufacture or retest tank trucks and certify their continued fitness for use, there is no knowledge of how many tank trucks may be defective but still certified for use. Overloading of tank trucks is not likely to be checked by BMCS investigators, as another example.

^{64/} BMCS, "Roadside Vehicle Inspections," op. cit., p. 3.

^{65/} Ibid., p. iii.

Identification of Carriers and Hazardous Materials Shippers

As noted in the introduction to this report, the BMCS maintains an official census of carriers and shippers known to be subject to the FMCSR's and Federal Hazardous Materials Regulations; the BMCS acknowledges that the census is incomplete but does not know by how much. It is the responsibility of the field staff to supply to headquarters the information on which the census is based, and to make sure that newly-identified companies are aware of the regulations. Each region has its own methods for identifying companies. Among the methods mentioned in interviews with regional BMCS personnel were: accident reports, State data, on-the-road inspections, fuel tax reports, Federal and State records of operating authority granted, bills of lading, Safety Management Audits, ad hoc regional mail surveys, review of the telephone book Yellow Pages, EPA information, "personal knowledge," and conversations with truckdrivers. Officials in Region 5 said that they concentrate their enforcement activities on the 78 largest carriers in the region and therefore do not spend much time trying to identify other carriers.

When a carrier or shipper is identified, BMCS investigators mail a survey form (MCS-32A; see appendix C) to the company, requesting basic information about the company, the types of cargo hauled or shipped, and its drivers and equipment. Even before the form is returned by the company, the investigator sends whatever information he or she has to BMCS headquarters for entry into the automated census. The automated file is then completed and/or amended when the form is received.

Preparation of Hazardous Materials Enforcement Cases

The development and documentation of evidence for enforcement cases (both general motor carrier safety and hazardous materials cases) are done by the BMCS field staff. The process of assessing, negotiating, and collecting fines for hazardous materials enforcement cases is handled by the FHWA headquarters' Office of the Assistant Chief Counsel for Motor Carrier and Highway Safety Law.

The BMCS regional offices maintain files on carriers and hazardous materials shippers domiciled within their regions. These files contain the records of audits and on-the-road truck inspections, and other contacts with carriers and shippers. State records of violations and enforcement actions may also be in the file. Study of this file is the first step in developing enforcement cases.

If the information in the file is considered sufficient to build a strong case, the investigator writes the case history and appends exhibits from the file. If he or she believes more information or further exhibits are needed, the investigator may conduct an audit of the carrier or shipper or may target a carrier's trucks for special attention during on-the-road inspections. 66/

66/ A BMCS investigator told Safety Board staff that he is building an enforcement case against a radioactive materials carrier which will be based largely on the results of on-the-road inspections, which are used as a source for strengthening enforcement cases.

When the investigator has compiled sufficient information, the case is transmitted through the BMCS Regional Director to the FHWA attorneys. All violations on hazardous materials trucks (including general truck safety violations) are violations of the Federal Hazardous Materials Regulations, which incorporate the FMCSR's by reference. Thus, all cases involving hazardous materials are handled by FHWA headquarters attorneys.

Criteria for deciding whether and how to develop an enforcement case have not been developed by the BMCS. However, the "Motor Carrier Safety Training Text" indicates some of the factors to be considered in making these decisions:

- past efforts to obtain compliance without enforcement were ineffective
- prior record of violations
- carrier knowingly and willfully violated regulations
- accident ratio
- pattern of indifference or disregard toward regulations
- previous complaints
- compliance cannot be expected without imposing a penalty.

These are, however, very general criteria and there is wide variation in investigators' interpretation of them. The DOT Inspector General found that, for example:

[A] safety investigator in Region 3 requires that a violation be "serious" and even then he will not initiate enforcement action if a carrier "agrees" to comply. A second safety investigator in Region 3 relied in part on his "experience" with the carrier and his own judgment in deciding whether or not to take enforcement action. A safety investigator in Region 5 will not proceed with an enforcement action without documenting at least 25 violations. A second safety investigator in Region 5 required at least 30 documented violations before he would proceed with an enforcement case. 67/

Generally, the regional personnel interviewed for this study indicated that if the file reveals a pattern of continued, serious violation of the hazardous materials and/or the motor carrier safety regulations (for example, a history of use of nonspecification containers for transporting hazardous materials or a history of improperly packaged hazardous materials shipments), or if investigators have other reasons to suspect that such violations are occurring, 68/ they will develop and document an enforcement case.

Similarly, the criteria for how to document a case are not uniform or clearly defined. The DOT Inspector General found that "three of the four safety investigators in Region 6 said there was an unwritten policy of making an enforcement case based on a single incident of failure to placard a hazardous materials shipment--regardless of whether the carrier had committed a prior

67/ DOT, Inspector General, *op. cit.*, p. 10.

68/ These "reasons" may include complaints from a wide range of sources, information received from other carriers or from shippers, or information received from another region.

similar violation. The other safety investigator said he did not make an enforcement case unless there was a BMCS record showing the carrier had previously failed to placard a hazardous materials shipment." 69/

The question of how many violations to document is important because the documentation process itself is time-consuming and because the amount of the fines assessed by FHWA attorneys seems to be largely determined by the number of violations cited, more than by such factors as seriousness of the violation. 70/

Hazardous Materials Sanctions Process

As described in the introduction to this report, the BMCS can assess large fines for carrier or shipper violation of the hazardous materials regulations. These fines can also be assessed for violation by a carrier of the FMCSR's if the violation occurred on a truck carrying a hazardous material.

Assessment of fines is handled by the FHWA headquarters' Office of the Chief Counsel which received 144 hazardous materials case reports from field staff in fiscal year 1980; 136 cases were concluded with penalties assessed, 18 cases were closed without prosecution, and fines totaling \$429,083 were collected.

The civil forfeiture process begins with the attorney's review of an enforcement case report developed in the field by an investigator. The attorney reviews the report for completeness, adequacy of documentation, and suitability for use in an enforcement proceeding. After review, the attorney may send the report back for clarification or further documentation, may close the case without further action, or may proceed to an assessment. Cases to be pursued are discussed with the regional director supervising the investigator who developed the case report. 71/

Once the attorney decides to proceed with a case, he or she determines the appropriate amount of the initial assessment. The Hazardous Materials Transportation Act of 1974 requires that, in making this determination, "the Secretary shall take into account the nature, circumstances, extent, and gravity of the violation committed and, with respect to the person found to have committed such violation, the degree of culpability, any history of prior offenses, ability to pay, effect on ability to continue to do business, and such other matters as justice may require." 72/ The FHWA has not developed any more specific guidance than this for determining the appropriate level of fines. The FHWA attorneys interviewed described their informal criteria for assessing fines. For example, one attorney told Safety Board staff that use of an unauthorized tank truck or carrying poisons with foodstuffs would be considered serious violations; use of an abbreviation on shipping papers if the meaning of the abbreviation were unmistakable (e.g., "FLAM LQD" for "Flammable Liquids") would probably not be

69/ DOT, Inspector General, op. cit., p. 10.

70/ Diver, op. cit., p. 78.

71/ According to an attorney who handles many of the cases, one of the reasons for calling the regional director is to obtain more information on the financial condition of the violator, in order to determine the company's ability to pay.

72/ Sec. 110(a).

considered a serious violation. This attorney said that the initial assessment is made on a case-by-case basis, using the statutory criteria as a "framework."

When the amount of the initial assessment has been decided, a letter is sent to the violator, describing the alleged violation and stating the amount of the assessment. The recipient is given three choices: reply in writing within 20 days, request a formal hearing before an administrative law judge within 40 days, or communicate with the FHWA General Counsel to discuss terms of payment or settlement of the penalty. 73/ FHWA attorneys told Safety Board staff that, on average, it takes about 20 days from their receipt of a case report until the initial assessment letter is sent to the violator. 74/

The initial assessment letter does not provide much, if any, explanation of the way in which the initial assessment was determined. A high percentage of the respondents challenge the initial assessment (89 percent of the cases reviewed by the DOT General Counsel's study); the challenges are mostly directed at the amount of the penalty rather than the assertion that they have violated the regulations. 75/

Settlement negotiations may be handled by telephone 76/ or by a meeting among company officials, BMCS officials, and FHWA attorneys. Such a meeting was described to Safety Board staff by the president of a tank truck carrier as "quite informal;" he came to the FHWA headquarters in Washington with his company's safety director, presented "his side of the story," presented information on the financial conditions of his company, and departed. Some time later he received a letter from the FHWA reducing the amount of the initial assessment, which he then paid.

A sample of FHWA hazardous materials enforcement cases reviewed for the DOT General Counsel's study showed that the FHWA reduced the initial assessment in more than 90 percent of its cases. The average reduction was 55 percent. The final assessment letters from the FHWA usually do not provide any explanation of the reasons for these reductions. 77/

Although some regional BMCS officials are dissatisfied with the FHWA's decision to retain responsibility for hazardous materials penalty assessment in its headquarters, FHWA headquarters attorneys and the FHWA Associate Administrator for Safety say that the need for consistency in case handling makes this arrangement necessary. They believe that if hazardous materials enforcement were carried out by the nine regional counsels, wide variations in the handling of these cases would develop from region to region.

73/ Diver, op. cit., p. 9.

74/ The DOT General Counsel's study found that the mean interval between violation and final assessment, however, was 343 days. Diver, op. cit., Table 8, p. 38.

75/ Ibid., pp. ii and 31.

76/ DOT, Inspector General, op. cit., p. 14.

77/ Diver, op. cit., pp. 36 and 43.

However, even under the present arrangement, the variation in penalty assessments is very high from case to case. 78/ The DOT General Counsel's study could find little explanation for this variation. The study concluded that the amount of the assessment appears to be largely determined simply by the number of violations cited. 79/

The types of hazardous materials violations most frequently cited by the BMCS against both carriers and shippers are those related to proper completion of shipping papers, marking or labeling of packages, and placarding of vehicles. A random sample of 13 shipper case reports for FY 1980 shows, for example, that 32 of the 33 violations cited were of this type; a random sample of 43 hazardous materials carrier case reports shows that 37 of the 74 hazardous materials violations cited were in this category. 80/ The DOT General Counsel's study, using a random sample of 71 hazardous materials enforcement cases by the BMCS, showed that 57 of the 95 most commonly cited violations pertained to shipping papers or marking/placarding motor vehicles. 81/ In the cases reviewed, the mean initial assessment per shipping paper violation was \$3,675, the mean final assessment was \$1,289 (the maximum allowable fine per violation is \$10,000). 82/

In discussing the relatively high rate of citations for violations of the shipping paper, marking, labeling, and placarding rules, FHWA attorneys pointed out that such "paper" violations are "simpler to document and enforce than equipment violations. . . . It is more difficult to show a pattern of equipment violations because they are usually discovered through road checks. In addition, proof of knowledge is often difficult [with equipment violations] because of the carrier's defense that the defect occurred on the trip in question, subsequent to the time the truck last left the terminal."

Although other methods of encouraging industry compliance with the regulations are available to the BMCS, such as seeking ICC revocation or suspension of a carrier's operating authority or the imposition of compliance orders on shippers or carriers, the BMCS has rarely used these. The agency also does not use its authority to count each day of violation as a separate violation.

The entire BMCS program for enforcing the FMCSR's and the Federal Hazardous Materials Regulations is grounded in what the director calls the "voluntary compliance philosophy." In general, BMCS's view of enforcement is that fines and other sanctions should be used as a last resort, when all other methods of inducing compliance appear to have failed. Their view is that the industry is fundamentally honest and wishes to comply with the regulations. Compliance depends primarily on the industry being aware of the regulations, considering them "reasonable," and having enough time in which to come into compliance. Therefore, investigators typically do not take enforcement action for violations found during the first audit, but use this visit to "educate" the company officials about the regulations. In the same spirit, the BMCS uses the assessment process

78/ Ibid., p. 40.

79/ Ibid., p. 78.

80/ Information supplied by BMCS Compliance Analysis Branch.

81/ Diver, op. cit., Table 3.

82/ Ibid., p. 10.

itself as an "education" process, and uses its authority to mitigate initial assessments very extensively.

This view appears to be consistent with overall DOT policy on hazardous materials enforcement. The RSPA Administrator, who is in overall charge of DOT's hazardous materials enforcement program, testified recently to a Congressional committee:

We agree that a strict system of penalty assessments for regulations violations is one method of attempting to improve an enforcement program. It should be pointed out, however, that the issue with which we are most concerned is that of fostering compliance with the regulations. High numbers of penalties collected do not necessarily indicate a successful enforcement program. If we can achieve regulations compliance through informal meetings with violators and compromises of assessed penalties, then the goal of minimizing the risks associated with hazardous materials transportation will have been met, and our enforcement program would be considered a success. 83/

Management Information System

Since 1974, the BMCS has been gradually converting its files on motor carriers and hazardous materials shippers to a computerized data system, called the BMCS Management Information System (MIS). Before this, files were in hard copy and maintained by individual investigators; there was no central recordkeeping repository.

Use of hardcopy files seriously limited the BMCS's ability to organize its enforcement activities efficiently and effectively. For example, it was difficult for individual investigators to obtain an organized view of a carrier's safety and compliance record; even more difficult was the task of comparing the compliance records of many carriers in his or her area of responsibility. It was hard to correlate violations committed by the same carrier that occurred in different localities. Selection of carriers for an audit was haphazard, dependent on a wide variety of factors (how well the files were organized, the investigator's personal knowledge of carriers in his or her area, location of the carriers in relation to the investigator's office, etc.), few of which related to determining which carriers most needed attention.

Because the files were scattered throughout the field offices, headquarters and regional offices had little control over the enforcement program as a whole; they could not easily tell whether investigators, individually or collectively, were using their time wisely to focus on those companies presenting the greatest risk to the public. BMCS management also could not assess the effectiveness of the enforcement program in inducing greater compliance by industry.

83/ Howard J. Dugoff, Hearing before the Senate Committee on Commerce, Science and Transportation on Reauthorization of the Hazardous Materials Transportation Act (Serial No. 96-94), p. 40.

The GAO pointed out some of the deficiencies in the BMCS's recordkeeping and analysis procedures in a 1973 report. ^{84/} In 1974, the BMCS initiated a study to identify the essential elements of a computerized Motor Carrier Safety Management Information System. The study led to a BMCS project to "integrate the existing Truck and Bus Accident Data File and a new Motor Carrier Safety Census File to provide a capability to obtain readily accessible data on the operational characteristics and safety compliance profile of all interstate motor carriers." ^{85/}

In a 1977 study, the GAO again urged that the BMCS "take steps to improve its method of selecting carriers for inspection. . . the selection process should provide for quick identification of the motor carriers with the poorest safety records." ^{86/} In response, the DOT cited the Motor Carrier Census File as an initial step in developing an automated capability for selecting carriers needing inspection/auditing. The GAO responded that "except for the Census File, [the system] is still a long way from providing a centralized source of timely and comprehensive information on carrier's safety status. Furthermore, the Bureau has not developed any target date for completing the system. We believe . . . an automated motor carrier safety information system should lead to better selection of the carriers most in need of inspection; however, the Department needs to insure that the system is completed in a reasonable time frame." ^{87/} As this report is written, the MIS is still not completely operational, 6 years after its design was begun.

The MIS is being developed almost singlehandedly by the chief of the Compliance Analysis Branch, assisted by three aides; programming is done by the FHWA Office of Management Systems. The MIS currently consists of several computer terminals in the BMCS headquarters office which can retrieve several types of information about the motor carriers and hazardous materials shippers in the computerized files. The computer files contain the complete list of all carriers and hazardous materials shippers known to the BMCS (called the carrier and shipper census); this list is constantly amended to keep it current, based on information received from field staff. As of July 1980, the computer lists 168,034 carriers and 12,457 hazardous materials shippers.

The files also contain information about all accidents reported by carriers to the FHWA from 1975 through 1978. The results of truck inspections carried out by the BMCS in 1979 are also in the carrier file. There is no information in the carrier and shipper files yet on the results of BMCS audits. Beginning in January 1981, audit records will be added to these files (no pre-1981 data will be entered, however).

The BMCS is in the process of placing terminals in each regional office, so that field staff will have direct access to the computer files. Field staff will be able to amend the files to a limited extent (they will not be able to alter a carrier's overall safety rating, for instance). In addition, headquarters will prepare specific

^{84/} GAO, op. cit. (1973).

^{85/} Information provided by the BMCS Compliance Analysis Branch in a report entitled "General Accounting Office Safety Recommendations," no date.

^{86/} GAO, op. cit. (1977), p. 16.

^{87/} Ibid., p. 17.

programs for the field staff, so that they can directly produce information relating to their areas of responsibility.

Currently, the information in the MIS is used in two main ways: (1) by BMCS headquarters to analyze, monitor, and to some extent, redirect field enforcement activities; and (2) by some BMCS field personnel to organize their own enforcement efforts and to delineate and respond to unique problems in their locality.

SAFETY BOARD ANALYSIS

The most striking fact about the DOT's program for enforcing general truck safety and bulk truck hazardous materials regulations is the tiny size of its enforcement staff in comparison to the industry it is regulating and monitoring. There are about 168,000 known interstate carriers, about 12,000 known hazardous materials shippers, 4 million interstate trucks (estimated as of 1975), and 413,000 tank trucks regularly hauling hazardous materials. With only 187 field personnel, it is crucial that the BMCS find ways to focus its available resources on activities that are the most productive in increasing good safety practices by carriers and shippers.

Aside from the BMCS's recent analysis of carriers' violations-per-inspection rate and determination of which carriers had not been audited since 1974, the Safety Board could find little evidence that the BMCS is making a systematic effort to decide how best to focus its activities. This lack of focus is evident throughout the field enforcement program, 88/ in the case development and penalty assessment process, and in the failure to develop methods for evaluating the effectiveness of the overall enforcement program.

On-the-Road Inspection Program

In its 1977 report on the BMCS program, the GAO noted that in 1966 the ratio of vehicles to ICC investigators was about 21,700 to 1 and the ICC inspected about 3 percent of the regulated vehicles; by 1975, when truck inspection responsibility had been under the DOT for 8 years, the ratio was about 32,500 to 1 and the BMCS inspected less than 1 percent of interstate commercial vehicles. As of July 1980, the BMCS knew of 168,000 carriers (about 12,000 of them hazardous materials carriers) and 12,000 hazardous materials shippers; the number of trucks operated by each of these carriers varies from 1 to more than 5,000; 149,000 of the carriers operate between 4 and 6 units. The BMCS has 187 investigators in the field, or 898 known carriers and 67 hazardous materials shippers to every investigator. Therefore, the BMCS can inspect only a tiny percentage of the trucks and drivers on the road. Even if every truck inspected were put out of service and even if every out-of-service truck were not moved until it was satisfactorily repaired, such a program could not, in fact, remove many "unsafe" trucks or drivers from the road. One BMCS Regional Director told the Safety Board that lost out-of-service time is regarded by a significant portion of carriers as one of the normal costs of doing business. In his experience, the out-of-service percentage has been "running around 30 percent for a long time and no significant change has been observed." Therefore, he feels that placing trucks out of service and conducting

88/ Region 10's experimental program may be an exception.

on-the-road checks in general are not effective ways of reducing the number of unsafe trucks on the highways. Another BMCS Regional Director said he regards Safety Management Audits as a "much more effective enforcement tool" than on-the-road truck inspections. Specialists in another region say that on-the-road truck inspections are not an efficient use of the time of trained professionals; they too believe that audits are much more effective.

The on-the-road inspection of hazardous materials trucks does little to ensure that these trucks are in compliance with all the Federal Hazardous Materials Regulations or that they are "safe." Probably partly because they do not perform hazardous materials truck inspections full time (as State program inspectors in Illinois do, for instance), the BMCS investigators tend to focus only on the most obvious types of infractions such as the proper completion of shipping papers and the existence of the required placards. From a safety point of view, such infractions may or may not be the most crucial to detect. If the truck is involved in an emergency, properly completed shipping papers and placards may be of some help to response personnel, but they in no way help to prevent the release of the hazardous materials during the accident. The fitness of the tank truck for hazardous materials carriage is rarely if ever checked in such inspections; at best, the operation of valves may be checked or the condition of the dome covers; the plate required to be affixed to the tank indicating when it was last tested for structural fitness is likely to be examined, but since no DOT agency (including the BMCS, whose direct responsibility it is) is inspecting tank truck manufacturers and retesters, there is no assurance that these plates guarantee tank integrity. Such hazards as overfilling of tank trucks are not checked at all.

Because almost all on-the-road truck inspections are done for "probable cause," the BMCS cannot develop a reliable picture of overall truck and driver compliance with the FMCSR's and Federal Hazardous Materials Regulations. Only truly random selection of trucks for inspection can provide such a picture; but because the BMCS has conducted so few of these random inspections (the director said he knew of two), only a small percentage of the population has been caught in the samples, so that even these random inspections have not yet provided a reliable picture of industry compliance.

The BMCS's insistence on carrying out "full" inspections of trucks on the road is another example of its failure to focus its limited resources on the most productive activities. Several BMCS field officials and State Demonstration Program officials criticized the Federal out-of-service criteria as being too stringent and perhaps not always indicative of an unsafe truck. The BMCS's own analysis of truck defect-caused accidents shows the same "critical items" involved in these crashes as the California Highway Patrol's study showed. Yet the official position of the BMCS has remained opposed to use of this more focused inspection technique. If the BMCS continues to believe that it is worthwhile to conduct probable cause on-the-road inspections at all, use of the critical item technique could make these inspections more efficient, might increase carrier respect for the

inspections, and might focus carrier maintenance on the defects known to be involved most frequently in mechanically-caused accidents. 89/

The Safety Board learned that despite official BMCS policy, two BMCS regions have experimented with use of the critical item inspection technique. In early 1980, Region 9 tried using the California Highway Patrol's procedure in Arizona. The Region 9 personnel believe that the technique worked well and that it is especially valuable in the regions where there is a large number of vehicles on very long hauls. Region 9 had been using the inspections for the 6 months prior to the Safety Board's inquiry. When questioned whether the critical item inspection led to carriers maintaining only those items, a regional official commented that it was more than some carriers were maintaining anyway. 90/

Region 5 has also experimented with critical items inspections. A critical items checklist was used in a large-scale truck inspection conducted in April 1980. One regional official there commented to the Safety Board that it "seemed to work well, and as a result of using it more trucks were inspected than would have been using the 'full' BMCS procedure."

Safety Management Audits

Although, in general, Safety Management Audits appear to be a more efficient and effective way to increase carrier and shipper compliance with the regulations than on-the-road inspections, the BMCS has not yet developed good procedures for focusing the audits on the most important areas. The BMCS has still not developed criteria for field staff to use in selecting which carriers and shippers to audit, despite repeated criticism of this failure in the past. 91/ Although the increasing sophistication of the MIS permits better analysis of which carriers and shippers need attention, the Safety Board found that the rigor of the selection procedure still varies from region to region and different selection criteria are in use from region to region. The selection of carriers and shippers to be audited is still largely at the individual investigator's discretion (with the exceptions of Regions 1 and 5 in part, and Region 10 largely). Regional officials cited a wide variety of reasons for audit selection: some regions focus on

89/ It is interesting to note that, in the case of hazardous materials truck "incidents" (which includes everything from small unintentional hazardous materials releases to major accidents), the MTB has found that "about 84 percent . . . resulted from human error, and the other 16 percent from equipment failure." (Testimony of Lee Santman, MTB director, Hearing before the Senate Committee on Commerce, Science and Transportation on S. 1896, To Amend the Hazardous Materials Transportation Act to Authorize Appropriations for Fiscal Year 1979, April 18, 1978, p. 49) Despite these findings, the BMCS has not developed specific requirements for the training of truckdrivers (either hazardous materials trucks or otherwise). The only special requirement for drivers of hazardous materials trucks is that they may not be physically handicapped.

90/ In Region 9, when a placarded vehicle is stopped, the critical item inspection procedure is followed along with a look at the more obvious hazardous materials requirements such as shipping papers and tank valves.

91/ Both the 1977 GAO study and the DOT Inspector General's report focused strong criticism on this aspect of the BMCS's enforcement program.

particular categories of companies (those reporting no accidents for 2 years, radioactive materials shippers, or passenger carriers, for example); one region has decided to limit its audit to the 78 largest carriers in the area; others mentioned such reasons as the location of the company relative to the investigators' travel opportunities, public complaints about a company, "experience and observation of field personnel," a high number of incident reports or accidents, and poor performance in on-the-road truck inspections. One regional official said that available manpower is too low to perform audits according to a system.

Region 10 is an exception to this pattern. This region has developed its own data system and is experimenting with the use of explicit selection criteria based on analysis of companies' accident and compliance records and the relative hazards posed by their operations. This region's systematized enforcement program makes extensive use of State data on truck accidents and truck traffic violations, in addition to BMCS-collected data.

There are two indications that the BMCS is taking steps to find ways to focus its use of Safety Management Audits on the companies most needing attention. The first is the MIS printout of carriers not audited since (at least) 1974, along with the violations-per-truck-inspection ratio of all carriers. The second is the notice that appeared recently in the Federal Register 92/ indicating that the BMCS is considering the publication of criteria for the selection of carriers for general safety and hazardous materials safety audits. A Notice of Proposed Rulemaking was scheduled for January 1981.

However, these two steps are by no means sufficient to answer the criticisms that have been leveled against the audit selection procedure. Making sure that carriers that have not been audited for at least the past 6 years are promptly reviewed is a reasonable first step, but it does little toward developing sensible criteria for ongoing audit selection. As the MIS is being developed, the BMCS needs to be thinking about the data it needs to determine which companies should receive attention, and should systematically collect such data and determine reasonable criteria for applying them to the universe of companies facing its small field staff. The rulemaking mentioned above may provide a vehicle for analyzing these questions, but only if the BMCS is looking at the larger questions and not merely publishing a list of the reasons on which investigators currently rely for choosing companies for audits.

Hazardous Materials Sanctions Process

A number of problems have been cited in the past with the process by which the BMCS develops enforcement cases, assesses claims, and negotiates settlements. The Safety Board could find no indication that the BMCS is effectively attempting to resolve any of these problems, despite its acknowledgement of the problems.

The BMCS has been criticized several times for its lack of guidelines for enforcement case development by the field. The 1977 GAO report criticized the "lack of systematic procedures for identifying and developing cases suitable for enforcement" and recommended that the BMCS "establish specific criteria to assist

92/ 45 F.R. 56588, August 25, 1980.

investigators in identifying when and how to develop cases suitable for enforcement action." The FHWA agreed with this recommendation and said it would "revise enforcement procedures with a view toward establishing more definitive criteria for selecting cases for enforcement action." The DOT Inspector General's 1979 study also urged the BMCS to establish specific guidelines for the development of enforcement cases on initial and subsequent audits; his report said that the FHWA agreed with this. In its 1980 study, the GAO again recommended that the FHWA "develop guidelines for determining when violations are to be prosecuted."

There are several reasons why it is important for the BMCS to establish more definitive criteria for case development. Case development is extremely time-consuming for the field. Some investigators waste time documenting violations that will never be pursued; in other instances, investigators do not sufficiently document the violations for which they are seeking penalties, so that the case must be delayed while the investigator goes back for further investigation.

Furthermore, the DOT General Counsel's study of the hazardous materials sanctions process found that the main determinant of the amount of final assessments against violators appears to be the sheer number of violations documented. It is not clear whether FHWA attorneys are basing final assessment amounts on the number of violations because they believe that is the best indication of the appropriateness of fine levels, or because the cases forwarded to them provide no better indication, such as a solidly-developed pattern of serious violations covering a variety of violation types. If the BMCS wants to develop a better basis for setting fines than mere number of violations, it must provide better guidance to the field staff.

This leads into the second major criticism of the sanctions process: the lack of criteria for setting initial and final assessments. The DOT Inspector General recommended that the FHWA develop penalty assessment guidelines which relate penalty amounts to the severity of the violations alleged; his report noted that the FHWA agreed with his recommendation. The DOT General Counsel's study urged the same thing-- that the FHWA establish written standards for the determination of penalty amounts. That study found that, at least in the hazardous materials enforcement cases, the FHWA (like other DOT agencies studied) showed "a very high degree of variation in penalty assessments from case to case." This is ironic because the FHWA justifies its centralization of hazardous materials enforcement case handling in headquarters on the grounds that only in that way can consistency in case handling be assured.

So far as the Safety Board staff could determine from interviews with FHWA attorneys handling hazardous materials cases, no criteria for assessment levels have yet been established. The assessments appear to be set largely on the basis of the particular attorney's judgment, using the (extremely general) statutory criteria as a "framework," in the words of one of the attorneys. Such factors as the "nature" and "gravity" of the violations are, according to these attorneys, taken into account, but not on the basis of an analysis of the relative risks imposed by one violation in comparison to another. More refined distinctions in the bases for setting assessment levels will be possible, however, only if the BMCS and the DOT as a whole develop more comprehensive truck safety and hazardous materials information and more sophisticated methods of risk analysis.

A final problem with the current motor carrier safety and hazardous materials sanctions process is its inadequate documentation. Studies by both the DOT Inspector General and the DOT General Counsel found that the FHWA provides almost no documentation of its reasons for assessing initial and final assessments at the amounts it does, nor is there adequate documentation of the arguments put forward by the respondents for challenging the initial assessment or the disposition of those arguments by FHWA attorneys. One of the major effects of this lack of documentation is that it is difficult to develop a consistent BMCS or DOT enforcement policy without such a written history. Attorneys may differ in their judgments as to appropriate assessments for similar violations and in their reaction to various arguments advanced by respondents for reducing the fine. If consistency in handling enforcement cases is important to the effectiveness of the overall enforcement program, as the Safety Board and the FHWA believe, then documenting the decision process is important for developing precedents and a coherent pattern of administrative judgments. Furthermore, without such documentation, oversight of the BMCS's handling of enforcement cases is extremely difficult, including management oversight by the FHWA and other elements within the DOT.

The Safety Board believes that a policy of requiring documentation of the reasons for initial and final assessments and disposition of respondents' arguments would benefit the enforcement program in at least two ways. First, it would force careful consideration of the bases for setting initial assessments and for subsequently mitigating them. The FHWA mitigated initial hazardous materials assessments in more than 90 percent of the cases reviewed by the DOT General Counsel's study, and mitigated them, on average, by more than 50 percent. Second, articulation of the specific reasons for setting the initial assessment at a certain level and for subsequently mitigating it would, over time, serve to educate the industry to the DOT's hazardous materials and general truck safety enforcement policies in a way no "education" program can.

Adopting explicit criteria for setting assessment levels and requiring careful documentation of the specific reasons for both assessing and mitigating penalties are even more important in light of the BMCS's extensive use of negotiations to "settle" cases. Without such criteria and documentation, BMCS and FHWA officials are unnecessarily open to charges of impropriety.

In development of the MIS, serious consideration should be given to including this case-handling information in carrier and shipper files. Furthermore, indexing of all motor carrier safety and hazardous materials enforcement cases by rule violated could be automated to provide, over time, one indicator for determining where regulatory and enforcement actions may need to be increased or reduced.

Organizational Structure

The Safety Board believes the FHWA should reconsider the organizational structure of BMCS, and in particular the BMCS's lack of direct authority over its field staff. The BMCS has never been comfortably integrated within the FHWA organizational structure since it was moved from the ICC in 1966. The BMCS is still largely staffed by the same people who worked there when it was part of the ICC, and many of them believe that the missions of the FHWA and the BMCS are so distinct as to make the BMCS's complete integration impossible. Several FHWA

and BMCS officials interviewed acknowledged that most FHWA managers know very little about the trucking industry and the daily reality of BMCS investigators' work. Some BMCS personnel expressed the opinion that many FHWA officials, particularly in the field offices, do not have any interest in, or respect for, the BMCS's work. The general sense expressed was, "They're highway engineers, we're motor carrier inspectors, and never the twain shall meet."

The FHWA has made a strong effort to integrate BMCS organizationally. As described above, the BMCS investigators ultimately are responsible to the administrator of the FHWA region in which they are located, and the BMCS headquarters officials do not guide the field staff activities directly. Within the FHWA structure, regional administrators enjoy a large degree of autonomy. A regional administrator who wishes to shape his or her own BMCS program within the region has considerable power to do so, whether or not the program is consistent with BMCS headquarters' concept of the appropriate national strategy.

Most of the FHWA's activities in the highway area are structured to accommodate the fact that the agency is working with State governments, each with characteristics somewhat different from those of other States. The BMCS, on the other hand, works with interstate trucking and shipping companies, whose characteristics have little or nothing to do with the particular State in which their vehicles or products happen to be moving. The BMCS program is, by its very nature, a national program, requiring inspection and enforcement practices based on a consistent national policy. Undue exercise of regional autonomy can only hinder this.

However, it should be noted that the only significant innovation in the BMCS enforcement program in many years (aside from work on the MIS)--the experimental program in Region 10--was conceived and is being carried out by regional personnel. The substantial autonomy enjoyed by the regional offices under the current organizational structure was probably beneficial to this endeavor. The Safety Board believes the FHWA Administrator should emphasize to the regional and division administrators the importance of supporting the BMCS program and of cooperating in a consistent national enforcement program.

Management Information System

The automated MIS is the BMCS's response to past criticism that its enforcement program is unfocused. It has been under development since about 1974, however, and is still not complete. Conceived as a way to assist the field staff in directing their investigative work toward the carriers (and now also hazardous materials shippers) most in need of attention, the MIS has been shaped largely toward that sole end. However, the BMCS managers have now begun to realize its potential for enhancing their supervision of subordinates' activities. Its possibilities as a tool for evaluating the effectiveness of specific BMCS activities or the BMCS program as a whole have not yet been explored. Whether this capability will be exploited remains to be seen.

At this point, the MIS can help the BMCS determine which carriers (and eventually which shippers) need attention. For example, an MIS printout was recently sent to each region showing the following:

- o All known carriers domiciled in the region, ranked by average number of driver/vehicle violations found per inspection
- o The number of truck inspections each carrier has undergone
- o The date of the most recent audit each carrier has undergone

On the basis of the printout, each BMCS Regional Director could tell which carriers in the region had the highest violations-per-inspection record and when those carriers had last been audited. The printout also made obvious which carriers had not been audited at all (since at least 1974, the earliest year of the MIS records).

Such a tool not only eases the planning difficulties faced by a small enforcement staff attempting to monitor a huge industry; it also permits enforcement program managers to monitor the activities of their subordinates far more effectively than in the past. For example, the chief of the Compliance Analysis Branch said the same regional carrier printout will be run again in April 1981 and management will be checking to see whether the current audit "gaps" have been filled.

Such computerized information can also be useful in evaluating whether or not the BMCS enforcement program is having any effect on carrier compliance with safety regulations, including the Federal Hazardous Materials Regulations. Analyses can be made of carrier's ratios, over time, of violations-per-inspection. Changes in individual carriers' performance; or the performance of selected classes of carriers (by fleet size or type of operation); or performance by carriers in specific regions; or overall national trends can all be measured and the results used as partial evidence of the efficacy of BMCS enforcement strategies.

When the information collected during carrier and shipper audits is computerized, the sophistication and variety of analyses of industry compliance and BMCS enforcement effectiveness can be further increased. Since the audit form requires considerable information gathering about the specific hazardous materials carried or shipped by the company being audited, computer analysis of these forms can be expected to provide considerable basic data not previously known about hazardous materials transportation by truck.

The second major way in which the MIS information is currently used is by some BMCS regions to organize their own enforcement programs and to delineate unique local problems. For example, Region 1 recently requested a printout of carriers in the region which did not report any accidents within the last 2 years. Other region officials say they are beginning to use the MIS regularly and that it is "extremely useful" for isolating groups of carriers of interest, for performing various comparisons among different States in the region, and for determining whether their placement of investigators within the region coincides with the distribution of carriers.

Regional use of the MIS is evolving slowly, however, and not all the regions are satisfied with it. Regional officials cited the incompleteness of the census, the lack of carriers' and shippers' terminal locations in the census, and the lack of State-generated data in the files as serious deficiencies. Two regions said they make little use of the MIS--Region 5 because it concentrates on large carriers, of

whom it says it is already aware, and Region 10 because it has developed its own data system to support its experimental enforcement program.

The comments of several regions about the omission of State data from the MIS echo a criticism made by the GAO in its 1977 study of the BMCS. The GAO recommended that the BMCS should "use road check, safety survey [audit], and accident reports provided by the States when formulating work schedules. The BMCS should rely on State reports to the maximum extent practical." ^{93/} The BMCS replied that it "has no authority to require States to submit motor carrier safety reports, but the BMCS would request appropriate State agencies to voluntarily furnish such reports for inclusion in the management information system now under development." ^{94/} However, the chief of the Compliance Analysis Branch told Safety Board staff that the BMCS has not requested data from the States. He feels that there are too many State data for the system to handle at present, and that the data are not uniform.

The usefulness of the MIS is limited in a number of other ways. Each carrier and each shipper known to the BMCS is assigned a number, called the census number, and the data contained in the MIS are keyed to it. The number assigned by the ICC to each regulated carrier, called the ICC docket number, has been cross-referenced to the BMCS census number for access. The problem with correlating non-BMCS data into the MIS is that unless either the BMCS census number or the ICC docket number is provided, the company cannot be identified within the MIS. For example, none of the other modal administrations within the DOT uses the BMCS census number to identify hazardous materials shippers. Therefore, compliance and enforcement information about a specific hazardous materials shipper cannot readily be shared between BMCS and other DOT hazardous materials enforcement agencies. Furthermore, many other Federal agencies either collect information about carriers and shippers which BMCS might find helpful or could make use of BMCS information (for instance, NHTSA truck accident information, Bureau of the Census data on trucks and carriers, EPA hazardous waste control program data). But none of these agencies uses the BMCS identification number, and information cannot easily be shared. It is not yet clear whether even the DOT's comprehensive, automated Hazardous Materials Information System, under development now, will require all the modal administrations to use a common identifying number for carriers and shippers, nor whether it will be based on the BMCS census number.

A more basic problem with the emerging MIS data is the one that threatens all systems built on collations of data, namely, the accuracy and completeness of the information fed into the computer. As the FHWA Associate Administrator for Safety said, "Any MIS is only as accurate as the data that is initially placed in the system." ^{95/} The process of computerizing field-generated inspection forms has had the secondary benefit of revealing to BMCS management the fact that field investigators have often been negligent in their record completion. In compiling the headquarters computer file of truck inspection forms, for example, the Compliance Analysis Branch found "an appalling number of improperly prepared

^{93/} GAO, op. cit. (1977), p. 33.

^{94/} Ibid.

^{95/} Memorandum from FHWA Associate Administrator for Safety to Regional Federal Highway Administrators, October 9, 1980, concerning Management Information System.

documents, improper citations [of violations], improper section numbers [of the Code of Federal Regulations], failures to code properly, and omissions." 96/

The FHWA Associate Administrator for Safety and BMCS headquarters officials are putting considerable emphasis on reducing these field recordkeeping problems. Each region has been directed to review its data quality control procedures and effect improvements where necessary "in order that all users can have a high degree of confidence in the accuracy of information coming out of the MIS." 97/ The Compliance Analysis Branch has been instructed to "start culling out improperly prepared documents as examples," and the matter will "be covered in Field Office Management Reviews performed by Headquarters personnel." 98/

When completed, the MIS can be used for truck safety enforcement planning and evaluation. It can flag those carriers and shippers who are responsible for the highest number of reported accidents and violations and review companies' accident and violation rates subsequent to BMCS enforcement actions. The MIS can also be used to isolate groups of carriers or shippers having a common characteristic (e.g., size, location, accident frequency, time since last audit, etc.). It can be used to rank carriers according to the number of violations per inspection or according to some other inspection-related criterion.

The MIS will also be useful for hazardous materials enforcement, although the accident data currently in the files do not contain accurate information on commodities carried at the time of the accident. When the audit file is operational, more information on hazardous materials carriers will be available through the MIS; audits of hazardous materials carriers specifically note carrier performance in the areas of shipping papers, spills during loading/unloading operations, accidents occurring when hazardous materials are being carried, use of currently tested specification containers, and hazardous materials handling procedures.

The MIS is being built primarily to support the enforcement system; it was conceived as a way to organize and make easily accessible the information on the number, location, characteristics, and compliance performance of the known carriers and shippers under BMCS jurisdiction. Its usefulness as a management control tool is steadily becoming more apparent to the BMCS, also.

With the addition of more data, the MIS could be used for more sophisticated analyses which would be of great value to the BMCS. The system currently lacks:

- o comprehensive and detailed information about enforcement cases
- o ability to correlate information on driver hours of service with accident information
- o truck exposure data, correlating miles traveled with accident frequency and severity
- o detailed information on commodities carried at the time of accidents

96/ Ibid.
97/ Ibid.
98/ Ibid.

- o a method of relating carrier compliance data to carrier accident data (i.e., of determining statistically the correlation or lack of correlation between carrier compliance with hazardous materials and motor carrier safety regulations and carrier accident history)
- o a tracing mechanism so that the BMCS can gauge the effects of various educational and enforcement activities (e.g., warnings, discussion of audit findings, out-of-service actions, and imposition of sanctions) on carrier and shipper safety records.

Voluntary Compliance Philosophy

The DOT Inspector General has strongly criticized the BMCS enforcement program in general and the "voluntary compliance" philosophy in particular:

We believe that [the] relative ineffectiveness [of the BMCS motor carrier and hazardous materials safety enforcement program] can be attributed to the BMCS philosophy of seeking voluntary compliance with Federal safety and hazardous materials regulations and initiating enforcement action only as a last resort We don't think that motor carriers will voluntarily comply with Federal motor carrier safety or hazardous materials regulations when it is more profitable to ignore or circumvent these regulations In fact, we consider this philosophy to be counterproductive in that it simply encourages the carriers to "play the odds" which seem to be overwhelmingly in their favor We conclude that the BMCS philosophy of voluntary compliance is unrealistic, ineffective, and inefficient. Compliance, much less voluntary compliance, seems unlikely unless there is a systematic investigations process and an aggressive enforcement policy with stiff penalties assessed for non-compliance. 99/

The Safety Board believes that, given the small size of the BMCS's enforcement staff in relation to the numbers of carriers, shippers, drivers, and trucks they are responsible for monitoring, whatever compliance there is by industry will, in reality, have to be voluntary. To the extent the industry is not aware of the regulations, of course, compliance will be less. BMCS efforts to "educate" the industry are, therefore, commendable.

However, the Board believes that the BMCS's overreliance on the voluntary compliance philosophy has deterred it from organizing its small program to maximize its effectiveness. It has made little or no effort to determine the most important areas for attention and focus its efforts on these problems. In the Board's view, the BMCS should be asking itself such questions as:

- o What hazardous materials commodities present the greatest risk in transportation? In what amounts? Along what routes?

99/ DOT, Inspector General, op. cit., pp. 7 and 8.

- o How much attention should be given to ensuring that hazardous materials tank trucks are constructed and maintained properly? How much to driver training? How much to driver practices (hours of service, loading/unloading procedures, driving at a safe speed, following the hazardous materials driving and parking rules, etc.)?
- o How important is the general safe maintenance of hazardous materials trucks (brakes, tires, steering, etc.) compared to proper containerization of the chemical or to safe driving practices?
- o Should large carriers receive most of the attention (because of greater risk exposure) or should all carriers receive equal attention?
- o Is there any relationship between a carrier's history of compliance with the FMCSRs and the Federal Hazardous Materials Regulations and its accident history?
- o What should be the criteria for developing an enforcement case? For prosecution of a case? Number of violations? "Nature and gravity" of violations? How should these words be interpreted?
- o Should truck inspections focus solely on those defects known to be most often the cause of accidents or is there significant safety payoff in spending time inspecting windshield wipers and reflectors?
- o Should the BMCS spend any time performing "probable cause" truck inspections? Do they have any effect on the degree of industry compliance? Should the BMCS limit its truck inspections to periodic, large-scale random inspection, to provide reliable information on the overall level of compliance and the problem areas most in need of enforcement attention?

Even more fundamentally, the BMCS needs to reassess the appropriate and feasible role of a small Federal enforcement program faced with a huge and rapidly increasing set of responsibilities. Particularly as the urgency and magnitude of the hazardous waste transportation problem is added to the already staggering size of its other enforcement tasks, the BMCS must come to grips with several basic issues:

- o How can the BMCS make it more likely that States will take on truck enforcement programs? How can the BMCS be of the most assistance to State programs (training, data collection and analysis)?
- o What is the purpose of the BMCS's own enforcement program? To "police" truck traffic in order to remove unsafe trucks and drivers from the road? Or to increase carrier and shipper compliance with the regulations? Where should the BMCS's limited resources be focused?
- o What sorts of data are needed to help focus the motor carrier safety and hazardous materials enforcement program planning? How can the BMCS obtain, analyze, and disseminate these data?

- o How can the BMCS measure the effectiveness of its efforts? Should the BMCS seek to measure only compliance with the regulations or actual effect on highway accident losses?

The BMCS has done little to plan its enforcement program for maximum effectiveness, to measure its various activities against a coherent statement of program purpose, to devise means for assessing the effectiveness of its specific activities or its program as a whole, or to collect and organize the information needed to do these things. The work that has gone into development of the MIS is encouraging, but far more needs to be done and the BMCS will have to devote considerably more time and resources to this effort if it is to fulfill its potential for program improvement.

BMCS DEMONSTRATION PROGRAM

Representatives of three States participating in the BMCS "Commercial Motor Carrier Safety Inspection and Weighing Demonstration Program" were interviewed by the Safety Board in order to ascertain how Federally-assisted State truck safety programs can operate, and to make a preliminary assessment of the effectiveness of such programs. ^{100/} Although the demonstration programs in Michigan, Idaho and Utah currently deal with hazardous materials solely on a superficial level, they could be expanded to include rigorous hazardous materials enforcement in the future, which makes review of their potential effectiveness doubly important.

Demonstration Program Legislative History

In 1978, Congress appropriated \$3 million ^{101/} for the establishment and BMCS administration of a demonstration program to "promote the establishment and maintenance of motor carrier safety programs and the adoption of consistent safety standards for both interstate and intrastate motor carrier commerce." ^{102/} The program was to include weight inspections, equipment inspections, and driver checks for qualification and hours of service. Additionally, the program was to collect data about the results of weight inspections and random and "probable cause" truck inspections for BMCS use in analyzing the effects of the demonstration program on carrier compliance. Initially, full Federal funding of an appropriation of \$4 million was requested; however, both the House and the Senate decided that the States should contribute to the cost of the program and the funding was accordingly reduced by \$1 million; the Federal contribution was limited to 90 percent of total program cost.

The Senate Appropriations Committee directed the BMCS to develop an evaluation plan to assess the effectiveness of the demonstration program in increasing highway safety and motor carrier compliance with safety regulations.

^{100/} Alaska, the fourth State participating in the demonstration program, was not contacted because of the expense involved in traveling there for the necessary interviews.

^{101/} DOT and Related Agencies Appropriations Act, 1979 (P.L. 95-335, 92 Stat. 435, August 4, 1978).

^{102/} House Appropriations Report No. 95-1252, p. 24.

The goals of the demonstration program, as expressed by the House and Senate, are to:

- o increase the level of motor carrier compliance with highway safety and weight regulations
- o increase highway safety
- o promote the adoption and enforcement of consistent motor carrier standards for both interstate and intrastate trucks
- o promote the establishment and maintenance of State motor carrier safety programs

Demonstration Program Design and Administration

The demonstration program was designed, and is administered, by the BMCS. To be considered for participation in the programs, States had to meet the following criteria:

- o a core staff of personnel conducting truck weighing and driver/equipment inspection activities
- o fixed weighing facilities with a permanent parking space to accommodate trucks removed from the public highways
- o authority to require off-loading of overweight trucks
- o adoption of, at a minimum, the FMCSR's
- o authority to require both private and for-hire carriers operating within the State's boundaries to comply with the State's motor carrier safety laws and regulations
- o authority to impose penalties (fines and other sanctions) for trucks and drivers found to be in violation of the State's laws and regulations
- o a management information system and personnel capable of providing weighing, inspection, and accident data

Four States were selected by the BMCS from the 12 States that applied: Alaska, Idaho, Michigan, and Utah. The funds allocated for the first year of the program were:

Utah	\$1,040,000
Idaho	\$1,030,000
Michigan	\$ 900,000
Alaska	\$ 800,000

Currently, the demonstration programs are in their first year of operation and State project managers are involved in the budgeting process for the second year.

The BMCS has assisted the four States in designing their data collection systems, setting up inspection procedures, and training the State inspectors. The BMCS monitors the data acquisition and processing and reviews the program results.

Development of Program Strategies and Techniques

Each State has developed an inspection strategy, approved by the BMCS, responsive to the State's unique carrier density, truck traffic pattern, and geographical situations. The strategies differ in specifics in the three States visited; however, they have certain techniques in common, required by the provisions of the demonstration program contract. These include:

- o performance of the "full" BMCS inspection rather than a "critical item" type check 103/
- o periodic inspection of a random sample of trucks
- o use of the out-of-service sanction for trucks with equipment defects corresponding to the Federal out-of-service criteria
- o use of standardized reporting formats for detailing inspection results, with fields designed for computerized information capture

State Staff Training

The training received by demonstration program field staffs in the program states was designed and carried out with the assistance of the BMCS. The training in Michigan, Utah, and Idaho has been varied in terms of curriculum and duration, ranging from Michigan's 6-week, full-time course to Idaho's 40-hour course taught by the BMCS technical project officer.

All demonstration program field staff have been instructed in the content and meaning of the PMCSR's inspection and enforcement techniques, and proper documentation of inspections (including use of the inspection forms and preparation of activity reports).

103/ It is interesting to note that two States, Utah and Idaho, have begun (Idaho) or are about to begin (Utah) training their police troopers to conduct critical item inspections.

Information System Design

One of the purposes of the demonstration program is to produce computerized, detailed information about the current level of compliance with truck safety regulations and the potential for improving compliance through State truck safety/weight enforcement programs. At the outset of the program, the BMCS worked with the States in designing data collection forms which would provide comprehensive information formatted for ease of entry into a computer. The BMCS also ensured that the tapes of raw data delivered to Washington were compatible with the FHWA's software. State program officials interviewed indicated that they are refining and upgrading their automated data processing (ADP) systems to better meet demonstration program requirements.

Data Acquisition and Processing

The States are required by the demonstration program contract to send the computer tapes containing the weight and safety inspection data to BMCS headquarters for processing. The BMCS is aggregating and integrating the data for analysis; the States will receive annual reports from the BMCS. The BMCS, not the States, will perform the analysis of program effectiveness mandated by Congress in the appropriations legislation; it requires originally coded data from the States to perform this analysis.

Monitoring of Results

The BMCS monitors the programs through examination of the State data and progress reports, the annual budgetary process, and through day-to-day contact between BMCS field personnel and State program officials.

STATE DEMONSTRATION PROGRAMS

Each of the three State programs studied by the Safety Board has unique features resulting from State governmental, geographic, industrial, and carrier population characteristics. The following sections provide detailed descriptions of the three State programs studied.

Michigan Demonstration Program

The Michigan Public Service Commission (PSC) is administering that State's demonstration program. The program has provided 40 inspectors (in addition to the 100 inspectors already working for the PSC), 32 Federally-funded and 8 State-funded; it has a management staff of six. Training for the 40 inspectors is being provided by a combination of State and Federal personnel.

Actual inspections under Michigan's demonstration program began in November 1980. The primary focus of the program is Interstate 94, which travels east/west across the State and which had several scalehouses already in place. The program will also build five more scalehouses, on Interstate 69, U.S. 23, and the Mackinaw Bridge approaches.

The demonstration program uses a combination of road checks and scalehouse operations. The road checks involve taking a random selection of trucks and weighing them and inspecting them for safety, using portable scales and roving patrol cars to bring trucks to the scales. At the permanent weigh stations, overweight trucks and those with visible safety violations will be inspected. Trucks which do not pass inspection are put out of service without citation, on the theory that the purpose of the program is to get unsafe trucks off the road, rather than to collect fines (which, in any case, are limited in Michigan to \$100).

During the winter, safety inspections, which must be conducted outside, will be greatly reduced; weight inspections will continue at the same pace. 104/ Inspections in randomly selected (heated) terminals may be substituted for road inspections. 105/

The Michigan demonstration program is not a hazardous materials enforcement program. The State inspectors and newly-hired demonstration program inspectors have received no special training in hazardous materials enforcement. They only check those items on trucks carrying hazardous materials which can readily be inspected (such as valves). No distinctions are made between hazardous materials trucks and other trucks in terms of severity of penalty.

Training. The Michigan demonstration program inspectors are uniformed employees of the PSC who have peace officer powers and carry sidearms. They have received 6 weeks of training from State and BMCS personnel, covering a wide range of topics: legal aspects of motor carrier safety enforcement and weight enforcement, truck inspection and weighing techniques, review of drivers' logs, terminology of the motor carrier industry, completion of demonstration program forms and other documentation of inspections, and weapons use and defensive tactics. In addition to their classroom instruction, trainees receive practical demonstrations and field instruction in weight and safety inspections, and are given firing range weapons training.

Utah Demonstration Program

The Utah demonstration program, conducted by the Utah Highway Patrol, is built upon the preexisting Utah Truck Inspection Program (UTIP), initiated in 1977. The UTIP was primarily a safety inspection program; to modify it for the demonstration program, the Highway Patrol increased its emphasis on weighing activities.

Prior to the demonstration program's inception, the UTIP had a core group of 8 troopers and 1 sergeant who weighed and inspected trucks, and 25 troopers trained in truck inspection. The Highway Patrol set up three zones for enforcement and, once a month, set up an 8-hour roadblock operated by the core group and by those truck inspectors stationed in the area, who weighed and inspected trucks in that zone. The rest of the month, the core went where it was needed (heavily traveled routes, areas with special problems, etc.). The

104/ Michigan may use the California Highway Patrol "critical items" checklist as its safety inspection procedure during the winter.

105/ Terminals may also be inspected in response to complaints from the public.

demonstration program project director said that, while the UTIP had only a limited effect on truck safety and weight, it did gather data 106/ showing the extent of the problem and demonstrating the need for increased funding.

There are 435 sworn Highway Patrol officers in Utah. The Utah demonstration program uses 45 of them as full-time employees and one financial clerk works part time for the program. Twenty of the troopers work in two-person, portable scale teams, weighing and inspecting trucks. These are moved around the State to cover bypass routes and secondary State roads on a rotating basis. Thirteen troopers work at the eight fixed ports of entry, performing truck inspections only (the weighing staff at the ports of entry is not part of the demonstration program). In addition to the field and supervisory staff, seven ADP personnel work for the program. Three sergeants and one lieutenant supervise field operations; the project director is a captain.

The Utah demonstration program contract started on September 28, 1979; February 1980 was the beginning of "test" enforcement, and official enforcement activities started in March 1980. The data for the first quarter show that 1,128 vehicles were inspected at the ports of entry, and 1,197 vehicles were inspected by the portable scale crews. The project director said that the portable crews emphasize inspection; they must have probable cause to weigh trucks. Weight checks are standard at the ports of entry.

Most Utah demonstration program truck inspections are performed for "probable cause." Random inspections and random weighing are performed for one 8-hour period each month for data-gathering purposes. "Random" in this case means that when a trooper finishes an inspection he takes the next truck available. A 24-hour truck count is also taken once a month for analysis purposes. Random inspection data are compared with data from baseline random checks, taken early in the program, to assess the effectiveness of the program.

Trucks transporting hazardous materials are checked for proper placarding, and the valves of tank trucks are inspected. The demonstration program currently places no special emphasis on hazardous materials, although the project director would like to do more with them; he has proposed concentrated hazardous materials training for his inspection staff in the demonstration program cost proposal for next year. However, he told the Safety Board that the FHWA has instructed him to concentrate on vehicle condition and driver qualification and not to increase the emphasis on hazardous materials enforcement.

The demonstration program does not include terminal inspections; these are performed by the Utah Department of Transportation's Safety Division. The project director notes that the Highway Patrol did some terminal inspections at the start of the demonstration program, primarily as a public relations gesture for Utah carriers, informing them of the demonstration program and advising them how to meet its requirements.

106/ These data were hand-tallied; demonstration program data are fully automated.

The BMCS officials in Utah audit demonstration program inspections occasionally, and have worked with the Highway Patrol, teaching inspection techniques.

The program uses the Federal out-of-service criteria with slight variances. The project director noted that there is a conflict between the Federal out-of-service criteria (which the Highway Patrol has contracted to enforce under the demonstration program) and what he believes to be problems serious enough to put a truck out of service. ^{107/} He feels that the Federal out-of-service criteria are basically good but are sometimes "nitpicking," especially for Utah conditions, where trucks may be inspected in a semidesert 200 miles from the nearest garage. He notes that trooper discretion in enforcing out-of-service criteria can sometimes be a problem, and that, especially in the beginning of the program, some troopers enforced the out-of-service criteria very strictly, creating such problems as a truck carrying sheep being put out-of-service in a desert miles from help.

In order to avoid duplicating inspections, demonstration program personnel recommend to drivers that they make a copy of the inspection report and keep it with them (the driver is supposed to turn the original over to the carrier). If a driver can produce a copy of a "recent" Utah or Idaho demonstration program inspection, he or she need not be reinspected.

Sanctions available under the demonstration program include out-of-service, citation, and off-loading for weight violations. No civil sanctions are available. Fines for equipment violations are \$30 per violation; troopers usually write only one ticket covering all violations, but if the violations are flagrant, more than one ticket may be written for a single truck. Nonequipment safety violations, such as driver hours of service, are fined at a level set by the Justice of the Peace hearing the case; the project director said that Justices are fining "heavily" for hours of service violations. The overweight fine is \$50 plus \$1 per pound overweight.

Utah's project director would like to take the fine system out of the courts and change from criminal to civil penalties. However, he believes that the Highway Patrol should not benefit from the fines, to forestall charges of abuse. He would like to see the fines placed in a Utah Department of Transportation fund or the equivalent.

Information Handling. Information generated by weighing and inspection activities is sent to Highway Patrol headquarters on a coded form, and all data are captured on computer. In addition, field personnel send in weekly "Activity Reports" summarizing the week's work.

The FHWA does not want aggregated data; therefore, Utah sends computer tapes of the raw data to Washington. No demonstration program funds are provided for evaluation; the FHWA provides only summaries of data to the States. However, Utah has made some use of the data generated by the demonstration

^{107/} The project director states that defective trucks carrying hazardous materials are more likely to be put out of service than defective trucks carrying general commodities.

program by spending Highway Patrol funds to process it, and is developing a complex data system to handle the information. Currently, the Highway Patrol does not have hardware for printing computer output, so it must rely on the FHWA for processing of the data.

The project director believes BMCS's MIS data are potentially quite useful to Utah, and he already uses it to some extent. The Utah BMCS division provides some MIS printouts to the Highway Patrol, and the Patrol has compared its carrier file with the MIS census of carriers. In some cases, the Highway Patrol has used the MIS to get a record of the violations charged against a carrier by the BMCS.

Training. The staff of the demonstration program are all sworn Highway Patrol officers. As such, they are required to have at least a high school education, to have had 5 years of uninterrupted employment, and to pass a competitive written examination before they are accepted into the Police Academy. After graduation from the Academy, demonstration program troopers receive 80 additional hours of training in interpretation of the FMCSR's and truck inspection and weighing procedures. Demonstration program troopers receive a minimum of 40 hours a year of in-service training emphasizing commercial vehicle enforcement. The Highway Patrol has also arranged for some Utah carriers to give troopers the same training they give their drivers.

Future of the Utah Demonstration Program. The project director anticipates that Utah will continue the demonstration program at about the same level, or even expand it, after Federal funding ceases. If so, he would like to make some changes in it. For example, he is in favor of a dated inspection sticker system with reciprocity agreements among States similarly inspecting trucks. (He would recognize Idaho's inspection, for instance, but not California's critical items inspection, which he believes is not sufficiently detailed). He also intends to alter the out-of-service criteria to bring them into accord with Utah conditions.

Idaho Demonstration Program

Idaho's "Proposition 1" restricts the number of State personnel who can be hired. As a result, the demonstration program, which is being conducted by the Idaho Division of Law Enforcement, is working closely with the Idaho State Police at the ports of entry and has limited its new hires to 17 interns (criminal justice students) who work 30 hours a week at the ports of entry, inspecting trucks under the supervision of a State Police sergeant. Additional demonstration program staff includes a four-person team which circulates among satellite weigh stations inspecting trucks, 108/ the project director, an ADP manager, and two secretaries. The State Police provide 7 troopers at each port of entry and 144 troopers who are allocated among the 17 satellite weigh stations according to seasonal variations in truck traffic. In addition, all Idaho State Police troopers have been trained to perform "critical item" type truck inspections, and they do so when they stop a truck for any reason.

108/ Idaho is projecting a two-person terminal inspection team for next year's program.

The Idaho program involves "full" inspection of trucks at ports of entry and at satellite weigh stations. Seventy-five percent of the inspections are for "probable cause." Random inspections, performed according to a statistical formula developed by Boise State University, are conducted 25 percent of the time. The random inspections are primarily a data-gathering activity, used for analysis of effectiveness and for public information. Idaho has targeted radioactive materials transporters, so these are inspected as they come through.

The sanctions Idaho has available for truck safety violations include out-of-service (considered by Idaho officials the best sanction available) and citation. Both are at the inspector's discretion, and they are careful not to make the penalty too severe (e.g., if perishables are being carried, and a truck must be put out of service because it represents an imminent hazard, arrangements are made to off-load the perishable goods).

Program Structure and Information Flow. Information flows two ways within the Idaho demonstration program: inspection forms and regular activity reports are sent in from the field; in return, headquarters sends out a newsletter and information on particular cases, including findings of inspections. Program representatives said that it would be advantageous for morale if they received similar feedback on cases handled by the Federal government.

The Idaho program tries to keep field paperwork to a minimum in order to allow more time for inspections. It does require full inspection reports, however, and it has set up a tickler system to follow up on inspection reports.

Training. The demonstration program student intern staff was trained by the BMCS technical project officer, who taught a 40-hour course in truck inspection--16 hours of classroom instruction and 24 hours of hands-on training. The Idaho BMCS Division has provided some in-service training to the demonstration program, especially in the area of hazardous materials enforcement. State Police involved in inspections have been given training to conduct critical-items-style walkaround inspections; Idaho plans to train all of its State Police to conduct such investigations in the near future.

SAFETY BOARD ANALYSIS

The Safety Board has reviewed the demonstration programs in three States for their success in meeting the Congressionally-mandated goals, keeping in mind that the projects are new and data for less than a year are available.

Increase the Level of Motor Carrier Compliance with Weight and Safety Regulations

When the Safety Board staff interviewed representatives of the Michigan demonstration program, the program had not begun its enforcement activities. Therefore, no information is available for that State. However, Utah and Idaho had begun enforcement, and both the local BMCS officials and the State project directors believed the program was increasing the degree of compliance with the FMCSR's by carriers traveling in these States. However, they had formed no impression of the effect of their efforts on hazardous materials compliance.

At the beginning of the program, Utah put about 70 percent of the trucks it inspected out of service; this has dropped to 35 percent as the program has continued. However, Utah may have enforced the out-of-service criteria more rigorously at the beginning of the program than it does now. Idaho also claims a drop in equipment violations, although it is not able to provide figures on this. These drops in the out-of-service percentage are reported on the basis of the random inspections rather than the probable cause inspections. Utah representatives believe that the improvement of intrastate truck equipment is marked. 109/

The BMCS, in accordance with the Senate's directive to evaluate the effectiveness of the demonstration program, is developing an overall evaluation plan, although none exists at the time of this report. The BMCS demonstration program technical project officer stated in August 1980 that the criteria to be used to measure program effectiveness would be developed by late September 1980; in January 1981 he told Safety Board staff that he hoped the evaluation plan would be completed by mid-February 1981.

Increase Highway Safety

The program's effects on increasing highway safety are difficult to determine. The only information available is from Utah, where both the Utah Highway Patrol and the Utah BMCS division stated that truck accidents are dropping in the State while they are increasing in neighboring States. There are, however, insufficient data to assess the demonstration program's effectiveness in meeting this goal at this time.

In any case, it should be understood that the BMCS does not plan to measure the effects on "highway safety" except in indirect terms. The BMCS Director told Safety Board staff that evidence of direct effects of such a program on rates of truck accidents (or other measures of "safety") are problematical at best. The degree of influence of other variables, such as economic conditions, energy prices and supply, seasonal variations, etc., is unpredictable and usually difficult to segregate from the effects, if any, of this kind of program. Therefore, the BMCS intends to measure the effectiveness of this program by analysis of changes in the reported level of carrier compliance with the safety regulations applicable to them. If the States report a lower percentage of inspected trucks being put out of service at the end of the 3 years, for example, or a lower ratio of violations per inspection, this fact will be cited as indirect evidence of the program's beneficial effect on highway safety.

Although there is considerable merit in this argument, several points should be kept in mind. First, as the BMCS's first safety effectiveness evaluation of its own enforcement program concluded, "A definitive correlation between a carrier's level of compliance with the Federal Motor Carrier Safety Regulations and its corresponding safety posture is still largely unknown." 110/ Simply put, the

109/ The Utah project director related that a California Highway Patrol (CHP) representative called him to say that trucks coming out of Utah were doing much better in CHP inspections.

110/ BMCS, Safety Effectiveness Evaluation Report, December 1979.

effectiveness of the FMCSR's and the motor carrier-related Federal Hazardous Materials Regulations, even when complied with, in reducing the numbers and/or severity of truck accidents is not proven. What is true in this regard of the BMCS's own enforcement program is likewise true of the demonstration program, a State-level version of essentially the same program.

Second, just as several factors can influence the numbers and rates of truck accidents besides Federal or State safety enforcement programs, so too the numbers of violations reported on the trucks inspected or the percentages of inspected trucks put out of service can be affected by other factors than merely the degree of carrier compliance with the regulations. The most obvious of these other factors is the amount of discretion permitted to and exercised by the inspectors. The Utah demonstration program, for instance, acknowledges that at the outset of their program their inspectors were more inclined to resolve ambiguous situations in favor of putting the truck out of service, but that as the program continued they developed "better judgment" in this regard. Thus, the drop in Utah's reported out-of-service ratios from 70 percent to 35 percent may be less indicative of increased truck compliance than it seems. The same tendencies may be at work in the area of violations per inspection also, and they may affect other programs than Utah's.

The best evidence the Safety Board has that Utah's reported decreases in truck violations corresponds in some measure to an actual decrease in truck violations is the impression formed by the California Highway Patrol truck inspection forces that trucks arriving from Utah are showing a marked improvement in compliance.

These considerations do not argue that the demonstration program will not have a beneficial effect on truck compliance with safety regulations or on highway safety. They do, however, indicate the difficulties of measuring such improvements and determining their source, and the care with which claims of the program's benefits must be weighed.

Promote the Adoption and Enforcement of Consistent Motor Carrier Standards

The demonstration program certainly "promotes" the adoption and enforcement of consistent safety standards in a general way. Of course, as a condition of receiving Federal funds under the program, the States had to have adopted the FMCSR's. Whether the program succeeds as a means of persuading other States to adopt the Federal regulations (or closely similar ones) remains to be seen. As discussed above, it is not yet clear that the program results will be persuasive of the efficacy of programs to enforce the Federal safety regulations.

Even if the program succeeds in persuading States to adopt and enforce safety regulations generally similar to those promulgated by the BMCS, States may choose to "tailor" them to conditions they perceive to be unique to their State. For instance, program officials in both Utah and Idaho plan to seek some changes in their enforcement program as soon as the demonstration programs are finished, namely, in making the out-of-service criteria less stringent. Representatives of both programs told the Safety Board that the Federal out-of-service criteria do not take into account the conditions in Western States, in which, for

example, a truck may be hundreds of miles from a repair facility when it is put out of service. These representatives feel that use of the out-of-service sanction for "minor" violations (e.g., cracked reflectors) is unreasonable and counterproductive. Other States may take a similar view or choose to make other modifications. Depending on the extent and nature of such modifications, the results may or may not be considered "uniform."

If States choose to tailor the Federal safety regulations to their own circumstances (thus missing the goal of uniformity), it will be difficult to make a persuasive argument for the superior safety benefits of the Federal version. Such benefits of the Federal regulations as a whole are assumed, not proven, and are certainly not quantified. The safety benefits of any particular regulation are even less certain, and the difference in safety benefits to be anticipated between the Federal regulation and a proposed State version of it would be virtually impossible to predict.

Promote the Establishment and Maintenance of State Motor Carrier Safety Programs

Program officials in the three demonstration program States interviewed by the Safety Board are enthusiastic about their programs, and hope to continue them after Federal funding has run out. Both Utah and Idaho believe that their legislatures can be convinced of the wisdom of such continuation.

The demonstration program has been effective in developing a method for turning State weighing programs into safety programs. The tactic of beginning with something familiar (weight inspections) and building on that to initiate something novel (safety enforcement) has been successful and State enthusiasm for the programs is high.

When interviewed by the Safety Board staff in the fall of 1980, both Utah and Idaho demonstration program representatives were planning to attend the first meeting of a developing "Western Alliance" to urge the adoption of uniform State safety programs, using their own programs as examples.

Whether other States can be persuaded to establish motor carrier safety programs similar to that of the BMCS will depend on other factors besides the outcome of the demonstration program. They will have to be convinced that they need such a program, that truck accidents constitute a significant preventable loss that they can and should take steps to reduce. Some States may be more interested in establishing programs directed solely at hazardous materials carriers, particularly at bulk carriers, than in regulating all types of commercial motor carriage. Many States may believe they do not have the financial or personnel resources to carry out such programs. In this regard, the availability of Federal grant-in-aid funds for State enforcement programs (such as the grant programs proposed in Senate bill 1390 and House bill 4971) may induce some otherwise reluctant States to develop programs similar to those of the BMCS. However, not all States are eager to embark on Federally-funded programs, uncomfortable with the "strings" that necessarily accompany them (such as requirements that participating States adopt uniform regulations and enforce them uniformly).

Should the BMCS decide to do so, it would be possible to add hazardous materials enforcement to demonstration program activities. The mechanisms for inspection are already in place, and hazardous materials trucks are being given general safety inspections at this time. Addition of a high-quality hazardous materials inspection and enforcement program would require intensive training of the inspection staff, and possibly an increase in staff, as hazardous materials inspections require more time to perform in conjunction with safety inspections. Two factors involved in maintaining a hazardous materials program have been stressed by Illinois, which has such a program in place:

- o it is difficult to keep the field staff advised of changes in regulations, and regular training must be provided
- o the hazardous materials regulations are so complex that it is preferable to have full-time hazardous materials inspection personnel, rather than personnel who perform hazardous materials inspections as one of several duties

These factors could limit the effectiveness of hazardous materials programs established as part of general truck safety programs.

STATE HAZARDOUS MATERIALS ENFORCEMENT PROGRAMS

The Safety Board staff reviewed State programs for truck safety and hazardous materials enforcement in 11 States. The Safety Board believes it is important to study these programs for several reasons:

- o The BMCS is already moving, through its demonstration program, to urge States to establish truck safety programs
- o Studies of the BMCS done by the General Accounting Office and the DOT Inspector General have recommended an increased level of cooperation with the States as a method of improving general motor carrier safety and hazardous materials transportation safety
- o Congress has been considering whether to establish Federal grant-in-aid programs for State truck safety and hazardous materials enforcement programs
- o State programs based on enactment of State regulations identical or closely similar to the FMCSR's and the Federal Hazardous Materials Regulations would increase uniform enforcement directed at interstate trucks
- o The States have jurisdiction over purely intrastate carriers, not covered by the FMCSR's nor actively enforced against under the Federal Hazardous Materials Regulations
- o No detailed information on existing State programs has been developed before

The State programs selected for investigation for this study provide a cross-section of State program types. They reflect a broad range of State concerns and abilities, from small programs directed at one commodity (the Texas Railroad Commission's LPG truck inspection program, for example) to large programs directed at general truck safety, including hazardous materials trucks (the California Highway Patrol's program, for example). Table 2 shows the State programs studied for this report.

Table 2.—State Programs Investigated for this Study

<u>State</u>	<u>Programs</u>
New York	New York Department of Transportation New York State Police
Pennsylvania	Hazardous Substances Transportation Board Pennsylvania State Police
Maryland	Maryland State Police
Tennessee	Tennessee Department of Transportation Tennessee Public Service Commission
Georgia	Georgia Department of Transportation Georgia Fire Marshal Office
Illinois	Illinois Department of Transportation Illinois State Police
Michigan	Michigan Demonstration Program (Public Service Commission) State Police Fire Marshal Division
Texas	Texas Railroad Commission LP Gas Division Texas Department of Public Safety
Utah	Utah Department of Transportation Utah Demonstration Program (Utah Highway Patrol)
Idaho	Idaho Demonstration Program (Bureau of Motor Carrier Safety) Idaho State Police
California	California Department of Health Services California Highway Patrol

At the beginning of the study, various reports on State activities in the areas of truck safety and hazardous materials enforcement were consulted in search of active and innovative State programs, and these were noted. The reports were also searched for active agencies in States in which BMCS regional offices were located, since Safety Board staff would be traveling to those States to interview BMCS representatives. This research resulted in an initial list of State programs to be investigated.

The second step in the selection process involved telephoning the State program representatives identified earlier and asking them about their own programs and any other hazardous materials or truck safety programs in existence in their States. In this way, project staff were able to confirm that the State agencies, in fact, still had motor carrier enforcement responsibilities (the State situation is so volatile that State agencies may gain and lose enforcement responsibilities within a short period of time). ^{111/} In this way, the Safety Board was able to determine what other State agencies should be interviewed.

The criteria for selecting State programs to investigate were quite broad, since the project staff was seeking an understanding of the full range of State activities in the hazardous materials/motor carrier safety enforcement area. The program had to:

- o deal with some aspect of motor carrier safety enforcement or hazardous materials transportation enforcement (as distinct from mere emergency response)
- o be inspection programs (as distinct from solely regulatory programs).

No criteria concerning size, length of existence, or degree of coverage were established; essentially, if they inspected trucks, they were interviewed.

The resultant sample of State hazardous materials/motor carrier safety programs is not necessarily statistically representative; however, it does represent a good geographic coverage of the United States, and it does contain a selection of large, medium, and small programs with quite different structures, operating techniques, and focuses of interest and activity.

In order to broaden coverage of State programs for this study, telephone interviews were conducted with 13 additional States with hazardous materials and/or motor carrier safety programs. These telephone interviews ascertained the existence and general characteristics of the programs, but did not obtain information in depth. The results of these interviews are reported in appendix B.

^{111/} For example, the Georgia Fire Marshal Office at one time carried out a small truck inspection program and conducted hazardous materials training. A reorganization of state offices ended these activities. A division of Florida's Public Service Commission, with 70 inspectors performing regular on-the-road truck safety inspections, was recently disbanded under Florida's "sunset" law.

The Fragmentation of State Responsibilities for Hazardous Materials Enforcement

In selecting the programs to be reviewed, and during the time the interviews were being conducted, it became clear that the responsibility for hazardous materials enforcement is, in many States, quite fragmented, with related duties spread across many State agencies. Because many of the States with hazardous materials legislation have adopted it in a piecemeal fashion, or have written hazardous materials legislation of their own addressing specific commodities (for example, Georgia's requirement for permits for transport of radioactive materials, polychlorinated biphenyls, and liquefied natural gas), different agencies have, at different times, been assigned specific hazardous materials responsibilities. In some States, for example, the State DOT may have the responsibility for inspecting trucks, but has no power to stop the trucks for inspection. In this case, the State Police and the State DOT must establish a cooperative program.

Another kind of overlapping jurisdiction results from State agencies having responsibilities for particular materials. For example, the Texas Department of Public Safety has an on-the-road general truck safety inspection program; the Texas Railroad Commission's LP Gas Division, however, has specific responsibility for trucks carrying liquefied petroleum gas, but it inspects only hazardous materials-related equipment on LPG trucks.

Another kind of fragmentation is reflected in Utah, where the Utah Highway Patrol, under contract with the BMCS, is conducting a demonstration program to inspect and weigh trucks. The Safety Division of the Utah Department of Transportation (DOT) is currently limited to inspecting carrier and shipper terminals and inspecting trucks traveling non-State routes. However, it is the Utah DOT which promulgates Utah's hazardous materials transportation and motor carrier safety regulations.

A report done for the U.S. DOT ^{112/} lists State agencies having responsibilities for hazardous materials transportation regulation, and what those responsibilities were as of early 1979. The report covered the 50 States and the District of Columbia. A tally reveals that:

- 6 States had 1 agency responsible for some aspect of hazardous materials transportation.
- 4 States had 2 agencies with hazardous materials transportation responsibilities of some kind
- 9 States had 3 agencies
- 11 States had 4 agencies
- 10 States had 5 agencies
- 5 States had 6 agencies
- 4 States had 7 agencies
- 1 State had 8 agencies
- 1 State had 9 agencies

^{112/} Wizard Research and Development Group, Inc., "Hazardous Materials Transportation: State and Local Responsibility," prepared for the Technology Sharing Division, U.S. Department of Transportation, Office of the Secretary, June 1979.

In reviewing the report's list of State agencies, the Safety Board noted that some State agencies known to have hazardous materials enforcement responsibilities were not included; therefore, the total number of agencies involved is probably even higher than shown.

The State with nine agencies with hazardous materials transportation responsibilities is Kentucky. The agencies, and their areas of responsibility are:

- o Kentucky Department of Transportation--highway and air transport
- o State Fire Marshal's Office--responsibilities in all five modes of transportation
- o Kentucky Railroad Commission--rail transport
- o Department of Military Affairs--disaster emergency services
- o Division of Explosives and Blasting--transport of explosives
- o Division of Hazardous Materials and Waste Management--general responsibilities
- o Division of Radiation Control--radioactive materials
- o Department of Natural Resources and Environment Protection--cleanup
- o Department of Natural Resources--transport of radioactive materials

Some of the States reviewed for this study by the Safety Board staff are attempting to deal with the fragmentation of hazardous materials responsibilities by establishing committees to discuss jurisdiction and develop cooperative agreements. For example, there is an ad hoc task force discussing hazardous materials problems in the State of New York. Members of the task force include the New York Environmental Department; the State Police; the Departments of Health, Labor, State, Motor Vehicles, and Transportation; and the Civil Defense Authority. Topics under discussion include jurisdiction over incidents and emergency response procedures.

Tennessee has already been through a similar process in the course of setting up an emergency response program. The interagency cooperation established in the initial stages of this program has, according to Tennessee officials interviewed, proved invaluable to the efficiency of the program. Agencies involved in emergency response include Civil Defense; the Departments of Transportation, Public Health, Labor, Agriculture, Safety, and Conservation; the Public Service Commission; and the National Guard.

In three States reviewed for this report, jurisdictional overlap had been handled in quite different ways. In Illinois, the State Police conduct the inspection portion of a large hazardous materials program, performing on-the-road hazardous materials inspections of both interstate and intrastate trucks. The inspection results are sent to the Illinois DOT, which administers the overall hazardous materials enforcement program, deals with carrier management, and imposes sanctions. In California, the Highway Patrol performs inspections for other agencies, including the Public Utility Commission and the Department of Health Services, in addition to running its own truck safety program. In Idaho, the State Police assist the Division of Law Enforcement in truck inspection activities, and Idaho State Police are being trained in quick walk-around truck inspection procedures. The two agencies closely coordinate their activities.

The fragmentation of responsibility for hazardous materials transportation regulation affects many of the State programs discussed in this report. It is also a major stumbling block to establishing new State programs or improving existing ones.

State Program Activities

As illustrated above, State truck safety and hazardous materials programs are diverse, and the focuses of the programs differ widely. Generalizations concerning a "typical State truck safety program" cannot be made. However, it is possible to compare the programs and draw some conclusions.

Table 3 presents a summary comparison of all the State programs reviewed for this report. The State programs are listed on the vertical axis of the matrix; their characteristics and activities are listed on the horizontal axis. Program characteristics and activities have been placed into four groups: legal characteristics, inspection procedures, program size, and data management. These four groups constitute the basic elements of all the State truck safety and hazardous materials programs reviewed. The matrix is strictly descriptive; a high number of identified characteristics should not necessarily be interpreted as an indication of a superior program.

The Federally-funded demonstration programs have been included in the matrix. These programs in Idaho, Michigan, and Utah differ from the other State programs in that the BMCS has assisted in their design and the data being collected by these States are being processed and analyzed by the BMCS.

The focus of 16 of the 21 State programs reviewed for this report is truck weight and/or general truck safety. The hazardous materials inspections which are performed in the majority of programs examined tend to be superficial: highly visible hazardous materials equipment, such as valves, is inspected, the truck's placarding is checked, and shipping papers are examined. It was noted in several interviews that trucks bearing placards have a higher chance of being inspected than nonhazardous materials trucks, but the inspection which the hazardous materials truck receives is a general safety inspection.

The Safety Board staff interviewed officials of five State agencies that concentrate on hazardous materials: the Illinois DOT and the Illinois State Police, the Michigan State Police Fire Marshal Division, the Pennsylvania Hazardous Substances Transportation Board, and the Georgia DOT. Detailed descriptions of these agencies' programs are presented below.

Illinois State Hazardous Materials Program

Illinois stands out as having by far the most coherent, comprehensive, large-scale State hazardous materials enforcement program. For this reason, this report presents a detailed description of the Illinois program, with briefer summaries of the three other State hazardous materials programs reviewed.

Table 3.--Summary of State programs reviewed.

	LEGAL CHARACTERISTICS				INSPECTION PROCEDURES				SIZE			DATA MANAGEMENT										
	Adopted FMCSR's	Adopted Federal IM Regulations	Equivalent Regulations on Books	Impose Fines for Equipment Violations	Impose Fines for IM Violations	Use Civil Forfeiture	Inspect Trucks On-the-road	Inspect Trucks at Weigh Stations	Inspect Trucks at Terminals	Weigh Trucks	Perform Equipment/General Safety Inspections	Inspect Small Number of IM Items (e.g., Valves, placards)	Perform Full IM Inspection	Place Trucks Out-of-service	Ticket Trucks in Violation	Program Size*	Have Follow-up Procedures	Use Manual Files	Use Automated Data Processing	Maintain Historical IM Inspection Records	Use Inspection Data for Program Analysis	Use Inspection Data in Set Program Priorities
New York DOT		X	X												S							
New York State Police		X	X	X					X					X	S		X					
Maryland State Police	X	X		X	X		X	X	X	X	X		X	X	M		X		X	X	X	X
Pennsylvania Hazardous Substances Transportation Board	X	X		X	X			X		X		X			S	X		X	X	X	X	X
Pennsylvania State Police	X	X		X	X		X	X	X	X	X		X	X	M		X					
Georgia Fire Marshal											X				S		X					
Georgia DOT							X								S		X					
Tennessee DOT	X	X													S			X				
Tennessee Public Service Commission	X	X		X	X		X	X	X	X	X		X	X	L	X		X	X	X	X	X
Illinois State Police		X	X	X	X		X	X				X	X	X	L	X		X	X	X	X	X
Illinois DOT		X	X	X	X	X									L	X		X	X	X	X	X
Michigan Fire Marshal	X	X		X	X			X				X			S			X	X	X	X	X
Michigan Public Service Commission (Denc. Program)	X	X		X	X		X	X	X	X	X		X	X	L	X		X	X	X	X	X
Texas Railroad Commission LP Gas Division	X	X	X	X	X		X	X				X	X		M	X		X	X	X	X	X
Texas Department of Public Safety	X	X		X	X		X	X	X	X	X		X	X	L			X	X	X	X	X
Utah Highway Patrol (Denc. Program)	X	X		X	X		X	X	X	X	X		X	X	L			X	X	X	X	X
Utah DOT	X	X		X	X			X		X	X		X	X	S			X	X	X	X	X
Idaho Demonstration Program	X	X		X	X		X	X	X	X	X		X	X	M			X	X	X	X	X
Idaho State Police	X	X		X	X		X	X	X	X	X		X	X	M			X	X	X	X	X
California Highway Patrol	X	X		X	X		X	X	X	X	X		X	X	L	X		X	X	X	X	X
California Department of Health Services	X	X						X							S							

*The number of program personnel does not accurately reflect the size of a program, since states may require different numbers of personnel, depending on carrier population, carrier density, and geographical characteristics. Therefore, small (S), medium (M), and large (L) designations are used to indicate the program's relative size.

†The Illinois State Police are the enforcement arm, the Illinois DOT the administrative arm, of a unified program. Terminal inspections are rare, and are carried out by the Illinois State Police & Illinois DOT together.

The Illinois legislature enacted the Illinois Hazardous Materials Transportation Act in 1977, directing the Illinois DOT to promulgate rules consistent with the Federal Hazardous Materials Regulations. The Illinois DOT published the proposed rules in the Illinois Register for public comment, and a final rule was issued in February 1979. The Illinois regulations cover the motor vehicle-related Federal Hazardous Materials Regulations, including Part 397 of the FMCSR's (Transportation of Hazardous Materials; Driving and Parking Rules). The Illinois law provides for civil penalties of up to \$10,000 per violation and criminal penalties of up to \$25,000 per violation.

Responsibility for enforcement of the hazardous materials regulations rests with two agencies: the Illinois State Police (inspection and field enforcement) and the Illinois DOT (administration, action on Notices of Apparent Violation (NAV's), and imposition of fines).

State Police. The State Police performs its inspection and field enforcement with 45 troopers scattered across the State; these officers spend about 80 percent of their time on hazardous materials enforcement work.

The enforcement program incorporates a mixture of surprise road checks and continuous inspections at weigh stations. Although weight checks of all passing trucks are being conducted at these stations at the same time as hazardous materials trucks are being inspected, the activities are separate, with different officers performing each.

The roadside and weigh station checks involve a thorough inspection of placarded hazardous materials trucks for both safety-related defects (brakes, steering, tires, etc.) and hazardous materials violations (placarding, shipping paper, tank truck equipment items, etc.) Trucks that are not placarded, but which the trooper suspects ought to be, are also inspected.

These hazardous materials truck inspections go beyond merely looking over the shipping papers and confirming the existence and appropriateness of the placards. All hazardous materials safety equipment is checked to see that it is there and in good operating order; the plate required to be affixed to tank trucks showing the U.S. DOT specification type and the dates of the periodic tests required to be made is checked for legibility and currency; tank trucks are scrutinized for damage or leaks; vents and manholes are examined; nonbulk hazardous materials cargos may be looked at for proper packaging, labeling, and appropriateness of cargo mixtures (i.e., no poisons packed with foodstuffs). The trooper photographs all violations (including paperwork errors) to provide supporting documentation for future enforcement cases. Troopers observed by Safety Board staff carrying out these inspections spent some time discussing the violations with the drivers. 113/

113/ The State Police believe these inspections would have more effect if Illinois had adopted the FMCSR's. They state that they can cite defective brakes and other serious safety defects only under such general categories as "unsafe equipment."

If no violations are discovered, one copy of the inspection form is given to the truckdriver as an "inspection form." If violations have been discovered, the form is filed with the Illinois DOT as an NAV. When the NAV has been filed, accompanied by the photographs, the State Police responsibility for enforcement is ended, and the Illinois DOT takes over the case.

The State Police has authority to carry out inspections in carrier terminals, shipper areas, and storage areas. However, it has rarely exercised this authority. When such an inspection is organized, the State Police and the Illinois DOT carry it out together.

The hazardous materials program covers both interstate and intrastate carriers, although small carriers have been given a grace period to come into compliance with the regulations. The State Police concentrates its efforts on major truck routes, but since hazardous materials specialist troopers spend part of their time patrolling, they do check less heavily traveled roads (including especially those which are used to bypass weigh stations). The hazardous materials specialist troopers are the only ones authorized to enforce the hazardous materials regulations; if other troopers find a violation, they must call a specialist trooper. The trooper in charge of the program believes this is a good aspect of the program; he is convinced that hazardous materials enforcement is a full-time job, and that just staying abreast of changes in the regulations requires a great deal of effort. He feels that a "part-time" program can be effective only in checking the most obvious violations, such as shipping papers and placarding.

The State Police recordkeeping procedure is decentralized. Each trooper maintains his or her own files and records; the central clearinghouse for information about the program is the Illinois DOT, which receives all of the NAV's.

Illinois DOT. The Hazardous Materials Section of the Illinois DOT has a staff of nine, divided into a Docket Unit, a Compliance Unit, and a Regulations and Training Unit. The functions of each unit are described below:

- o Docket Unit—receives NAV's from the State Police, logs them in, and establishes a file (if a first NAV is involved) or adds the NAV to an existing file; sends file to Compliance Unit after screening to confirm that an actual violation has occurred; maintains files.
- o Compliance Unit—reviews NAV's received from Docket Unit, investigates to obtain additional information if necessary, decides which of five courses of action to take (described below), cooperates with legal division, makes referrals of some cases to Regulations and Training Unit.
- o Regulations and Training Unit—accepts referrals from Compliance Unit when Compliance Unit feels that violation is caused by lack of awareness of regulations; inspects carrier and shipper facilities and trains carriers and shippers in hazardous materials regulations; trains Illinois DOT staff; conducts public orientation programs.

The Illinois sanctions program is best described by tracing an NAV issued by the State Police through the procedures employed by the Hazardous Materials Section. The NAV is received by the Docket Unit and immediately screened for accuracy; a copy is held for 1 week. If no violation is found, or if the violation is extremely minor (e.g., administrative, minor paperwork error), the Docket Unit files the NAV and no further enforcement action is taken. At the end of the week, an informational letter and the NAV copy is mailed to the carrier. This letter states only that an NAV has been received; no statement concerning carrier culpability is made.

For serious violations, the Compliance Unit reviews the NAV and decides whether further investigation is required to build a case. If so, it performs this investigation; if the evidence submitted by the trooper is adequate, the unit decides which of five options open to it should be pursued. These options are:

1. to take no formal action beyond the mailing of the information letter, but to initiate liaison with the company involved;
2. to send a warning letter to the violator, discussing the offenses discovered, and detailing the penalties to be imposed for further infractions of the regulations;
3. to issue a Notice of Probable Violation (NPV) and move for civil assessment;
4. to issue an NPV and a Compliance Order; or
5. to refer the case to the Regulations and Training Unit, thus taking an education approach to eliminating carrier or shipper violations.

Generally speaking, a warning letter (signed by the director of the Division of Traffic Safety) is not sent until a pattern of violations has been established. However, serious violation may bring a warning letter at the first occurrence. Repeated serious violations result in the issuance of Notices of Probable Violation (NPV's), with their associated monetary penalties, or Compliance Orders.

In contrast with Federal practice, Illinois fines associated with NPV's are not negotiated. ^{114/} The amounts are determined by use of a formula which takes into account the nature of the violation, the extent of violation, the degree of hazard involved in the violation, the violating company's culpability, and the violating company's compliance history. Part of the rationale for establishing such a system was the Illinois DOT's desire to make the sanction procedure relatively immune to political pressure. As the director of the Division of Traffic Safety (in overall charge of the Illinois hazardous materials program) stated, "The heart of administrability is a well trained professional staff which is immune from political pressure . . . [This requires] separation of penalty assessments from day-to-day administration." ^{115/}

^{114/} In fact, program officials feel that the BMCS practice of negotiating settlements makes Illinois' job more difficult, since many companies have come to expect it.

^{115/} Karsten J. Vieg, remarks at a meeting of the White House Office of Science and Technology Policy's Intergovernmental Science, Engineering and Technology Advisory Panel, June 6, 1980.

Thus, the Hazardous Materials Section is also buffered by having the Illinois DOT Chief Counsel's Office handle litigation. An "administrative error" on the part of the Illinois DOT legal staff provides the only ground for appeal to the civil court system.

Should the Compliance Unit decide that the best way of dealing with an NAV is to educate the violator, the NAV is referred to the Regulations and Training Unit for action. This unit will inspect the violator's facility and provide training in the regulations and suggestions about how to comply with the regulations. Usually, the unit deals in this way with small "mom and pop" operations which lack legal staff and experience in dealing with complex regulations. The unit also inspects carrier or shipper facilities at the company's request, and provides orientation programs for the public.

Data processing for the Hazardous Materials Section is handled by the Evaluations and Data Analyses Section of the Bureau of Safety Studies and Projects. All of the information on the NAV is captured and put into a computer file.

The Hazardous Materials Section uses special handling procedures to focus effort upon repeat violators. When a company has had 12 violations, it is placed on a "hot sheet." The hot sheet is monitored daily, and if a 13th NAV is filed against a hot sheet company, action on that NAV is taken immediately. When the Hazardous Materials Section was first established, there was quite a long period between issuance of the initial informational letter to companies and further action on the NAV. While this lag has been reduced, staff time limitations do cause some delay in action. The hot sheet was designed to establish priorities, "bumping" repeat violators to the front of the enforcement action queue.

From February 1979 through June 1980, approximately 1,700 informational letters (stating that an NAV was issued), 850 telephone calls, and 750 warning letters were issued. 116/

Training. The 45 hazardous materials specialist troopers have received extensive hazardous materials training. All have taken the 2-week basic course at the U.S. DOT's Transportation Safety Institute (TSI), and 30 of the 45 have taken the 1-week advanced course. The remaining 15 will also be sent to the advanced course. An attempt is made to provide continuing updates as hazardous materials regulations change on the Federal level; this is especially important because Illinois' rulemaking process imposes a 6- to 9-month lag between Federal and Illinois changes in the regulations (which may mean that an interstate truck in compliance with Federal regulations is not in compliance with Illinois regulations).

The training of the Illinois DOT Hazardous Materials Section personnel involves both external and in-house courses. Staff members attend the TSI's 2-week basic course and the 1-week advanced course. Additionally, they attend two in-house workshops on hazardous materials and hazardous wastes, and new investigators are assigned to work with experienced investigators for a time.

116/ These figures are approximate, taken from a graph marked in increments of 50, provided by the Illinois DOT.

The Illinois program is funded partly through the Federal Highway Safety Program (23 U.S.C. 402), under its Standard 16--Debris Hazard Control and Cleanup. Program officials say the Federal funds have been used to provide equipment and training for the hazardous materials specialist troopers, and for funding the Illinois DOT Hazardous Materials Section.

Officials of the Illinois program feel that most of the attention given by Federal agencies to State hazardous materials activities has been focused on training emergency response personnel in emergency handling procedures, and little or none on helping States to develop and implement solid, well-organized enforcement programs. In their view, "the Federal government should match its enthusiasm for State participation in hazardous materials administration with some funding as an encouragement for States to get involved." ^{117/} As the director of the program put it in a recent address to the White House Office of Science and Technology Policy:

At the moment, the only available federal funding is through Standard 16 . . . of Section 402 of the Federal Highway Safety Act. By stretching Standard 16 to the limits of its intention, some states, Illinois included, have funded training, administration, and equipment needs in hazardous material. There is serious question whether this will be allowed to continue much longer. It would be far better if Congress appropriated funds to the [U.S. DOT's Materials Transportation Bureau] which it could allocate to the states for the establishment of hazardous materials organizations based on uniform federal standards. The monies would be small, I estimate \$10-20 million annually, and the proportionate gains in enforcement would be enormous. ^{118/}

Officials of the Illinois program believe that the only way hazardous materials carriage by trucks will be effectively monitored will be through State programs of sufficient number, size, and thoroughness, not through the enforcement efforts of the BMCS. The Illinois director's view is that:

The only area for substantial state initiative is highway transportation, but highway transportation is exactly the area in which the bulk of incidents and injuries occur. It is also the area where state governments tend to have the greatest existing expertise.

Unfortunately, Federal officialdom which enacts these [hazardous materials regulations] is relatively powerless to enforce them. It does not have, and in the estimation of most observers will never have, staff or budget adequate to the job. The bulk of enforcement and administration must come from those states which have also adopted the regulations. Although Federal officials and the Congress are quick to give lip service to this reality, they have been slow to take tangible initiatives to cement the partnership upon which the goal of voluntary compliance depends. ^{119/}

^{117/} Vieg, op. cit.

^{118/} Ibid.

^{119/} Ibid.

Pennsylvania Hazardous Substances Transportation Board, Pennsylvania DOT

The Pennsylvania Hazardous Substances Transportation Board (HSTB) was created in 1965 after an explosives truck caught on fire and exploded, killing 17 firemen. The HSTB was at that time appended to the Pennsylvania Revenue Board. In 1970, the Pennsylvania DOT was created, and the HSTB was transferred there. The HSTB is a regulatory body with 15 members, 8 of whom are *ex officio* (e.g., the Commissioner of the State Police, the Public Utilities Chairman, etc.). The remaining 7 members represent industry and the general public.

In 1965, the HSTB promulgated the first hazardous materials regulations for Pennsylvania; in 1979, Pennsylvania adopted the Federal Hazardous Materials Regulations.

The HSTB's functions as a regulatory body are joined to a hazardous materials enforcement responsibility for the highway mode. However the HSTB has only two field investigators and two headquarters investigators (who, according to the director, spend a great deal of time in the field). The HSTB has split the State into five areas, based on carrier registration and hazardous materials truck accident rates, and the investigators are assigned to these areas primarily to perform terminal inspections of hazardous materials carriers. The director says that they are working with a list of about 3,800 hazardous materials carriers, most of whom "are concerned about the public perception of the dangers of hazardous materials carriage, and are eager to cooperate with HSTB." He estimates there may be another 1,000 to 2,000 carriers in Pennsylvania which carry hazardous materials occasionally.

The HSTB is developing a highly sophisticated data system with cross-referencing capabilities to generate terminal investigation priority lists using weighted factoring of data system elements. The director believes that, by using such analytical techniques, his small investigation staff can be used in a highly efficient manner.

Georgia Department of Transportation

In 1979, the Georgia State legislature enacted a bill requiring that highway carriers of three hazardous materials--radioactive materials, polychlorinated biphenyls (PCB), and liquefied natural gas (LNG)--obtain permits before transporting those materials in the State. The carrier must notify Georgia's DOT in advance of the route to be taken through the State, the anticipated times of arrival and departure (in the case of an interstate shipment), the substance carried, and the name of a responsible person to notify in case an incident occurs. Evidence of liability insurance and other security must be presented at the time of application for a permit. One-trip permits are valid for 5 days from the date of issuance, are nontransferable, and must be carried by the truckdriver. Annual permits may also be obtained.

All radioactive materials transported on an "exclusive use" vehicle, which are spent fuels, or which are "large quantities" as defined in the Federal Hazardous Materials Regulations 120/ require a permit identical to that issued for PCB or

120/ 49 CFR 173.389

LNG transport. However, radioactive materials in smaller quantities, or of a low curie level, may be transported after the Georgia DOT receives a letter of intent from the carrier.

A Georgia DOT official told the Safety Board staff that enforcement of the permit law is difficult. The Georgia DOT has approximately 140 enforcement officers, but their primary task is checking truck weight, fuel stickers, general licensing, etc., at weigh stations. If one of these officers happens to see a placarded truck, he or she may ask to see the permit or letter of intent. If the truck is carrying PCB or LNG and has no permit, it is clearly in violation. However, if radioactive materials are being carried, the officer can determine the size or degree of radioactivity of the load only by adding all the curie levels shown on the manifest, a time-consuming process.

The small number of enforcement officers, and the fact that they have other primary duties besides checking for permits, means that coverage of Georgia's highway system is spread thin, and that most loads moving in the State will not be checked. A program official told the Safety Board that the Georgia DOT does not know how many interstate and intrastate trucks are transporting PCB, LNG or radioactive materials in or through Georgia; he believes that they are aware of about 20 percent of the radioactive material transporters but would not estimate what percent of the PCB carriers were known to them.

The Georgia DOT has not been provided with additional funds to administer the program or to notify carriers of the permit requirements. If a carrier is cited for failing to carry a permit, the Georgia DOT does send a letter to the carrier's corporate headquarters with information on the permit program. Penalties for failure to obtain a permit or present a letter of intent are determined by county statute.

Michigan Fire Marshal Division

The Michigan Fire Marshal Division is an arm of the Michigan State Police. In October 1977, the Governor of Michigan instructed this division to institute a bulk truck hazardous materials inspection and enforcement program. The order was established by law in February 1979. Bulk hazardous materials trucks found to have a hazardous materials-related defect are subject to a \$200 fine.

Michigan's hazardous materials program is still in its infancy; the organization of the program has been established, but inspections and enforcement are just beginning. Initially, the law required the fire marshal to inspect annually all trucks carrying hazardous materials in bulk in or through the State. However, this was soon found to be infeasible; now, new intrastate bulk hazardous materials trucks and bulk hazardous materials trucks that change ownership are required to be inspected once. Other intrastate bulk hazardous material trucks are inspected through on-the-road checks. The program has focused initially on inspecting all intrastate trucks that carry bulk flammable liquids and LPG; the fire marshal estimates there are about 7,000 of these and his division has inspected about 4,000. Generally, this inspection has been carried out by having officers from the Fire Marshal Division go to carrier terminals and inspect a number of trucks at once.

The fire marshal is not attempting to enforce the inspection requirements against interstate trucks; at first this was because he did not have enough resources to handle both intrastate and interstate trucks; now he feels that the inspection requirement may not be legally enforceable against interstate carriers, based on Pennsylvania's recent experience with a similar requirement.

The Michigan program has two objectives: to locate trucks with hazardous materials-related defects and require those defects to be repaired, and to provide a means of identifying trucks and cargos, largely for emergency response purposes. If an inspector finds a minor defect in a truck which carries hazardous materials, he or she may issue a notice of the defect and allow the truck to continue to operate before it is repaired. If the defect is a more serious one, the truck may be put out of service until the repair has been made. When the truck passes inspection, three large five-digit inspection stickers are placed on the rear and sides. They serve three purposes: (1) they indicate that the truck has been inspected; (2) they provide a means of obtaining information on the general category of hazardous materials being carried; and (3) they provide a means of identifying contact persons for the carriers, in the event of an incident. The latter two capabilities are provided by Michigan's automated data processing system: the identification number is the key for retrieving a file of information provided by the carrier.

When the program started, it had a staff of 32; of those, 5 were administrators, 1 did the data processing for the program, 1 was a chemical engineer, 1 was an administrative analyst, and 5 performed clerical duties. This left 19 sergeants to inspect trucks. In mid-December, Safety Board staff learned that the Michigan program has been reduced to 16 personnel: 11 in the field and 5 in headquarters. The fire marshal told the Safety Board staff, "We'll be lucky to carry out terminal inspections now; I don't see how we'll be able to do on-the-road truck inspections." He suspects that when the public reaction to the mid-70's "double-bottom" gasoline truck accidents in Detroit wears off, the entire hazardous materials program may be dismantled, although the law may stay on the books.

Characteristics of Other State Programs Reviewed

On-the-Road Truck Inspections. Truck inspections are performed in many different ways in the 21 State programs reviewed. Some States use a "full" inspection similar to that used by the BMCS, which takes approximately 1 hour to perform, and which requires examination of the items appearing on the Federal out-of-service criteria. A Tennessee Public Service Commission (PSC) representative stated that PSC inspectors give trucks passing over weigh station scales a visual inspection; if they see defects, they pull the truck over and give it a full inspection similar to that done by the BMCS. The inspection form used by PSC inspectors is almost identical to the BMCS's, but Tennessee does not enter the inspection results in an automated data processing system. The Utah DOT Safety Division also performs BMCS-type on-the-road truck inspections.

The California Highway Patrol (CHP) uses a focused vehicle inspection technique, called the "Critical Items" inspection, based on an in-depth study of truck accidents and the items most commonly involved as causes. The CHP's study found that airbrake systems, steering components, tires, wheels, and connecting devices ("fifth wheels") were the items most frequently involved in truck-caused accidents; driver fatigue was also found to be a significant contributor to

accidents. ^{121/} The critical items inspection is designed to concentrate solely on those items during a vehicle inspection, in lieu of the more detailed (and more time-consuming) vehicle inspection performed by the BMCS and many States. (See figure 5 for a comparison of the vehicle and driver items inspected under the critical items technique and the BMCS "full" technique.) The CHP believes that it is more effective to inspect a greater number of vehicles for these items than to inspect a wider range of items (arguably less crucial to safety) on a smaller number of vehicles.

The CHP commercial vehicle program is divided into two programs: an "on-highway" effort and an "off-highway" effort. The on-highway program conducts size, weight, and safety inspections of commercial vehicles on California roads. This program has approximately 100 officers conducting operations at 47 platform scale locations and 9 inspection stations. In addition, there is a Mobile Road Enforcement (MRE) Program, staffed with 67 officers conducting inspections at random locations throughout the State. Approximately 300,000 units (power units and/or trailers) were inspected last year; last year's on-highway operating budget was about \$10.5 million.

After 2 years of testing the program, the CHP started a full-scale critical items program in 1979. Since then, all commercial vehicle inspections have been done by this technique. In 1979, 343,341 vehicles were inspected using the technique, a 44.5-percent increase in vehicle inspections over 1975. The inspections found brake defects in 186,000 vehicles in 1979, 38.8 percent more than in 1975. These inspections were also conducted with fewer person-hours than in 1975. The CHP is cautious in quantifying the effectiveness of its focused inspections in reducing accidents; however, the CHP says its records show "truck-at-fault" accidents down 0.4 percent in 1979, even though truck mileage increased 13 percent that year.

The CHP has trained other States' personnel in the critical items technique and is working with several Western States to develop a reciprocal inspection system in which trucks bearing a current inspection sticker from a State using the technique need not be inspected by other States in the system. The CHP is also trying to interest insurance companies in motivating their customers to maintain the critical items on their vehicles. The American Automobile Association distributes a pamphlet explaining the inspection program.

^{121/} Although the BMCS has declined to adopt an inspection similar to that of the CHP, it is interesting to note that the BMCS's own analysis of motor carrier accidents involving vehicle defects or mechanical failure found the same components most frequently at fault. For example, in 1976, 81 percent of the 1,257 reported accidents involved mechanical defects in the brake system, tires, steering assembly, wheels, or suspension. In 1977, 78 percent of the 1,437 reported accidents involved defects in the tires, brake system, steering assembly, wheels, or coupling devices. In 1978, 73 percent of the reported accidents involved defects in the brake system, tires, steering system, wheels, or coupling devices. Source: U.S. DOT, Federal Highway Administration, Bureau of Motor Carrier Safety, "1976-1978 Analysis of Motor Carrier Accidents Involving Vehicle Defects or Mechanical Failure," November 1979.

<u>California Highway Patrol</u>	<u>Bureau of Motor Carrier Safety</u>
1. Brake adjustment	1. Brake system (no further explanation in BMCS manual)
2. Air loss	2. Air loss (at hose coupling)
3. Low air pressure warning device	3. Brake warning device
4. Brake hoses	4. Brake hoses
5. Brake drums	5. Not indicated
6. Brake shoes	6. Not indicated
7. Steering components	7. Steering
8. Wheels	8. Wheels
9. Tires	9. Tires
10. Drawbars/fifth wheels	10. Fifth wheel/coupling device
11. Driver logs	11. Driver logs
Lights, other equipment, and condition of load (not specific items checked, but observed during the inspection process)	12. Headlights
	13. Clearance lights
	14. Identification lights
	15. Taillights
	16. Turn signals
	17. Fuel tanks
	18. Suspension
	19. Reflectors
	20. Sidemarker lights
	21. Rear-end protection
	22. Emergency equipment
	23. Horn
	24. Windshield wipers
	25. Windshield(s) and glazing
	26. Heater/defroster
	27. Speedometer
	28. Mirrors

Figure 5.—Comparison lists of inspection items for the California Highway Patrol and the Bureau of Motor Carrier Safety.
(Provided by the CHP)

Tennessee has experimented with a checklist-type inspection similar to the California Highway Patrol's, but supervisory personnel interviewed by the Safety Board staff said they do not feel the checklist approach is sufficiently thorough and have resumed "full" inspections. Tennessee inspectors also check the placarding of hazardous materials trucks; a Tennessee Public Service Commission representative said that his inspectors "look at hazardous materials trucks with a critical eye."

Some States perform a periodic inspection of trucks (California, for hazardous waste carriers, for instance), or require annual or one-trip permits for the transportation of certain hazardous materials but perform no truck inspection (Georgia, as discussed above, for example).

Many State truck inspection programs are conducted in conjunction with, or using the facilities of, State weighing programs. The weigh stations provide a convenient, safe spot for pulling trucks over and inspecting them. The truck weight inspections are familiar to States, and often truck safety inspection programs have been built into weighing programs, using personnel from the same department.

For example, Maryland's hazardous materials activities are not formally separate from the Maryland Truck Enforcement Division's truck weighing program. The Maryland State Police hazardous materials specialist gives a 2-hour hazardous materials course to police academy recruits; based on their academy training, Maryland weight inspection teams may inspect for hazardous materials and truck safety violations when they have stopped a truck for a weight check. When a truck is stopped, either at a permanent scalehouse or a temporary station, the truck is weighed and inspected. There is no set policy for inspected items; troopers inspect those items which "in their experience" are significant safety problems. Placarded trucks are inspected for obvious hazardous materials violations as well as for general equipment malfunctions and overweight. 122/

The Texas Department of Public Safety (DPS) operates by pulling every truck coming down the road into the scalehouse area. In the area, one trooper performs an audiovisual check of the truck; if this indicates a possible problem, the truck is given a safety inspection by another trooper and trucks with safety defects are issued a citation. If no problem is discovered, the truck moves on across the scales. The safety check (inspection following the audiovisual check) takes approximately 15 minutes to complete. The hazardous materials inspection involves little more than checking the placarding and inspecting hazardous materials-related equipment (valves, fusible elements, etc.) in the course of a general safety inspection.

An additional facet of Texas' truck safety enforcement program is inspection by patrolling troopers. If a trooper notices a truck with probable safety violations, he or she will pull it over and perform a safety check. A Texas DPS representative estimates that 5 years ago Texas spent approximately 1 or 2 percent of inspector time on equipment inspections; that percentage has now increased to 11 to 12 percent.

The Texas Railroad Commission's LP Gas Division's hazardous materials responsibilities include licensing of all LPG trucks (including interstate trucks), inspecting LPG trucks annually, and placing trucks with unsafe LPG-related equipment out of service. The director of the division pointed out that the inspectors do not perform general truck safety inspections; they inspect no vehicle equipment not related to the cargo.

122/ Maryland has only two operating permanent weigh stations; the State is considering expanding these to five at some point. In addition, there are 13 roving weight/hazardous material inspection crews operating on Maryland roads during the day.

Terminal Truck Inspections. Terminal surveys, during which carrier records are reviewed, are not generally part of the State truck inspection programs reviewed. Some State programs do involve truck inspections at the terminal (as distinct from BMCS-type Safety Management Audits); however, these programs focus on periodic inspection of a universe of trucks (for example, the Texas LP Gas Division's annual inspection of LPG trucks).

The Tennessee PSC performs terminal inspections during bad weather. The Utah DOT, which has established a Bureau of Motor Carrier Safety structured like the Federal BMCS, inspects trucks at terminals and conducts BMCS-type Safety Management Audits as well. In the case of a terminal which has a mixture of interstate and intrastate trucks, the Utah DOT and Federal BMCS investigators will perform the audit together, with the Utah DOT checking the intrastate trucks and BMCS checking the interstate trucks. Information concerning what surveys have been performed and are planned is exchanged regularly in order to avoid duplication of effort.

The California Highway Patrol, while it does not stress hazardous materials in its on-the-road truck inspection program, plans to expand its program of terminal inspections of hazardous materials carriers. Because it licenses all explosives transporters, it inspects and rates their terminals annually. It will, probably in 1981, start inspecting hazardous waste vehicles for the California Department of Health Services.

Enforcement Against Drivers. Representatives of only 3 of the 21 State programs reviewed for this report stated explicitly that they enforce hours-of-service and logbook regulations. The Utah DOT, the California Highway Patrol and, as discussed above, the Illinois State Police include checks of the driver's log and hours of service in their on-the-road inspections. The other inspection programs reviewed were oriented entirely toward equipment violations.

Sanctions for Equipment, Driver, and/or Hazardous Materials Violations. The sanctions which are available for equipment and hazardous materials violations in the States reviewed are diverse. As noted above, Illinois has a civil forfeiture program with a well-defined assessment structure. On the other hand, most of the reviewed States, including demonstration program States, have only low monetary sanctions. Table 4 indicates the sanctions available to the States reviewed for this report. The small fines listed in Table 4 were not felt to be an effective enforcement tool by the State representatives interviewed.

States may use the out-of-service sanction, which prevents a truck from moving until the equipment violations have been repaired, to keep dangerous trucks from moving on their highways. Program representatives are aware that it is possible for trucks to be moved without being repaired (after the inspection station closes or the troopers leave the area), but most program officials believe that most trucks are repaired before being moved.

Of the States reviewed that inspect for both hazardous materials violations and general truck safety violations, only Michigan and California distinguish between them in their fine structure. In the other States reviewed, hazardous materials violations are treated no more severely than equipment violations, and the prescribed fines are the same.

Table 4.--Available Sanctions for Violation of
State Truck Safety and/or Hazardous Materials Laws

<u>State</u>	<u>Sanction</u>	<u>Out-of-Service Option?</u>
Illinois	\$10,000 maximum civil forfeiture per violation, assessment per formula	Yes
Michigan	\$200 for hazardous materials safety defects; \$100 for other equipment defects	Yes
Pennsylvania	\$100	Yes
Texas	\$100-\$200	Yes, for LPG
Tennessee	\$50 plus court costs	Yes
Maryland	\$50	—
Utah	\$30	Yes
Idaho	\$300	Yes
Georgia	Differ from county to county	No
California	\$50-\$250, equipment violation; \$50-\$500, hazardous materials violation	Yes
New York	\$10-\$15, equipment violation; \$500 and 60 days in jail (1st offense), \$500-\$1,000 and 6 months in jail (2nd offense), 6 months in jail/felony. (3rd offense) hazardous materials violation	Yes

SAFETY BOARD ANALYSIS

State truck safety and hazardous materials enforcement programs are likely to become an increasingly important part of motor carrier enforcement programs. The DOT Inspector General, in his study of the BMCS, has recommended that the BMCS work more closely with States to improve motor carrier enforcement efforts. A bill "to amend the Hazardous Materials Transportation Act to encourage a greater Federal effort in the prevention and response to transportation incidents involving hazardous materials, to provide assistance to State and local governments in preventing and responding to such incidents, and for other purposes" has been drafted by the Senate Committee on Commerce, Science, and Transportation. This bill would authorize the Secretary of Transportation to "make grants to States for the development and implementation of programs for the enforcement of Federal rules, regulations, standards, and orders applicable to hazardous materials transportation and compatible State rules, regulations, standards, and orders." Several truck safety bills considered in the last session of Congress included provisions for Federal assistance to encourage the development or expansion of State enforcement programs.

As Congress, the DOT, and the States consider such options, it will be important to know what difficulties may be encountered in establishing and maintaining State truck safety and hazardous materials programs, as well as what potential benefits may accrue from their establishment and maintenance. Through review of the 21 State programs studied for this report, it is possible to draw some general conclusions concerning the possible weaknesses and strengths of State enforcement programs.

Weaknesses in State Programs Reviewed

The weaknesses in the 21 programs studied in 11 States are:

- o inadequate funding
- o personnel ceilings and hiring constraints
- o inadequate training
- o inadequate data processing facilities
- o the potential for interagency rivalry
- o nonuniformity of truck safety/hazardous materials regulations
- o susceptibility to political pressure
- o low penalties
- o the potential for too-frequent truck inspections

Several of the problems associated with the State programs seemed to derive from the lack of sufficient resources (human, educational, and monetary) or from various legislative actions. Problems associated with the administration of the programs and the performance of the inspections were rare; the State programs reviewed for this report seemed for the most part competently run and competently staffed.

Inadequate Funding. New York is a good example of a State with considerable truck traffic, including hazardous materials carriage, which has not funded truck safety or hazardous materials inspection or enforcement, although it has truck safety and hazardous materials regulations.

The New York State Police are responsible for enforcing all vehicle regulations on New York's books; this includes the Federal Hazardous Materials Regulations, which New York has adopted, and regulations which are equivalent to, and sometimes more stringent than, the FMCSR's. However, the State Police do not have a formal program of hazardous materials regulations enforcement, and indeed devote little time to hazardous materials. The State Police representatives interviewed by the Safety Board staff stated that the State Police force is "massively understaffed and underfunded," and that its truck inspection activities revolve around a Federally-mandated truck weight limitation enforcement program. The FHWA told New York 2 years ago that it was performing an inadequate number of weight inspections. As a consequence, the State Police initiated a program in which 86 troopers, supervised in the field by 9 technical sergeants, spend all of their time weighing trucks.

Another State Police program, while it is not directly connected with hazardous materials regulations enforcement, does pick up hazardous materials violations. Forty person-hours per month are expended inspecting all vehicles (passenger cars, commercial vehicles, and buses) traveling a given stretch of road in 33 zones, for a total of 1,320 person-hours per month Statewide. The items inspected are at the trooper's discretion, but an inspection routine is taught at the police academy. Hazardous materials violations and general truck safety problems are sometimes discovered during these inspections.

The New York State Police spend approximately 6 percent of its time, and \$6 million per year, on commercial vehicle enforcement. The State Police is structured as a law enforcement body, responsible for those areas without a local police force. As such, it is involved in criminal investigations and protection of life and property, and traffic enforcement is necessarily at a lower priority than many other State Police activities.

The New York Department of Transportation (DOT) has no formal hazardous materials transportation program; it has one hazardous materials specialist whose job is to respond to questions from 11 New York State (transportation) regions. Approximately 25 inquiries come to the specialist per month; he had received 200 as of August 1980. The inquiries mainly concern placarding procedures and paperwork requirements for hazardous materials.

The New York DOT would like to have a more substantial program; however, representatives told the Safety Board that budgetary and staff limitations preclude this. It has been 2 years since the New York DOT has had sufficient staff to conduct on-the-road truck inspections; when it last conducted such inspections, 20 to 30 percent of trucks inspected were being placed out of service.

The New York DOT's inspection resources are all being used to conduct a State-mandated bus inspection program. Every bus operating in the State must be inspected twice a year; the staff available to the New York DOT to do this is 78 inspectors, 9 supervisors, and 1 chief inspector. This group must work overtime in order to complete bus inspections, and no time is available for truck inspections.

New York may be an extreme example of the effects of inadequate funding on State truck safety programs, but it is a common problem. Truck safety and hazardous materials enforcement programs are expensive to establish and maintain. An effective program requires a relatively large field staff, who must be trained and equipped to do the job, as well as administrative and support personnel. The costs will vary depending on the size of the required staff and the extent of the program, but they will be substantial. As an example of the range of possible costs, the Illinois hazardous materials enforcement program costs approximately \$1 million per year to run, as does each State demonstration program, while the California Highway Patrol program costs approximately \$15 million per year to run. In the absence of data, it is difficult to demonstrate the direct benefits accruing to States from truck safety programs, and States have been reluctant to provide initial funding for these programs.

Experience in States with established, ongoing truck safety and/or hazardous materials programs seems to indicate that once data from the programs are being produced, and the nature of the safety and hazardous materials violations occurring in the States is known, obtaining continuing funding becomes somewhat easier. However, such programs are still considered a luxury; the captain of the Michigan Fire Marshal Division believes that his program's continued funding is directly tied to the State's economic condition and predicts further cutbacks if Michigan's economy does not improve.

While it could be argued that some Federal funding for State truck safety/hazardous materials enforcement programs might reduce the uncertainty of their continuance from year to year, several State program representatives made the point that Federal funding accompanied by strong Federal controls might not be acceptable to their legislatures. ^{123/} A Tennessee PSC representative believes State programs will require some Federal funding, which should be provided "without strings." He believes that the States should be allowed to develop work programs to meet local needs (which he feels can best be determined by those close to the situation), rather than be required to respond to a national program of some sort.

A CHP deputy chief offered a number of comments on Federally-funded programs. Projects that require matching funds (even as low as 10 percent) can be a problem for States with already active programs, in his view. The funds currently being used may not be used as matching funds and, therefore, an agency may have to provide additional funds for an already expensive program in order to receive Federal assistance. This penalizes States that have already taken some initiative in this area, as compared to States whose programs only begin with the Federal grant program.

^{123/} This feeling seems to be especially strong in the Western States. The demonstration program in Utah almost did not receive funding from the State legislature because of the requirements attached to the monies for the program, according to local officials.

Federal requirements for specific management controls and specific data reporting in grant programs sometimes make State acceptance difficult. The CHP deputy chief feels that these programs have to be structured to leave room for the States to plan and to manage the programs. Flexibility must be left in the program, and that, he feels, can only be accomplished by local management of the effort.

In this same vein, the director of Illinois' hazardous materials enforcement program argues that the fragmented division of Illinois agencies' responsibilities for various enforcement activities is "deeply rooted in Illinois statutes and administrative practices. No federal mandate, however laudable its goals, requiring a single State agency to encompass such activities, is likely to prevail." 124/

Personnel Ceilings and Hiring Constraints. Related to the problem of inadequate funding are the problems of personnel ceilings and hiring constraints. Many of the State Police programs analyzed for this study operate under legislatively mandated personnel ceilings, and must shuffle existing personnel to fill truck safety program positions, rather than hire new personnel. Often personnel ceilings place a severe burden on the State Police, whose enforcement responsibilities are not limited to the highways.

Hiring constraints of other kinds can also impede truck safety program development in the States. For example, Idaho is operating under "Proposition 1," which limits the number of new State employees who can be hired. As a result, Idaho was forced to hire student interns as truck inspectors for its demonstration program.

In some instances, the legislation to establish a program exists, but the required personnel have not been budgeted. In Georgia, for example, the legislature developed a permit program for three hazardous materials, but provided no budget for implementing the program. As a result, the permit program is being administered by one Georgia DOT staff member.

Inadequate Training. The quality and amount of training which State program staffs may receive varies widely. In the reviewed State programs, hazardous materials training ranged from 3 weeks of training in all aspects of hazardous materials regulations and inspection techniques at the DOT's TSI (Illinois State Police program), to 2 hours of training in placard recognition and basic hazardous materials inspection techniques, provided by a police sergeant who had attended the TSI (Maryland State Police). The Texas Department of Public Safety received inservice training in hazardous materials regulations and inspection techniques from the BMCS staff of FHWA Region 6. The availability of spaces at the TSI for State personnel depends on the BMCS's own needs for training at any given time.

124/ Karsten J. Vieg, letter to Senator Howard W. Cannon, Chairman, Senate Committee on Commerce, Science and Transportation, August 5, 1980.

Although TSI training is provided free of charge to State program personnel on a space-available basis, the State program must nevertheless pay transportation costs and salaries for the duration of the training period. If a program is just getting started, and a number of staff must be trained, this expense can mount rapidly. BMCS field staff appear willing to provide hazardous materials training to State program personnel (field staff in FHWA Regions 6, 8, and 10 do so regularly), but this training is not as systematic and comprehensive as that provided by the TSI.

Furthermore, State enforcement personnel need retraining periodically if they are to be most effective. The hazardous materials regulations change, and are added to often (for example, the recent addition of a new large body of hazardous waste regulations), and new hazardous materials enter the transportation network. Hazardous materials inspectors must be kept abreast of these changes.

Training in general truck safety inspection techniques is generally readily available and of good quality. Again, BMCS field staff provide both classroom training (Idaho and Tennessee, for instance) and on-the-job training (Utah, for example).

Inadequate Data Processing Facilities. Truck safety and hazardous materials enforcement programs need data processing facilities. Data obtained through the inspections need to be processed and analyzed if the program is to justify its continued existence in difficult economic times and organized access to them is necessary for enforcement actions and other followup activities.

1. Program Analysis. Program analysis includes assessing the effectiveness of inspection activities, determining where to use available resources, and determining the particular problem areas to be addressed by a hazardous materials or truck safety program. In order to perform such analysis, a good data system is required. Automated data processing is ideal, but manual files which are well organized and cross-referenced may be adequate. Fourteen of the State enforcement programs reviewed for this report include little program analysis in their activities; effort is expended on inspection and the data from the inspections are tabulated but not manipulated or analyzed. For example, the Maryland State Police has recently added a hazardous materials category to a manual system which it maintains on truck inspections. The truck inspection form categorizes violations discovered during inspections, and provides information on the numbers of trucks inspected, by month. No further analysis of these data is done.

California, the Michigan Fire Marshal Division, Illinois, and the Pennsylvania Hazardous Substances Transportation Board have automated data processing systems which can be used to track particular carriers, analyze compliance patterns, isolate types of carriers for attention, and compile statistics on various aspects of the programs. The three demonstration program States have automated data systems. However, State access to those data is limited by the BMCS project staff, making analysis difficult.

2. **Followup Activities.** Followup activities (making sure that required repairs have been made or determining that notices of violations have reached carrier management, for example) are a vital part of a strong hazardous materials or truck safety program. Without them, the effectiveness of program activities is greatly diminished. A good data processing facility is required to keep track of program activities and to indicate necessary followups. When State programs rely on the individual inspecting officers to maintain program records and follow up on their inspection activities, program management cannot easily be sure that the followup is occurring and cannot develop statistics for program management.

3. **Available Facilities.** Fourteen of the State programs reviewed by the Safety Board do not use computers; those that do must share them with other State users, which can cause problems. For example, the Michigan Fire Marshal Division must share a computer and experiences significant delays in obtaining computer time. In most instances, the "data processing facilities" available to the programs are hand-held calculators.

Potential for Interagency Rivalry. Related to the question of agency jurisdiction over truck safety and hazardous materials enforcement is the potential for interagency rivalry. It is highly possible that two or more State agencies with overlapping jurisdictions will battle over program jurisdiction, with its attendant potential increases in funding and personnel requirements. This is currently occurring in Utah, where the Utah Highway Patrol is running the demonstration program and the Utah DOT is inspecting carrier terminals. The two Utah agencies are involved in a bitter "interagency war" for funding and jurisdiction, a situation exacerbated by the award of the demonstration program to the Highway Patrol. This extreme situation was unique among the programs reviewed; agencies with shared jurisdiction in Illinois, California, Idaho, and Michigan had worked out amicable agreements over areas of responsibility.

Nonuniformity of Truck Safety and Hazardous Materials Regulations. Nonuniformity of State truck safety and hazardous materials regulations can present fairly severe problems to interstate carriers which must comply with different--and sometimes contradictory--sets of regulations. The most obvious example of this is weight limits; an interstate truck may pass through several States allowing different maximum weights and be, therefore, in violation of some States' laws and in compliance with others. The same situation applies to truck safety and hazardous materials regulations. For example, it is possible for a truck to pass into a State which requires a permit for the material it is hauling without knowing that a permit is required (e.g., Georgia, where notification concerning the permit program has been limited by available funds).

A third example of inconsistency, this time between State or municipal hazardous materials regulations and those of the Federal government, involves limiting hazardous materials carriers in general, or carriers of a particular hazardous material, to preestablished, restricted routes while traveling through certain areas. A recent example of this occurred in Boston, Massachusetts. The Boston Fire Department, on September 16, 1980, announced new regulations

banning the transportation of certain hazardous materials ^{125/} on Boston streets when the route had neither a point of origin nor a point of destination within the city. The regulations further prohibited trucks carrying hazardous materials from traveling into a designated downtown area between 6 a.m. and 8 p.m. on workdays. The regulations do contain a provision granting the Boston Fire Commissioner authority to grant exceptions to the regulations when the transporter can show a compelling need (e.g., lack of an alternative route) or when transportation through the city is held to be in the public interest.

The American Trucking Associations (ATA), the Massachusetts Trucking Association (MTA), and the Hazardous Materials Advisory Council (HMAC) have protested these regulations. The ATA requested that the U.S. DOT declare the Boston ordinance mandating the new regulations inconsistent with the Federal Hazardous Materials Transportation Act, on the grounds that it contradicts a Federal requirement that "hazardous materials be transported without delay." The ATA also stated that carriers would have difficulty complying with local variations in the rules. The HMAC and the MTA presented a joint application asking the U.S. DOT to consider the difficulties presented by a patchwork system of potentially conflicting routing regulations, and citing the vagueness of the conditions for obtaining operating permits.

All three organizations asked that Boston officials delay implementation of the new regulations until the U.S. DOT made its ruling. The U.S. DOT is empowered, through the Hazardous Materials Transportation Act, to preempt local and State regulations that are inconsistent with the Federal regulations. However, the issue of whether a U.S. DOT ruling is legally binding on a local government has not been resolved. ^{126/} The U.S. DOT and the ICC have recognized that inconsistencies in State regulations addressing interstate carriers present significant problems. The U.S. DOT and the ICC recently held eight regional public meetings to obtain information about State regulation of interstate motor carriers. According to the U.S. DOT's press release, "The public meetings will examine such areas as obtaining operating authority, registration, fuel and other taxes, temporary travel permits, and state administration." ^{127/}

^{125/} The materials covered include Class A and Class B explosives; poisonous gases; radioactive materials with radioactive yellow III labels; flammable solids in quantities greater than 2,500 pounds; and liquefied petroleum gas, liquefied natural gas, and liquefied hydrogen in quantities greater than 2,500 pounds. In addition, flammable liquids in quantities of 2,500 pounds or more and flash points of 73° F or less are banned in the designated downtown area between 6 a.m. and 8 p.m. on workdays.

^{126/} HMIR, September 19 and September 26, 1980.

^{127/} The U.S. DOT's authority to preempt inconsistent State hazardous materials laws has not yet been legally tested. There is no explicit Federal preemption clause in the FMCSR's.

Uniform State adoption of the FMCSR's and the Federal Hazardous Materials Regulations is an obvious method for eliminating nonuniformity among State programs. However, several factors prevent this from occurring:

- o Some States cannot legally adopt by reference, but rather must write regulations identical to the Federal regulations and bring them through State rulemaking procedures, causing delays of up to a year in implementing changes to the regulations
- o States with truck safety or hazardous materials laws on the books which differ from the Federal regulations may choose to leave the State laws in effect 128/ (for example, Georgia)
- o Some State legislatures disagree with the provisions of the Federal laws and therefore deliberately alter them in the process of enacting State truck safety and hazardous materials laws

Susceptibility to Political Pressure. State programs are susceptible to political pressure in two ways: the existence of the program may be assulted by special interests or by government reorganization and budget reduction, and the program's sanction system may become politicized and its validity called into question.

1. Dismantling of programs. State programs may be dismantled or reduced through government reorganization or be pressured in various ways by special interest groups. For example, the Georgia Fire Marshal Office formerly ran a limited hazardous materials program and a public education program; this has been dismantled and the hazardous materials inspectors have been reassigned to general fire inspection duties, as the result of a State cost-cutting effort. The Florida Public Service Commission, which maintained a large truck inspection program (approximately 70 field inspectors) has been eliminated by "sunset" legislation, claimed to be a direct result of truck association lobbying. 129/

Pennsylvania recently developed a set of regulations requiring interstate trucks to carry either Pennsylvania's inspection sticker or the sticker of a State with which Pennsylvania has a reciprocal inspection agreement. The ATA filed suit against this provision and obtained a temporary injunction against the State's implementation of the regulation, arguing that the regulations would place an unnecessary burden on interstate carriers, and that the correlation between periodic inspection of vehicles and increased highway safety had not been analytically made. Pennsylvania will make its response in the courts; the case is still pending.

128/ U.S. DOT press release, October 9, 1980.

129/ Statements of a BMCS hazardous materials specialist and a BMCS safety investigator in Florida, part of FHWA Region 4.

2. Politicizing of sanction systems. Politicizing of sanctions systems is a problem only for those programs which have well developed, high-penalty sanctions systems. Should the State program not be insulated in some way from pressure to reach politically advantageous judgments, the validity of the entire sanctions system may be called into question, since such programs must avoid even the appearance of impropriety. 130/

Illinois has insulated its program from such pressure by two means: use of a formula system for assessing penalties and giving enforcement litigation responsibility to the Illinois DOT Chief Counsel's Office rather than to the Hazardous Materials Section. Because negotiation does not enter into this objective process, the Illinois program is effectively protected during the assessment process from pressure to reach politically advantageous settlements. Placing litigation in the chief counsel's office, rather than in the program office, means that program representatives are involved only in testimony during litigation.

Inadequate Sanctions. Inadequate sanctions are, simply, fines that present no economic incentive to the trucking industry to prevent safety and hazardous materials violations. Most State fines for equipment and hazardous materials violations are set under \$200 per violation by statute. These fines are lower even than the cost of many truck repairs, much less the cost of establishing an effective truck maintenance and hazardous materials compliance program, and they are regarded by some carriers as a "normal cost of doing business" according to many State program representatives interviewed. They do not deter carriers from violating the law.

Potential for Redundant Truck Inspections. The potential for redundant truck inspections, which would slow trucks down and which might be viewed by carriers and drivers as a form of harassment, and which are an inefficient use of program resources, exists if neighboring States have active truck inspection programs. It is already possible for a truck traveling through a State with active programs to be inspected more than once on its way through the State. Utah program representatives said this has occurred in Utah. Should neighboring States have programs, it would be possible for trucks to be given essentially similar inspections several times in several States on one truck run.

Various methods have been proposed to deal with this problem. The California Highway Patrol proposes a reciprocity system based on uniform inspection techniques among several States, with the participating States issuing dated inspection stickers to indicate that a truck has been inspected recently. Utah urges drivers to keep a duplicate copy of the inspection report which they receive and show it to the next inspector the truck encounters. If the inspection report is recent enough, the truck is not inspected again.

130/ For example, a captain of the Utah Highway Patrol stated that he would like his program eventually to develop a civil forfeiture system, but that he believes that the fines assessed by the system should not in any way benefit the Highway Patrol, but rather should be placed into a special Utah DOT fund.

The underlying difficulty with too-frequent truck inspections is carrier rebellion. It is in the carrier's best economic interest to make the best time possible transporting goods. Frequent truck inspections, each of which may stop a truck for 15 minutes to an hour depending on the type of inspection used, would lower the profit from that truck run. If a carrier, or a carriers' association such as the ATA, could prove that a truck inspection program were unnecessarily burdensome on carriers, it might be possible for them to bring suit and have an inspection program enjoined.

Potential Strengths of State Enforcement Programs

The potential strengths associated with State truck safety and hazardous materials enforcement programs are primarily greater manpower (in comparison with BMCS manpower), better knowledge of State needs, and authority over intrastate carriers.

Large Inspection Forces. On-the-road inspections performed by the BMCS have been criticized as ineffective by the GAO, the DOT Inspector General and some BMCS field personnel. The main reason cited for their lack of effectiveness is that the BMCS lacks the manpower to inspect sufficiently large numbers of trucks on a regular basis, thus making the likelihood of an individual truck being inspected very low.

The usefulness of on-the-road inspections is enhanced in a State program with a large inspection force. A relatively large inspection staff, working full-time inspecting trucks, can inspect enough trucks to make it reasonably likely that trucks in violation will be identified. If a large inspection force is coupled with an adequate number of administrative personnel, the inspection reports can be followed up and repeat violators identified, and the impact on carrier compliance will increase still more.

Personnel ceilings and hiring constraints can make sufficiently large inspection and administration forces difficult to assemble. However, if State legislatures are convinced of the effectiveness of safety/hazardous materials programs, funds and personnel may be made available.

State program personnel who are involved in a program which does nothing but inspect trucks on the road can be trained in the mechanics of truck inspection and to recognize violations of the hazardous materials and motor carrier safety regulations without requiring the expensive, sophisticated training in investigation (as opposed to inspection) techniques and management practices which BMCS investigators must receive in order to carry out their varied tasks. The State program personnel may be paid at a lower rate for performing less skilled work, and thus, they may constitute a more cost-effective work force. ^{131/} Personnel

^{131/} The BMCS Regional Director of FHWA Region 1 would like to use less skilled personnel for performing truck inspections in the region. He proposed to BMCS headquarters that Region 1 be allowed to hire student interns and jobless people, train them in truck inspection, and set them to inspecting trucks under the supervision of one investigator. He believed that his practice would free up investigators to perform more skilled activities. The BMCS did not agree to his request.

already possessing some truck inspection training, received at a police academy, and truck enforcement experience obtained as a trooper may be transferred into State enforcement programs and readily trained in systematic truck inspection. This matches available manpower to required activities economically.

Superior Knowledge of State Needs. Representatives of State programs asserted that one large advantage of State programs is that their personnel can develop a clear and more detailed understanding of the particular truck safety and hazardous materials enforcement needs existing in that State than the BMCS can.

The areas of superior State knowledge cited by those interviewed include:

- o Knowledge of State traffic patterns, truck routes, areas of heavy and light truck traffic, and unsafe routes (e.g., poorly engineered roads)
- o Knowledge of seasonal variations in truck traffic
- o Ability to identify intrastate carriers through State licensing records

Authority over Intrastate Carriers. Another advantage of State programs is that they alone have authority over intrastate carriers of nonhazardous materials cargos. (The BMCS has authority over intrastate carriers of hazardous materials, but rarely uses this authority.) The States have jurisdiction over all carriers operating within their borders and have access to information about intrastate carriers through their vehicle licensing process. State programs can thus contact intrastate carriers to explain regulations and conduct educational programs. Such educational programs are currently being carried out by the Michigan Fire Marshal Division and by the Texas Railroad Commission's LP Gas Division.

CONCLUSIONS

1. The volume and variety of hazardous commodities, the numbers of transporters and shippers, and the concern of local, State, and Federal organizations regarding associated safety problems are increasing.
2. The U.S. Department of Transportation (DOT) does not have accurate comprehensive information about the characteristics of hazardous materials transportation on highways.
3. The DOT's Materials Transportation Bureau (MTB), responsible for coordination of all DOT hazardous materials activities, has not succeeded in shaping the hazardous materials enforcement activities of all the DOT modes into a well-coordinated DOT enforcement program. Even such basic enforcement coordination as use of common identification numbers for hazardous materials carriers and shippers among the DOT agencies has not been accomplished.
4. With only 187 field personnel, the DOT's Bureau of Motor Carrier Safety (BMCS) alone cannot conduct an effective program aimed at identifying and removing unsafe vehicles and drivers from the road.

5. Hazardous materials truck inspections are performed by BMCS field staff as part of their overall interstate truck safety inspection activities.
6. Hazardous materials truck inspection by the BMCS focuses primarily on such violations as incorrect shipping papers, placarding, and sometimes such obvious violations as leaking cargo.
7. No agency of the DOT inspects tank truck manufacturers, reconditioners, or retesters to ensure that the DOT specification tank trucks in use are, in fact, safe for bulk hazardous materials transportation.
8. The BMCS has done little to determine where it should focus its small enforcement resources to maximize their effectiveness.
9. The BMCS has not developed reliable information on industry compliance with the Federal Motor Carrier Safety Regulations (FMCSR's) and the Federal Hazardous Materials Regulations.
10. The BMCS has not conducted periodic random truck inspections of sufficient frequency and size to permit statistically valid extrapolations.
11. The BMCS has not developed explicit criteria for deciding which carriers and hazardous materials shippers to audit to ensure that the BMCS's small resources are focused on the companies most in need of attention.
12. The BMCS has not developed procedures or data systems that would permit the development of audit selection criteria based on an analysis of the relative risk posed by different carriers and hazardous materials shippers.
13. Although the BMCS's own analysis of truck defect-caused accidents shows that only a few "critical items" are responsible for the majority of such accidents, the BMCS has not focused its truck inspections on these items and continues to require its investigators to inspect also a much larger number of noncritical items, thereby reducing the potential effectiveness of its field staff. This policy, coupled with the fact that trucks may be put out of service for such noncritical defects, also increases truck transportation costs with no demonstrated safety benefit.
14. The BMCS has not developed explicit criteria for deciding whether to develop an enforcement case and how many and what type of violations to document. As a result, investigators' time is sometimes wasted in preparing cases that will not be pursued by FHWA attorneys, in documenting violations that will not be prosecuted, or in supplementing case reports insufficiently documented in the first place.
15. The BMCS has not developed explicit criteria for determining the appropriate level of initial assessments in enforcement cases or for deciding whether and how to mitigate an initial assessment. Furthermore, the ad hoc reasoning used by FHWA attorneys in past cases has not been documented. As a result, it is difficult to ensure consistency in enforcement case handling.

16. The BMCS has not evaluated the effectiveness of its various enforcement activities or its program as whole; therefore, it has not been able to demonstrate to what degree its enforcement activities increase carrier or shipper compliance with the regulations or reduce the risk involved in truck transportation, including transportation of hazardous materials.
17. The BMCS automated Management Information System (MIS), under development now, can assist the BMCS in focusing its enforcement activities more effectively and in evaluating the effectiveness of these efforts, if its potential capabilities are fully utilized.
18. There is no uniform national BMCS truck safety or hazardous materials enforcement program; although some aspects of the BMCS field activities have been standardized, the differences in policies and operating procedures from region to region are substantial.
19. Because of BMCS's organizational placement within the FHWA and the substantial autonomy of FHWA regional administrators, these administrators have more direct communication and authority over the BMCS field program than does the BMCS director. To some degree, this arrangement has made possible innovations within the BMCS program that might otherwise not have occurred; on the other hand, regional autonomy has made it more difficult for the BMCS to develop a consistent, cohesive, national enforcement program.
20. In States that have laws regulating the transportation of hazardous materials, responsibility for enforcement is often fragmented among several State agencies, so that few States can be said to have a cohesive hazardous materials transportation enforcement program, even in the highway mode.
21. State efforts to regulate hazardous materials transportation are often seriously hampered by such problems as inadequate and uncertain funding, too few personnel, jurisdictional fragmentation and overlap, inadequate data processing facilities, and ineffectively low fines.
22. Because the DOT does not exercise its authority to enforce the Federal Hazardous Materials Regulations in intrastate commerce, and because there is little State enforcement of the hazardous materials regulations, the percentage of intrastate hazardous materials truck carriage that is inspected is very small.
23. Development of adequately staffed and reasonably uniform truck safety and/or hazardous materials truck enforcement programs in all the States, or in a network of strategically located States, offers the advantages of substantially increased enforcement resources, more precise knowledge of State or regional truck traffic characteristics, and increased coverage of both interstate and intrastate truck transportation.

24. Of 24 States interviewed, the Safety Board found that only Illinois currently has a reasonably comprehensive hazardous materials truck enforcement program with a large staff trained in hazardous materials enforcement, suitable data processing facilities, effective interagency coordination, and an organized sanctions system with large fines available.
25. The BMCS demonstration program's usefulness to convince other States of the value of truck safety inspection programs is uncertain; the BMCS has not completed a plan for evaluating the program's effectiveness and, in any case, does not intend to measure its direct effect on truck accident rates and severity.
26. Program officials in the three BMCS demonstration program States interviewed are enthusiastic about the program and hope that their States will continue the program after Federal funding ceases.

RECOMMENDATIONS

As a result of this safety effectiveness evaluation, the National Transportation Safety Board made the following recommendations:

--to the Administrator, Federal Highway Administration:

Develop and implement a data collection and analysis plan for use in determining the relationship between compliance with the Federal Motor Carrier Safety Regulations and the motor vehicle-related Federal Hazardous Materials Regulations and motor carrier accident/incident reduction. (Class II, Priority Action) (H-81-2)

Develop a plan for performing periodic vehicle inspections, based on random selection methods, of sufficient magnitude and appropriate frequency to provide statistically valid data on carrier compliance with the Federal Motor Carrier Safety Regulations and the motor vehicle-related Federal Hazardous Materials Regulations. Such a plan should consider the potential for assistance by the States in performing these inspections. The data should be published in a form usable by States with motor carrier safety or hazardous materials enforcement programs. (Class II, Priority Action) (H-81-3)

Develop a written plan for using the BMCS Management Information System to (1) improve the effectiveness of the Bureau's motor carrier safety and hazardous materials enforcement activities; (2) evaluate the effectiveness of these activities on carrier compliance with the Federal regulations and on reducing the risks of motor carrier transportation and hazardous materials carriage by truck; (3) assist States in developing and conducting motor carrier safety and hazardous materials enforcement programs. (Class II, Priority Action) (H-81-4)

Allocate more resources to the development of the Management Information System and provide the Bureau of Motor Carrier Safety with adequate and timely programming support to facilitate the system's development. (Class II, Priority Action) (H-81-5)

Develop explicit criteria for deciding which carriers and hazardous materials shippers to audit to ensure that the small resources of the Bureau of Motor Carrier Safety are focused on the companies most in need of attention. The criteria should take into account such factors as accident experience, type of cargo, compliance history, measures of exposure, and other factors related to the degree of hazard presented by the candidate companies. (Class II, Priority Action) (H-81-6)

Develop explicit criteria to guide field staff of the Bureau of Motor Carrier Safety in the development of enforcement case reports, including criteria for initially determining that a case should be developed and the number and types of violations to document. (Class II, Priority Action) (H-81-7)

Develop and publish FHWA policy and procedures for determining initial and final assessments against motor carriers and hazardous materials shippers for violations of the Federal Motor Carrier Safety Regulations or the Federal Hazardous Materials Regulations, for use by FHWA attorneys and others. (Class II, Priority Action) (H-81-8)

Direct FHWA regional and headquarters attorneys to systematically document the reason(s) for the amount of initial assessment, the arguments advanced by respondents for withdrawing or mitigating the initial assessment, the disposition of those arguments, and the reason(s) for the amount of the final assessment. Determine whether such documentation could be included in the carrier and hazardous materials shipper computer files of the Management Information System of the Bureau of Motor Carrier Safety. (Class II, Priority Action) (H-81-9)

--to the Administrator, Research and Special Programs Administration:

Develop and use a common shipper identifier in all DOT hazardous materials compliance records. (Class II, Priority Action) (H-81-3)

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

/s/ JAMES B. KING
Chairman

/s/ ELWOOD T. DRIVER
Vice Chairman

/s/ FRANCIS H. McADAMS
Member

/s/ PATRICIA A. GOLDMAN
Member

/s/ G. H. PATRICK BURSLEY
Member

February 19, 1981

APPENDIX A

PERSONS INTERVIEWED FOR THIS STUDY

FEDERAL

Federal Highway Administration (Headquarters)

Mr. Lorenzo Casanova, Associate Administrator for Safety
Mr. James Stapleton, Assistant Chief Counsel, Motor Carrier and Highway
Safety Law Division
Ms. Kathleen Markman, Attorney, Assistant Chief Counsel's Office

BMCS Headquarters

Mr. Kenneth Pierson, Director
Mr. Arthur R. McAndrew, Chief, Operations Division
Mr. Walter J. Hannigan, Chief, Field Programs Branch
Mr. James Jeglum, Chief, Compliance Analysis Branch
Mr. Alex Stevens, Demonstration Program Project Officer

Research and Special Programs Administration

Mr. Howard J. Dugoff, Administrator

Materials Transportation Bureau

Mr. Leon Santman, Director
Mr. William Nalley, Chief, Hazardous Materials Enforcement Division

BMCS Field

Region 1:	BMCS Regional Director Hazardous Materials Specialist Accident Investigation Specialist
Region 3:	BMCS Regional Director Hazardous Materials Specialist Accident Investigation Specialist Pennsylvania Officer-in-Charge
Region 4:	BMCS Regional Director Hazardous Materials Specialist
Region 5:	FHWA Regional Administrator BMCS Regional Director Hazardous Materials Specialist
Region 6:	BMCS Regional Director Hazardous Materials Specialist

Region 7: No interviews

Region 8: Utah Officer-in-Charge
Utah Safety Investigator

Region 9: Hazardous Materials Specialist

Region 10: Hazardous Materials Specialist
Accident Investigation Specialist
Idaho Officer-in-Charge

STATE

New York DOT

Mr. George Naginey, Hazardous Materials Specialist
Mr. Martin Chauvin, Chief, Motor Carrier Safety
Mr. Jerome Bone, Director, Operations Bureau

New York State Police

Maj. Robert F. Siek, Traffic Division
Sgt. T. E. McCleave, Motor Carrier Program
Sgt. Gene Martin, Hazardous Materials Training

Maryland State Police

Sgt. K. R. Harry, Hazardous Materials Specialist, Truck Enforcement Division

Illinois State Police

Trooper John Nordin
Trooper Ed Weigand

Illinois DOT

Mr. Karsten Vieg, Director, Division of Traffic Safety
Mr. Phillip Madonia, Bureau Chief, Safety Studies and Projects
Mr. Al Pryor, Section Chief, Hazardous Materials Section

Michigan State Police

Capt. William Rucinski, Michigan Fire Marshal
Lt. Royal K. Gaddy, Fire Marshal Division
Lt. Ron Kenyon, Fire Marshal Division

Michigan Demonstration Program

Mr. Pat Turner, Supervisor, Field Operations Division, Michigan Public
Service Commission

Tennessee DOT

Mr. H. H. Bixler, Emergency Services Coordinator

Tennessee Public Service Commission

Mr. Andrew C. Rymer, Director, Transportation Rate Division

Georgia DOT

Mr. Robert Goldman, Enforcement Branch

Georgia Fire Marshal Office

Mr. E. H. Edwards, Assistant Fire Marshal

Pennsylvania Hazardous Substances Transportation Board

Mr. Brad Mallory, Director

Pennsylvania State Police

Maj. Bernard Stanalonis, Traffic Division

Texas Department of Public Safety

Mr. Earl Haddock, Inspector, License and Weight Service
Captain George King, Highway Patrol Service

Texas Railroad Commission

Mr. Hugh Keepers, P.E., Safety Director, LP Gas Division

Utah Highway Patrol

Capt. Dennis Nordfelt, Project Director, Utah Demonstration Program

Utah DOT

Mr. David Alder, Safety Investigator, Safety Division

Idaho DOT

Mr. Gary Gunderson, Project Director, Idaho Demonstration Program

Idaho State Police

Col. Victor Barfuss

California Highway Patrol

Deputy Chief Edward E. Kynaston, Commander, Enforcement Division
Capt. John Law, former Commander, Commercial Vehicle Section; currently
with the Office of Heavy Duty Vehicle Research, National Highway Traffic
Safety Administration, U.S. DOT

California Department of Health Services

Mr. Brad Parsons, Hazardous Materials Section

INDUSTRY AND OTHER

Mr. James D. Massie, Assistant Vice President, Member Services,
The Fertilizer Institute

Mr. Clifford Harvison, Managing Director, National Tank Truck Carriers
Conference, American Trucking Associations, Inc.

Mr. John Grimm, President, O'Boyle Tank Lines

Mr. Lawrence Bierlein, attorney and author

Ms. Debbie Rudolph, Staff Director, Transportation, Commerce and
Community Development Task Force, Intergovernmental Science,
Engineering and Technology Advisory Panel, White House
Office of Science and Technology Policy

Mr. Howard L. Anderson, former FHWA Associate Administrator for Safety.
Mr. Anderson also served as FHWA Region 5 Administrator and FHWA Division
Administrator in Nevada, among other FHWA positions he held during 30
years of service.

APPENDIX B

ADDITIONAL STATE PROGRAMS

Telephone interviews with representatives of 13 additional States--Alabama, Arizona, Delaware, Florida, Iowa, Kentucky, Louisiana, Mississippi, Missouri, Nevada, New Jersey, Ohio, and South Carolina--revealed considerable difference among their various truck hazardous materials and truck safety inspection and enforcement programs. In only three of the States was there just one agency in charge of truck hazardous materials regulation and inspection, and general truck safety regulation and inspections: Arizona executes these duties through its Arizona Corporation Commission, Mississippi through a Public Service Commission, and Ohio through the Public Utility Commission. (Mississippi's program is supplemented in hazardous materials regulations by State Health Commission and State Tax Commission activities.) In Alabama and Nevada, these four different functions are divided up among several agencies: in Alabama, truck hazardous materials regulations and truck safety inspections are enforced by the Public Service Commission, while truck hazardous materials inspections and truck safety regulations are handled by the Alabama State Troopers. Nevada's Public Service Commission handles truck hazardous materials regulations, while hazardous materials inspections are performed by the Nevada Highway Patrol; truck safety regulations are handled by the Nevada Department of Motor Vehicles (weight and size), and safety inspections by the Highway Patrol.

Many States must coordinate several departments and bureaus to perform these tasks. Louisiana, for example, carries out most of these duties through the Louisiana State Police and the Louisiana DOT, with cooperative assistance from the BMCS, but has special agencies (a Nuclear Regulatory Board and a Liquid Petroleum, Gas, and Anhydrous Ammonia Division) for special cargos. In Missouri, the Highway Patrol and Public Service Commission work together in all four areas, as do the State DOT and the Highway Patrol in Iowa. Delaware coordinates three groups--the Hazardous Materials Commission, the State Police, and the Fire Department.

Shifting legislative action has left programs in flux and with varying degrees of effectiveness in four States. In South Carolina, the Public Service Commission (PSC) and the Department of Health and Environment (DHEC) are currently engaged in a legal battle over who should administer and enforce hazardous materials rules. The PSC personnel have no hazardous materials training, and only do the safety inspections of public carriers. The DHEC controls all hazardous materials transportation from storage to emergency, and issues permits and licenses. The Highway Patrol is currently not involved, but will probably become so. The situation in New Jersey is similarly uncertain. No one knows who will ultimately control the program, the State Police, the Department of Labor and Industry, the Department of Environmental Protection, or the Department of Transportation, and no one knows whether the State will adopt the Federal Hazardous Materials Regulations. The Highway Patrol is, at the moment, the most active in terminal and on-the-road inspections.

Kentucky is also in a state of uncertainty: the Kentucky DOT formerly attended to regulation enforcement and inspection, but responsibility has been shifted to the State Police, Division of Security and Compliance. As soon as the

shift occurred, however, a substantial personnel turnover resulted in a situation in which no one seems sure who is responsible for what. Lower-level personnel are working, still enforcing highway statutes for interstate and intrastate trucks, and the police are doing motor carrier inspection, safety inspections, and weight enforcement. The Public Protection and Regulations Cabinet (State Fire Marshal) is also active in hazardous materials work and driver qualifications for intrastate trucks. As of January 1, 1981, all hazardous materials transporters will have to register with the Kentucky DOT.

Florida is perhaps in the most difficult situation of all the States whose representatives were interviewed by telephone. Truck safety and economic regulation are tied together in Florida legislation, and, when the legislature failed last year to reach agreement on economic legislation, truck safety legislation, in effect, lapsed, so that there is currently no inspection program in Florida. All officers from the Public Service Commission (formerly in charge of inspection) were transferred to the Florida DOT, although many office staff were not. The Florida DOT and the Highway Patrol can currently enforce only weight and size regulations, and the Florida traffic statute safety items (wipers, brakes, lights). There is a minimal placard law, but otherwise no hazardous materials regulations at all, other than occasional fire marshal inspections. Maximum fines for the most flagrant violations are traffic fines of \$15.

Structurally, then, these 13 States are quite different and have quite different capabilities as a consequence. Some States are unable to make terminal inspections (Delaware, Florida, Nevada, and South Carolina); Missouri and Iowa leave these up to the BMCS. All but three (Florida, Nevada, and New Jersey) have adopted the Federal Hazardous Materials Regulations totally or in part, and all but Delaware, Florida, and Nevada have adopted the FMCSR's totally or in part. Fragmenting of work into various departments, however, and partial adoption of the Federal Hazardous Materials Regulations and the FMCSR's have led, understandably, to gaps in coverage. In Nevada, for example, enforcement agencies are heavily dependent on a frustratingly spotty set of vehicle statutes: lighting regulations are good, but there are no mud-flap or load-securement regulations. New Jersey, similarly, passed a law governing radioactive materials transport in 1977, but the truck section of it is so splintered that there is no placarding enforcement, and there are no out-of-service criteria. Statutory authority does not allow Ohio law enforcement officials many ways of penalizing shippers, as is the case in Florida. Fines and penalties vary enormously, from Florida's maximum \$15 to Ohio's misdemeanor fines of up to \$1,000 (the average Ohio fine is \$242). South Carolina has criminal court penalties and cease-and-desist orders, Arizona has criminal sanctions, and Delaware has civil penalties for shippers.

Training of inspection and enforcement personnel also varies enormously: all 37 Ohio inspectors have taken the TSI courses, both basic and advanced, and half of them have attended the Northwestern Traffic Institute of Pennsylvania State University. Nevada, on the other hand, the site of the only low-level radioactivity dump west of the Mississippi, has no funds to send people to the TSI. It depends on on-the-job training, as do Arizona and Florida.

Iowa has perhaps the most solid program of those States whose representatives were interviewed by telephone. It has good training, good coordination with the BMCS, a good computer system (which Missouri has arranged to share), and strong and positive legislative involvement. The program is aggressive and progressive; but aggressiveness and high visibility have been detrimental to programs of other States. Officials in both Florida and South Carolina expressed the opinion that aggressive programs and too much publicity led to industry pressure and consequent cutbacks of programs in those States. Arizona and Louisiana, on the other hand, felt that publicity is a good thing: Arizona, short on program funds, is embarking on a program of industry education; a BMCS officer in Louisiana felt that the public acknowledgement of the great potential for serious accidents in New Orleans has encouraged positive legislative backing in the face of strong industry opposition. Most States felt that they have good legislative support (even Florida has gubernatorial backing in its drive to adopt the Federal regulations), although many felt the pinch of tight funds, and expressed trepidation about a perceived future emphasis on deregulation.

FORM MCS-32A

US DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION BUREAU OF MOTOR CARRIER SAFETY CARRIER/SHIPPER IDENTIFICATION ACTION REQUESTED: N NEW D DELETE U UPDATE R RETURN		1 NAME OF MOTOR CARRIER/SHIPPER													
		2 PRINCIPAL OFFICE STREET ADDRESS P.O. BOX ROUTE NO.													
		3 PRINCIPAL OFFICE CITY	4 COUNTY	5 STATE	6 ZIP CODE	7 REGION									
8 D/C NO.	9 TERRITORY	10 PRINCIPAL OFFICE TELEPHONE NUMBER AREA CODE / NUMBER		11 BUSINESS ORGANIZATION A INDIVIDUAL B PARTNER/MP C CORPORATION STATE _____ DATE / /											
CARRIER INFORMATION															
12 CARRIER CENSUS NO.		13 CLASSIFICATION (CIRCLE ONE) A MC COMMON E ICC CONTRACT C ICC EXEMPT D PRIVATE E FOREIGN F MIGRANT G MAIL H OTHER			14 NAME OF PRINCIPAL CARGO										
15 SCOPE OF CARRIER OPERATIONS (CIRCLE) UNITED STATES (US) OR POSSESSIONS CANADA MEXICO				16 CARRIER OPERATES A INTERSTATE B INTRASTATE ONLY C INTRASTATE ONLY											
				17 ICC DOC# NUMBERS FIRST _____ SECOND _____ THIRD _____											
18 CARGO CLASSIFICATIONS					19 (RESERVED)										
A GENERAL FREIGHT F LOGS, POLES, BEAMS B HOUSEHOLD GOODS G BLDG MATERIALS C METAL SHEETS, COILS, ROLLS D MOTOR VEHICLES E DRIVEAWAY/TOWAWAY J PRODUCE, FRUIT, SEAFOOD K LIQUIDS IN CARGO TANKS L INTERMODAL CONTAINERS M PASSENGERS N OILFIELD EQUIP OR SERVICE O LIVESTOCK P GRAIN, FEED, HAY Q OTHER R SUSPENDED MEAT S NEW FURNITURE OR FIXTURES T US MAIL Z OTHER					20 (RESERVED)										
21 HAZARDOUS MATERIALS TRANSPORTED															
IN CARGO TANKS		OTHER PACKAGES		IN CARGO TANKS		OTHER PACKAGES									
A EXPLOSIVES A	T	P	H CORROSIVES	T	P	O IRRITATING MATERIAL	T	P							
B EXPLOSIVES B	T	P	I OXIDIZERS	T	P	P ORM MAT'L	T	P							
C EXPLOSIVES C	T	P	K POISON A	T	P	Q HAZARDOUS WASTE	T	P							
D FLAMMABLE LIQUID	T	P	L COMBUSTIBLE LIQUID	T	P	R ETIOLOGIC AGENT	T	P							
E FLAMMABLE SOLID	T	P	M RADIOACTIVE MATERIAL	T	P	S BLASTING AGENT	T	P							
F FLAMMABLE GAS	T	P	N ORGANIC PEROXIDE	T	P	T HAZARDOUS SUBSTANCE-EPA	T	P							
G NONFLAMMABLE GAS	T	P				U CRYOGENICS	T	P							
22 NO. DRIVERS & VEHICLES SUBJECT TO FMCSA						23 P.O. EMPLOYEES ASSOCIATED WITH TRANSPORTATION (INCLUDE DRIVERS)		24 SHIPPER CENSUS NO.		25 EQUIPMENT OWNERSHIP					
DRIVERS		TRUCKS	TRUCK TRACTORS	TRAILERS	BUSES			OWNED	TRUCKS	TRUCK TRACTORS	TRAILERS	BUSES			
EXEMPT INTRA-CITY															
OVER THE ROAD						S		TERM LEASED							
								TRIP LEASED							
26 OVER THE ROAD OPERATIONS						27 NUMBER OF DRIVERS IN EACH CATEGORY			28 DATE OF LAST PRINCIPAL OFFICE SAFETY SURVEY						
A REGULAR ROUTE		B IRREGULAR ROUTE				A EMPLOYED BY CARRIER			/ /						
27 HAS CARRIER BEEN GRANTED DIVIDED RECORDS AUTHORITY?						B OWNER OPERATORS LEASED TO CARRIER			/ /						
A YES B NO						C EMPLOYED BY INDEPENDENT CONTRACTOR-LEASED TO CARRIER			/ /						
29 MILES OPERATED IN THE LAST 12 MONTHS		30 (RESERVED)		31 (RESERVED)		32 (RESERVED)		33 (RESERVED)		34 (RESERVED)		35 (RESERVED)			
SHIPPER INFORMATION															
12 SHIPPER CENSUS NO.		13 SHIPPER SHIPS			14 MODES USED TO SHIP HM		15 CARRIER CENSUS NO.								
S		A INTERSTATE B INTRASTATE ONLY C INTRASTATE ONLY			A TRUCK B AIR C RAIL D WATER										
16 HAZARDOUS MATERIALS SHIPPED						17 (RESERVED)									
A EXPLOSIVES A		B FLAMMABLE SOLID		C EXPLOSIVES C		D FLAMMABLE LIQUID		E CORROSIVES		F COMBUSTIBLE LIQUID		G IRRITATING MATERIAL		H ETIOLOGIC AGENT	
B EXPLOSIVES B		F FLAMMABLE GAS		G NONFLAMMABLE GAS		H CORROSIVES		I OXIDIZERS		J POISON A		K POISON B		L ORGANIC PEROXIDE	
C EXPLOSIVES C		M RADIOACTIVE MATERIAL		N ORGANIC PEROXIDE		O IRRITATING MATERIAL		P ORM MAT'L		Q HAZARDOUS WASTE		R ETIOLOGIC AGENT		S BLASTING AGENT	
D FLAMMABLE LIQUID		U CRYOGENICS													
18 DATE OF LAST PRINCIPAL OFFICE HM SURVEY						19 SUBMITTED BY						20 DATE PREPARED			
/ /												/ /			

FORM MCS-325

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION BUREAU OF MOTOR CARRIER SAFETY SAFETY COMPLIANCE REPORT 1 NEW RECORD 1 UPDATE	2 WASHINGTON USE ONLY	3 (CIRCUITS) A. PRINCIPAL OFFICE B. OTHER FACILITY	4 CARRIER CENSUS NO.	5 SUPER CENSUS NO. S
	NAME OF CARRIER/SHIPPER			
PRINCIPAL OFFICE STREET ADDRESS, CITY, STATE, AND ZIP CODE				
14 IF OTHER FACILITY SURVEY, ENTER CITY, STATE, CN, AND TELEPHONE NUMBER OF FACILITY				15 DATE SURVEY COMPLETED
6 _____ (CITY)	7 _____ (STATE)	8 _____ (ZIP)	9 AC _____ (NO)	10 _____ (TELEPHONE NUMBER)
<p>Violations of Title 49 C.F.R., parts 390 and 399, The Federal Motor Carrier Safety Regulations, may subject the offender to the criminal penalties provided by 49 U.S.C. 322(a) or 49 U.S.C. 11914(b), which provides for a fine of not less than \$100 nor more than \$500 for the first offense and a higher fine for subsequent offenses, or the assessment of civil penalties of up to \$500 for each offense and \$250 for each additional day such offense shall continue under the provisions of 49 U.S.C. 322(b) or 49 U.S.C. 11901(g).</p> <p>Violations of Title 49 C.F.R., parts 100 to 179, The Federal Hazardous Materials Regulations, may subject motor carriers and/or shippers of hazardous materials to the penalty provisions of 49 U.S.C. 1839, which provides for the assessment of civil penalties of not more than \$10,000 for each violation, or criminal penalties of not more than \$25,000 or imprisonment for not more than five years, or both.</p> <p>Violations of Title 49 C.F.R. 325, The Interstate Motor Carrier Noise Emission Standards, may subject motor carriers to the penalty provisions of the Noise Control Act of 1972, 42 U.S.C. 4910, which provides for a fine of not more than \$25,000 per day, imprisonment for one year, or both, in the case of first offenders, and a fine of \$50,000 per day, imprisonment for two years, or both, in the case of subsequent offenders.</p> <p>Failure to comply with Department of Transportation regulations by motor carriers operating under a certificate or permit issued by the Interstate Commerce Commission may result in a report that a motor carrier is not in satisfactory compliance with DOT regulatory requirements, and may result in the initiation of or participation in proceedings before the Interstate Commerce Commission by the Department of Transportation.</p>				
PERSONS INTERVIEWED DURING THIS SURVEY				
NAME _____		TITLE _____		
NAME _____		TITLE _____		
NAME _____		TITLE _____		
NAME _____		TITLE _____		
NAME _____		TITLE _____		
RECOMMENDATIONS TO IMPROVE SAFETY COMPLIANCE				
REPORTED BY _____		TITLE _____		DATE(S) OF SURVEY _____
RECEIPT FOR COPY OF REPORT				
THIS IS TO ACKNOWLEDGE THAT A COPY OF THIS REPORT, TOGETHER WITH _____ PAGE(S) OF THE CONTINUATION SHEET VIOLATIONS AND EXAMPLES, HAVE BEEN FURNISHED TO ME ON THE DATE APPEARING BELOW. IT IS UNDERSTOOD THAT MY SIGNATURE CONSTITUTES ONLY AN ACKNOWLEDGEMENT OF RECEIPT OF A COPY OF THIS REPORT.				
RECEIVED BY _____		TITLE _____		DATE COPY RECEIVED _____

FORM MCS-32C

SAFETY COMPLIANCE REPORT VIOLATIONS AND EXAMPLES					PAGE ___ OF ___ PAGES
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION BUREAU OF MOTOR CARRIER SAFETY		2 WASHINGTON USE ONLY	NAME OF MOTOR CARRIER/SHIPPER		
ENTRY NUMBER	49 CFR SECTION NUMBER	NUMBER DISCOVERED	NUMBER CHECKED	NO. DRIVERS/VEHICLES IN VIOLATION	
11	1	2	3	4	
11	1	2	3	4	
11	1	2	3	4	
11	1	2	3	4	
11	1	2	3	4	
11	1	2	3	4	
DATE(S) OF SURVEY BY		REPORTED BY		COPY RECEIVED BY	

FORM MCS-32D

13 DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION BUREAU OF MOTOR CARRIER SAFETY		2 WASHINGTON USE ONLY		NAME OF MOTOR CARRIER/SHIPPER					
INTRA AGENCY MEMORANDUM		12 REASON FOR THIS SURVEY							
EVALUATION OF CARRIER/SHIPPER'S COMPLIANCE		A MCSBZ INSPECTION		B STATE INSPECTION		C ICC APPLICATION			
		D ACCIDENTS		E ASSIGNMENT		F COMPLAINT			
		G NO PRIOR SURVEY		H EMPHASIS AREA		I FILE UPDATE			
		J NO RECENT SURVEY		K OTHER					
13 ACCIDENT INFORMATION - REPORTABLE ACCIDENTS			EVALUATION OF CARRIER/SHIPPER'S COMPLIANCE						
	REPORTABLE ACCIDENTS (LAST 12 MONTHS)	TOTAL MILES (LAST 12 MONTHS)		48 C & B NUMBER	ACCEPTABLE	MARGINAL	UNACCEPTABLE	NOT EVALUATED	
EXEMPT INTRACITY	A	B		14 261	A	B	C	C	
				15 262	A	B	C	D	
				16 263	A	B	C	D	
OVER THE ROAD	C	D		17 264	A	B	C	D	
				18 265	A	B	C	D	
				19 266	A	B	C	D	
TOTAL	E	F		20 267	A	B	C	D	
				21 268	A	B	C	D	
				22 269	A	B	C	D	
REPORTABLE ACCIDENT RATIO G (F DIVIDED BY F TIMES I MI. LK'S)				23 171	A	B	C	D	
13 HOURS OF SERVICE VIOLATIONS SEVERITY				24 172	A	B	C	D	
	TEN HOUR RULE	15 HOUR RULE	60/7	70/9	25 173	A	B	C	
LESS THAN 1 HOUR	A	B	C	D	26 177	A	B	C	
1 TO 2 HOURS	E	F	G	H	27 178	A	B	C	
2 TO 3 HOURS	I	J	K	L	28 225	A	B	C	
3 TO 5 HOURS	M	N	O	P	29	A	B	C	
MORE THAN 5 HOURS	Q	R	S	T	30	A	B	C	
				22 OVERALL SAFETY COMPLIANCE EVALUATION A SATISFACTORY B UNSATISFACTORY C CONDITIONAL					
23 PLANNED COURSE OF ACTION									
A CONTINUE ADMINISTRATIVE HANDLING			B CASE REPORT WITHOUT EVIDENCE			C CASE REPORT WITH EVIDENCE			
D RESURVEY IN 3 MONTHS			E RESURVEY IN 6 MONTHS			F RESURVEY IN 9 MONTHS			
G RESURVEY IN ONE YEAR			H LETTER REQUESTING COMPLIANCE			I REVOKE DIVIDED RECORDS AUTHORITY			
J OTHER			K OTHER			L OTHER			
24 DRIVER TURNOVER				26 ACCIDENT INFORMATION - LAST FULL CALENDAR YEAR (INCLUDE UNREPORTED ACCIDENTS)					
NO DRIVERS HIRED - LAST 12 MONTHS A _____ X 100 =				TOTAL NUMBER OF FATALITIES A _____					
TOTAL NO DRIVERS EMPLOYED B _____ C _____ %				TOTAL NUMBER OF INJURIES B _____					
				TOTAL MILEAGE C _____					
26 REGIONAL SPECIAL STUDY NUMBER	27 (RESERVED)		28 WASHINGTON SPECIAL STUDY NUMBER		29 (RESERVED)				
30 (RESERVED)	31 (RESERVED)		32 (RESERVED)		33 (RESERVED)				
34 (RESERVED)	35 (RESERVED)		36 (RESERVED)		37 (RESERVED)				
38 (RESERVED)	39 (RESERVED)		40 (RESERVED)		41 (RESERVED)				
42 (RESERVED)	43 (RESERVED)		44 (RESERVED)		45 (RESERVED)				
46 (RESERVED)	47 (RESERVED)		48 (RESERVED)		49 (RESERVED)				
STATEMENTS MADE BY CARRIER RELATIVE TO IMPROVING SAFETY COMPLIANCE ADDITIONAL PLANNED COURSES OF ACTION AND OTHER COMMENTS RELATIVE TO THIS SURVEY									
50 SIGNATURE OF PRINCIPAL INVESTIGATOR			51 THREE NUMERICAL CODE NO		52 SIGNATURE OF ASSISTANT INVESTIGATOR			53 THREE NUMERICAL CODE NO	

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N T I S