

The Transportation of Hazardous Materials: Insurance, Security, and Safety Costs

**A report to Congress as required by Section 1555(b) of the
Implementing Recommendations of the 9/11 Commission Act of 2007
(Pub. L. 110-53)**

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1.0 INTRODUCTION

1.1 Legislative Background and Methodology

This report has been prepared by the U.S. Department of Transportation (DOT), in conjunction with the U.S. Department of Homeland Security (DHS), pursuant to Section 1555(b) of the Implementing Recommendations of the 9/11 Commission Act of 2007.¹ Section 1555(b) reads:

“Within 1 year after the date of enactment of this Act, the Secretary of Transportation, in conjunction with the Secretary [of DHS], shall study to what extent the insurance, security, and safety costs borne by railroad carriers, motor carriers, pipeline carriers, air carriers, and maritime carriers associated with the transportation of hazardous materials are reflected in the rates paid by offerors of such commodities as compared to the costs and rates, respectively, for the transportation of nonhazardous materials.”

In studying the extent to which insurance, security, and safety costs are reflected in the rates paid by shippers for the transport of hazardous materials, we focused our attention on identifying structural, regulatory, institutional, or similar failings that affect the rates that shippers pay, or that prevent carriers from recovering, through their rates, the cost of carriage for such commodities.² We found this approach to be reasonable as it would be impractical to conduct an extensive arithmetic comparison of costs and rates across various modes for numerous shipments of hazardous materials, partly because most of these data are confidential business information. In conducting our study, we examined the overall economic regulatory environment and industry trends within the respective modes to identify significant problems, if any. As part of our research effort, we consulted modal experts within and outside DOT, assessed recent rulemakings, and reviewed other relevant literature. Additionally, our examination of the freight rail sector paralleled the subject matter of three recent Surface Transportation Board (STB) proceedings. Oral testimonies and submitted materials from these proceedings have been reviewed and sourced in this report.

1.2 Hazardous Materials

Hazardous materials are essential to the economy of the United States and to the well-being of its people. Not only do hazardous materials provide direct utility to American households (e.g., fueling automobiles and heating/cooling households), commercial enterprises, particularly in the agricultural, manufacturing, medical, mining, and public utility sectors, depend on them for a wide array of industrial and agrarian applications. Under the United Nations (UN) system for classification, identification, and ranking of

¹ The Act was signed into law by former President George W. Bush on August 3, 2007; see Pub. L. 110-53.

² It should be noted that evidence of rate differentials and shipper-carrier disagreements are not necessarily indicative of failings.

hazardous materials, all hazardous substances are divided into nine general classes according to their physical, chemical, and nuclear properties as follows:

Class 1	Explosives and pyrotechnics
Class 2	Compressed, flammable, nonflammable, and poison gases
Class 3	Flammable liquids
Class 4	Flammable solids
Class 5	Oxidizers and organic peroxides
Class 6	Toxic and infectious materials
Class 7	Radioactive materials
Class 8	Corrosive materials
Class 9	Miscellaneous dangerous substances and articles

Because hazardous materials are often produced distant from their end-use location, producers and consumers depend on the transportation industry to deliver these commodities in a safe, secure, and efficient manner. More than 3 billion tons of regulated hazardous material is transported in this country each year. There are over 800,000 daily shipments of hazardous material that range in quantity from several ounces to many thousands of gallons. While hazardous materials are transported by all modes of transportation, certain commodities are more likely to be transported by particular modes. Understandably, certain commodities are prohibited from being transported by some modes due to the risks posed by the material and the potential severity of an accident. Beyond the nature of the hazardous material being transported, other considerations are also important when determining mode choice, such as shipment quantity, time, rates, modal accessibility, travel distance, and route. Below is a table with 2002 ton-miles of hazardous material shipments, showing, for each hazardous class, the percentages shipped by each mode, derived from the 2002 Commodity Flow Survey (CFS):³

³ The Commodity Flow Survey (CFS) is the product of a joint effort between DOT (Bureau of Transportation Statistics) and the U.S. Department of Commerce (Census Bureau). Because the results from the 2007 survey have not yet been finalized, and because these surveys are conducted every five years, the 2002 version is the latest available with complete data sets.

Table 1.2: Hazardous Material Modal Choice by Class (2002)

Class	Description	Ton-miles (millions)	Modal Ton-mile Percentage					
			Motor Carriage	Aviation	Maritime	Rail	Multiple Modes	Other/Unknown
Class 1	Explosives	1,568	77.0%	0.1%	-	22.1%	S	S
Class 2	Gases	37,262	36.3%	S	4.7%	44.6%	0.9%	0.2%
Class 3	Flammable Liquids	218,574	31.0%	S	27.7%	11.3%	4.5%	S
Class 4	Flammable Solids	4,391	31.6%	S	S	56.2%	S	S
Class 5	Oxidizers and Organic Peroxides	4,221	64.2%	S	-	30.8%	S	S
Class 6	Toxic and Infectious Materials	4,254	19.9%	S	S	40.3%	S	0.9%
Class 7	Radioactive Materials	44	84.5%	3.2%	-	-	12.1%	S
Class 8	Corrosive Materials	36,260	43.6%	S	9.0%	43.0%	3.3%	0.7%
Class 9	Miscellaneous Dangerous Substances and Articles	20,153	34.3%	S	15.9%	46.2%	3.4%	S

NOTES: "Multiple Modes" refer to shipments that involve two or more modes of transportation. "S" means the figure is unavailable because the estimate does not meet CFS publication standards. A blank cell means that the figure is equal to zero or less than one unit of measure.

1.3 Insurance, Security, and Safety

Because hazardous materials frequently traverse densely populated or sensitive areas, where the consequence of an incident could be loss of life and/or serious long-term environmental damage, carriers of such substances are subject to unique insurance, security, and safety considerations and regulations (which typically translate into increased operating costs).⁴ For example, all carriers engaged in the transport of hazardous commodities maintain insurance, and in certain modes, federal regulations specify that carriers of hazardous materials must maintain insurance policies that are sufficient to meet potential liabilities. Because the consequences associated with an incident involving the release of extremely hazardous materials can be especially severe, carriers of these commodities typically maintain coverage in excess of what they do for less-hazardous operations. The actual degree of severity is also contingent on the circumstances surrounding the release (e.g., location of release, time of release, atmospheric conditions, etc.).

Additionally, carriers engaged in the transport of hazardous materials are subject to mandatory compliance with DOT and DHS safety and security regulations. DOT's primary focus is on safety matters, while DHS's primary focus is on security matters. DHS's authority to secure the nation's transportation network is granted under 6 U.S.C. § 202(2). Various DHS regulatory, training, and grant programs are targeted at identifying and mitigating security threats and vulnerabilities on the nation's transportation network, which can pose risk to hazardous material movements, and ensuring that first responders

⁴ We note that in general, transportation accidents that result in the release of hazardous substances are typically minor and have minimal consequences. In fact, from 1997-2007, less than 40 people died each year from such incidents, across all modes. Incident statistics, by mode, for 1997-2007 are available at: <http://phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Files/tenyr.pdf>.

are properly trained and equipped to respond to all incidents, including those involving hazardous materials.

DOT's authority to regulate the transportation of hazardous materials is granted under 49 U.S.C. § 5101 *et seq.* In particular, DOT's Hazardous Materials Regulations (HMR)⁵ establish requirements for the safe and secure transportation of hazardous materials in commerce. The HMR are predominately prevention-oriented and focus on identifying safety or security vulnerabilities, reducing the probability and quantity of a hazardous material release, and mitigating the consequences of a release. Specifically, the HMR stipulate appropriate packaging and handling requirements for hazardous materials and require shippers to communicate the material's hazard(s) through use of shipping papers, package marking and labeling, and vehicle placarding. The HMR also mandate training requirements for persons who prepare hazardous materials for shipment, who transport hazardous materials in commerce, or otherwise affect the transportation of hazardous materials by performing functions regulated by the HMR. Additionally, DOT provides planning and training grants to states, territories, and tribes to prepare for and respond to hazardous material transportation incidents.

1.4 Study Summary

Based on our analysis, for the most part, the relationship of insurance, security, and safety costs to rates paid by shippers of hazardous materials is not of significant concern in the motor carrier, aviation, and maritime sectors.⁶ Generally speaking, carriers in these modes have a high degree of discretion in accepting or rejecting hazardous material shipments. When opting to engage in such activities, carriers in these modes are able to charge rates and special handling fees that enable them to recover costs associated with the carriage of such materials. These market conditions, in addition to the lack of accounts of significant dissatisfaction among carriers or shippers over shipping rates, service quality, and service levels, lead us to conclude that market-based rates currently prevail in these sectors and that rates appropriately reflect input costs.

Conversely, we found that within the freight rail sector, shippers and carriers are concerned about the relationship of insurance, security, and safety costs to carriage rates for the transportation of hazardous materials. In particular, the bulk of the controversy centers on hazardous materials classified as "toxic-inhalation-hazard" (TIH).⁷ TIH materials are gases or liquids characterized as being extremely hazardous to humans because contact with a concentrated dose could be lethal or, at the very least, lead to adverse health problems. These materials pose special risk during transportation because

⁵ See 49 CFR Parts 171-180.

⁶ Pipelines are not included in this study since pipelines primarily transport hazardous liquids and natural gas; therefore it is not possible to compare transportation costs for these materials to those for non-hazardous materials.

⁷ Also commonly referred to as "poisonous-by-inhalation" (PIH) materials; see 49 CFR § 173.132 for regulatory definition of PIH materials.

an uncontrolled release could endanger a significant number of people. The two most commonly transported TIH commodities are anhydrous ammonia and chlorine.⁸

TIH rail shippers assert that carriage rates are too high, while rail carriers contend that current rates are a reflection of the costs associated with the handling of TIH materials – specifically rising insurance costs. TIH rail carriers, which include all seven Class I railroads and a number of Class II and III railroads,⁹ claim that despite the high cost of insurance, policies still do not provide a level of risk coverage sufficient to cover the potential “ruinous liability” resulting from an event involving the release of TIH materials while en route. Given these circumstances, rail carriers have long argued that they should be exempt from their “common carrier obligation” to haul TIH material, or any extremely hazardous material for that matter, unless afforded some form of liability protection. From a public policy standpoint, if a major railroad were forced into bankruptcy due to liability claims in excess of its liability coverage, it could lead to disruptions in service for shippers, which could, consequently, have a negative impact on the nation’s economy – though how severe an impact it would have is uncertain. We expand on this issue in Section 4.0 of this report, but first we provide a brief review of each major mode of transportation in the following section.

⁸ Anhydrous ammonia is a TIH gas, vital to agricultural product producers as a nitrogen-based fertilizer and to coal-based power producers as a pollution control substance. Chlorine is also a TIH gas, used for a wide variety of commercial and industrial purposes, including water purification.

⁹ The STB classifies railroads according to annual revenue generation: As of 2006, Class I railroads are carriers that generate \$359.68 million or more, Class II railroads are carriers that generate \$28.8 million or more, and Class III railroads are carriers that generate less than \$28.8 million. Class I railroads transport the vast majority of the TIH ton-miles.

2.0 MODAL REVIEW

2.1 Motor Carriage

The Motor Carrier Act of 1980 abolished most of the common carrier restrictions that existed in the trucking industry prior to enactment, resulting in the deregulation of the industry. There are virtually no rate regulations or restrictions on exiting the industry, and there are only nominal requirements to enter the industry. Generally, motor carriers have discretion to accept or reject hazardous material shipments. If a carrier does choose to haul hazardous materials, it is permitted to charge rates that allow it to recover its operating costs. However, motor carriers engaged in hazardous material transportation are subject to specific HMR requirements, in addition to broader Federal Motor Carrier Safety Administration (FMCSA) safety regulations.¹⁰

Among the various FMCSA regulations is a requirement for all motor carriers to maintain liability insurance.¹¹ The American Trucking Association (ATA) recently formed a task force, known as the Insurance Task Force (ITF), to assist motor carriers in acquiring affordable insurance. A recent investigation into insurance costs led the ITF to conclude that the current state of tort law inflates insurance premiums due to the potential for “outrageous and unfair verdicts” that result in plaintiffs being awarded high sums in punitive damages.¹² At various times in the past, lack of liability insurance has been a problem in the trucking industry,¹³ but at this time the availability of liability insurance does not appear to be a problem.

Due to the large universe of registered hazardous materials carriers (more than 25,000), the absence of rate regulation in the sector, and the lack of any obvious accounts of either carrier or shipper dissatisfaction, we conclude that market-based rates currently prevail in this sector and that rates appropriately reflect input costs.

2.2 Aviation

The hazardous material market within the aviation sector is relatively small due to regulatory and commercial limitations. Given the potential severity of an accident, airfreight carriers are limited by regulation in the types and quantities of hazardous materials they may carry and rarely transport extremely hazardous materials. Like motor carriers, air carriers have a high degree of discretion in accepting shipments and typically charge higher rates and special fees when hauling hazardous materials to compensate for special handling and security requirements. According to an Air Transport Association

¹⁰ Federal Motor Carrier Safety Regulations (FMCSR); see 49 CFR Parts 390 – 397.

¹¹ In order to operate legally, motor carriers are required by federal regulation to carry insurance policies, or surety bonds, sufficient to cover specified minimum liability amounts; see 49 CFR Parts 387.7 – 387.9.

¹² According to the ITF; see: <http://www.truckline.com/AdvIssues/Litigation/Pages/TortReform.aspx>.

¹³ See, for example, “Motor Carriers: The Availability of Environmental Restoration Insurance” (GAO/RCED-86-150BR, May 19, 1986).

(ATA) representative we interviewed as part of this study, shippers typically tolerate these higher rates and fees as they recognize that there are legitimate challenges involved in the air transportation of hazardous materials. Given these circumstances, we conclude that the current state of the hazardous material market within the aviation sector, as limited as it is, is meeting the needs of shippers and carriers, and that both parties seem satisfied with service levels, service quality, and rates.

2.3 Maritime

Every year, the maritime sector (international, coastal, and inland waterways) transports large volumes of hazardous material in a safe and secure manner. We found, in our review of the sector, that the majority of carriers are able to recoup the insurance, security, and safety costs associated with the transportation of hazardous materials. However, we also found that in recent times, the maritime sector has experienced significant regulatory changes with the implementation of the Maritime Transportation Security Act of 2002.¹⁴ These changes have caused some reluctance on the part of carriers to accept certain hazardous materials for transport, such as explosive and radioactive materials. Explosive and radioactive materials are typically shipped in lower volumes, require specialized training for the crew, and require additional safety and security measures that can decrease the motivation of carriers to accept such shipments. But for other classes of hazardous materials, service is available, and shippers and carriers seem content with the status quo.

2.4 Rail

Our review of the freight rail sector revealed significant discontent between shippers and carriers of hazardous materials. While rate and competition disputes between rail carriers and shippers are routine in all commodity classes, the problem appears to be especially contentious for hazardous commodities classified as TIH materials. Shippers and carriers are currently at odds over the rates, and to a lesser extent, service quality, of TIH shipments. Shippers of TIH material complain that carriage rates are high while carriers contend that rates are a reflection of the operating costs associated with the transport of these extremely hazardous materials. More specifically, carriers argue that liability exposure, particularly in the post-9/11 environment, is high, and that insurance costs have increased accordingly. Furthermore, carriers claim that the current state of the commercial rail insurance market does not provide adequate liability coverage for potential catastrophes involving TIH materials and other extremely hazardous commodities.¹⁵

¹⁴ See Pub. L. 107-295.

¹⁵ While the focus of this report is on TIH materials, many non-TIH hazardous materials pose serious threat during transit and can have significant liability implications as well. For example, a 1997 incident involving the release of butadiene from a rail car in New Orleans resulted in punitive damages in the amount of \$850 million, reduced from an initial award of \$2.5 billion; see: *In re New Orleans Train Car Leakage Fire Litigation*, 671 So.2d 540, 95-2710 (La.App. 4 Cir. 1996), *cert. denied*, 519 U.S. 1009 (1996). We note though that while chemicals such as butadiene are highly volatile, they do not pose the

We elaborate on these industry conditions in the following section and discuss public policy implications and possible adjustments in the subsequent section.

same the degree of risk during transit as TIH materials, and as such are not considered a source of controversy in this report.

3.0 RAIL SHIPMENT OF HAZARDOUS MATERIALS

3.1 Freight Rail Controversy

While a number of hazardous materials are transported by rail, it became evident in the course of our examination that the majority of the controversy centers on bulk shipments of hazardous materials classified as “toxic-inhalation-hazard” (TIH). Roughly 100,000 carloads of TIH material are transported by rail annually – 80% of which are either anhydrous ammonia or chlorine loads. At this point, there is no indication of significant discontent between rail carriers and shippers over the shipment of non-TIH materials.

Shippers of TIH commodities contend that current rail shipping rates are unjustifiably high and that these rates are continuing to increase. While TIH material shippers recognize that there are unique costs associated with the transportation of highly hazardous materials – particularly insurance, security, and safety costs – they believe that shipping rates charged by carriers do not accurately reflect actual input costs. More specifically, shippers claim that the current insurance cost pass-through is unjustifiably high. In addition to rate hikes, some carriers have also introduced surcharges for TIH shipments.¹⁶ According to their written testimonies in the recent STB proceeding titled “Common Carrier Obligation of Railroads – Transportation of Hazardous Materials” (Ex Parte No. 667 [Sub-No. 1]), some shipper organizations believe that increased shipping rates and the introduction of surcharges are designed to price TIH shippers out of the rail market in order to increase capacity for non-TIH shipments that are presumably more profitable and pose less liability risk.

Rail carriers, on the other hand, argue that high rail rates are a reflection of the financial and operational burden associated with the transportation of TIH commodities. In particular, carriers claim that their insurance costs and liability exposure are high and that shipping rates are a reflection of this reality. More pressing, from the rail carriers’ perspective, is that despite the high cost of insurance, policies available in the commercial rail insurance market provide risk coverage that is still less than what they believe to be sufficient to protect against the excessive liability risk that TIH movements pose. As such, rail carriers assert that they are forced to “bet the farm” with every TIH movement because if the liabilities from a catastrophic incident are in excess of a railroad’s primary insurance coverage, it would likely force the carrier into bankruptcy. Our review of Class I railroads’ annual reports confirmed that carriers consider the liability consequences from a hazardous material accident to be among their most significant business risks.¹⁷ Exacerbating the situation for carriers is that the TIH market is not one in which they choose to participate voluntarily, given these risks, but rather is one in which they must participate in accordance with their “common carrier obligation.”

¹⁶ According to the written testimony of the Agricultural Retailers Association, submitted to the STB in the proceeding titled “Common Carrier Obligation – Transportation of Hazardous Materials” (Ex Parte No. 677 [Sub-No. 1]), and as confirmed by a rail insurance broker we interviewed as part of this study.

¹⁷ Class I railroads operating in the contiguous United States are required to list their most significant “risk factors” in their Form 10-K filings (see Item 1A).

3.2 Common Carrier Obligation

Common carriers are defined as firms that provide essential services that can be solicited by the general public. Because these firms hold themselves out to the public and because the services offered are in line with the economic interest of society, common carriers are obligated by statute to provide said services upon reasonable request, hence the term “common carrier obligation.” In the transportation sector, services refer to the carriage of people and freight. For the freight rail industry, railroads have a common carrier obligation to render service to anyone that requests it in a reasonable fashion. The common carrier obligation for rail carriers, regulated by the STB for rail carriers engaged in interstate commerce, was most recently codified in 1996 and reads in relevant part:

“A rail carrier providing transportation or service subject to the jurisdiction of the Board [STB] under this part shall provide the transportation or service on a reasonable request.”¹⁸

Current interpretation of this statute requires rail carriers to haul all reasonable commodities – including TIH materials. In fact, there are only a handful of exceptions to this requirement.¹⁹ A number of rulings by the former Interstate Commerce Commission (ICC), the predecessor to the STB, and numerous court decisions have upheld the notion that, as a common carrier, a railroad company may not refuse service because it deems it inconvenient or because the firm’s profits are declining. Furthermore, “a carrier may not ask the [STB] to take cognizance of a claim that a commodity is absolutely too dangerous to transport, if there are DOT...regulations governing such transport, and these regulations have been met.”²⁰ If a railroad attempts to impose additional safety measures over those required by DOT, there is a heavy burden upon the railroad to show that for some reason the presumptively valid DOT regulations are unsatisfactory or inadequate in their particular circumstance.

Nevertheless, the common carrier obligation is not absolute as railroads need to make a profit on the traffic they do carry in order to stay in business in the long-term. To this end, carriers argue that they do not make sufficient profit from TIH movements to compensate for the excessive business risk that they bear. Furthermore, rail carriers have long argued that since the common carrier obligation requires them to provide service on a “reasonable request,” they should be allowed to reject TIH shipments as they constitute an “unreasonable request” due to excessive financial risk. For these reasons, rail carriers have long claimed that they should be exempt from their common carrier obligation to

¹⁸ See 49 U.S.C. § 11101(a).

¹⁹ See, for example, *Santa Fe Ry. v. Grant Bros.*, 228 U.S. 177 (1913); *Emporium v. New York Cent. R. R.*, 214 I.C.C. 153 (1936); and *Transportation of Circuses and Show Outfits*, 229 I.C.C. 330 (1956). Additionally, the STB has determined that some types of traffic are exempt from its regulation, and as a consequence, do not fall under the common carrier obligation. For example, intermodal traffic is considered exempt since it can move by either rail or truck. In fact, some rail carriers that move intermodal shipments have barred certain types of intermodal chemical shipments; see: Gallagher, John. “Uncommon Freight.” *Traffic World*, Oct. 23, 2006. pg. 1.

²⁰ See: *Akron, Canton & Youngstown R.R. v. ICC*, 611 F.2d 1162, 1169 (6th Cir. 1979).

haul TIH material, or any extremely hazardous material for that matter, unless afforded some form of liability protection.

In the following sections, we outline in greater detail how safety, security, and liability factors affect the TIH rail market.

3.3 Safety and Security Cost Controversy

Relative to their share of total freight rail traffic,²¹ the financial burden that hazardous material movements impose on railroads is significant, due in part to mandatory compliance with DOT and DHS safety and security regulations. In addition to direct financial costs, compliance with safety and security regulations has raised concerns about unintended consequences that affect some non-hazardous material rail operations. For example, a recently established DOT regulation (described in greater detail below) requiring trains to operate at not more than 50 miles per hour (mph) when hauling TIH materials may diminish the throughput of an entire rail line – compromising the operating efficiency of the rail network as a whole. The cost of delayed freight delivery is in addition to lost revenue from business that could have occurred. But given that this speed restriction is consistent with existing railroad industry standards put into effect prior to adoption of this rule, and that short line railroads' maximum track speeds are generally low for all shipments, this rule should only have a very limited impact on rail network efficiency.

While we found concerns about the costs and operational burdens that federal safety and security regulations impose on rail commerce, we note that the concerns expressed about these regulatory requirements were relatively low and not at the level of a major controversy. Though it is true that such regulations can produce higher costs, they do produce substantial safety and security benefits, and should help to minimize the consequences of rail accidents involving TIH materials, such as those discussed in the next subsection of this report. As part of their ongoing efforts to strengthen, clarify, and improve hazardous material safety and security, DHS and DOT recently adopted four new rail regulations that will likely increase the operating costs of transporting hazardous materials, but which should also reduce the likelihood of rail accidents and mitigate the adverse impacts of accidents when they occur, thus minimizing the risks associated with the movement of hazardous materials:

1. Rail Transportation Security (TSA final rule):²² This regulation, published on November 26, 2008 and codified at 49 CFR § 1580.107, requires freight and passenger rail carriers to designate rail security coordinators and report significant security concerns to the Transportation Security Administration (TSA). Freight rail carriers and certain facilities handling rail security-sensitive materials (TIH materials, certain explosives, and certain radioactive materials) are required to

²¹ Out of the 31.4 million freight rail carloads transported in 2007, 2 million were hazardous material loads.

²² TSA has identified TIH movements as a top security priority due to the high risks they pose; see TSA's Freight Rail Modal Annex, available at: http://www.tsa.gov/assets/pdf/modal_annex_freight_rail.pdf.

- report location and shipping information to TSA upon request and implement chain of custody requirements to ensure a positive and secure exchange of the materials. Shippers at any location must physically inspect rail cars prior to loading and must keep the cars in a secure area, with physical security measures, prior to a railroad carrier taking physical custody of the cars. The following rules apply within a high threat urban area (HTUA):²³ (1) there must be a positive and secure change of physical custody when transferring rail cars containing security-sensitive materials between carriers, shippers, and receiver facilities; (2) carriers must not leave a rail car unattended in a non-secure area until the receiver accepts custody of the rail car; and (3) receivers must keep rail cars in a secure area until they are unloaded. For a rail car that is transferred to another carrier and may subsequently enter a HTUA, the carrier must adopt procedures to ensure that the rail car is not left unattended at any time during the physical transfer of custody.
2. Security Plan Regulation (PHMSA final rule): In a final rule issued in 2003 (49 CFR §§ 172.800-804), the Pipeline and Hazardous Materials Safety Administration (PHMSA) requires persons, including rail carriers, who offer for transportation or transport certain hazardous materials to develop and implement security plans for such transportation. The security plans include an assessment of possible transportation security risks for shipments of hazardous materials and appropriate measures to address the assessed risks. At a minimum, a security plan must address personnel security (such as background checks), unauthorized access to hazardous materials, and security risks of shipments of hazardous materials en route from origin to destination.
 3. Enhancing Rail Transportation Safety and Security for Hazardous Materials Shipments (PHMSA final rule): In a final rule published on November 26, 2008 (73 FR 721181), PHMSA, in coordination with the Federal Railroad Administration (FRA), adopted new standards governing the routing and handling of highly hazardous rail shipments. The rule requires rail carriers to: (1) compile annual data on certain shipments of TIH, explosive, and radioactive materials (security-sensitive hazardous materials); (2) identify all practicable alternative routes which the railroad has authority to operate; (3) consider possible interchange of the security-sensitive hazardous materials traffic with other railroads; (4) collaborate with state and local officials to identify security risks to high-consequence locations along the routes currently used to transport security-sensitive hazardous materials and the alternative routes; (5) annually assess the safety and security risks of the routes used to transport security-sensitive hazardous materials, as well as the alternative routes, considering a minimum of 27 specified risk factors; (6) after considering mitigation measures to reduce safety and security risks, select the practicable routes that pose the least overall safety and security risks on which to transport security-sensitive hazardous

²³ A high threat urban area (HTUA) is a geographic area warranting special consideration based on population and risk assessment data; TSA has identified 46 HTUAs throughout the U.S.

materials;²⁴ (7) address en route storage and delays in transit;²⁵ and (8) inspect placarded hazardous material rail cars for signs of tampering or suspicious items. FRA has issued a companion regulation that states that if the carrier's chosen route is found to be unsatisfactory, the FRA Associate Administrator for Safety, in consultation with PHMSA, TSA, and the STB, may require the use of an alternative route until such time as identified deficiencies in the original route selection are satisfactorily addressed. FRA expects to use this authority only in exigent circumstances.

4. Improving the Safety of Railroad Tank Car Transportation of Hazardous Materials (PHMSA final rule): In a final rule published on January 13, 2009 (74 FR 1769), PHMSA, in coordination with FRA, adopted enhanced safety standards for tank cars used to transport TIH materials, including: (1) more rigorous tank car design standards for head and shell impacts; (2) improved standards for tank nozzles and top fittings protection; (3) a 50 mph speed restriction for trains hauling one or more loaded, placarded TIH tank cars; and (4) an allowance to increase the gross weight of tank cars that meet the enhanced tank-head and shell standards. By the Association of American Railroads' (AAR) own calculations, the new standards should lower by more than 70% the likelihood of a hazardous substance release in the event of an accident.²⁶ FRA and PHMSA are continuing to conduct research designed to support additional performance standards for tank cars carrying TIH materials.

We also note that Congress recently passed legislation, the Rail Safety Improvement Act of 2008 (RSIA),²⁷ which mandates roughly 40 railroad safety rulemakings, studies, and model state laws. Among its many measures, the RSIA adjusts the hours of service for train crews, dispatchers, and signal employees (which should decrease employee fatigue), requires major railroads to establish proactive, safety risk reduction programs, and requires Class I railroads to install, by the end of 2015, positive train control (PTC) systems on their mainlines that carry TIH materials and/or regularly scheduled intercity or commuter rail passenger transportation.²⁸ As the new RSIA-required safety measures are implemented, they should result in significant improvements in railroad safety, including the safe movement of TIH materials, thereby reducing the railroads' liability exposure.

²⁴ Railroads can elect to make their initial routing decisions by September 1, 2009, based on analysis of six-month data, or make their decisions by March 31, 2010, based on full year 2008 data.

²⁵ This requirement supplements PHMSA's 48-hour rule (codified at 49 CFR § 174.14). The 48-hour rule imposes a duty on carriers to expedite the transportation of hazardous materials by rail. The rule generally requires that carriers forward shipments of hazardous materials promptly and within 48 hours after acceptance at the originating point, or receipt at any yard, transfer station, or point of interchange.

²⁶ See: "Railroad Industry Applauds New Rule to Strengthen Tank Cars: DOT Rule Follows Standards Developed by AAR Tank Car Committee" AAR press release: Jan. 14, 2009; available at: http://dev.aar.org/AAR/Pressroom/PressReleases/2009/01/010409_FRA_tank_car.aspx.

²⁷ See Pub. L. 110-432.

²⁸ PTC is a communication-based surveillance system that is designed to prevent train-on-train collisions, train over speed conditions, intrusion into track maintenance work zones, and prevention of trains moving through misaligned switches. Though PTC systems will be costly, they will result in safety improvements.

We found that increased safety and security regulatory costs can generally be passed through to shippers, so we do not expect these new requirements to create a gap or mark-up between costs and rates. In short, shippers seem to acknowledge that the risks associated with the transportation of hazardous materials warrant stringent handling and transportation controls and appear willing to absorb the costs of these controls in the form of higher rates. In fact, all stakeholders interviewed for this study indicated that they work closely with their counterparts (i.e., carriers or shippers) on a continual basis to enhance the safety and security of hazardous movements. Given these circumstances, we find that there is no basic failure or major dissatisfaction in how safety and security costs are reflected in shipping rates for hazardous materials.

3.4 Rail Liability and Insurance Controversy

Based on our analysis, the most controversial factors that affect rail rates for the shipment of hazardous materials are insurance and liability considerations. Rail carriers maintain that TIH movements involve grave risk that can only be partially mitigated by regulations, and that can only partially be covered by insurance. Railroads argue that while incidents that result in the release of TIH material are extremely rare, given DOT and DHS's stringent safety and security regulations, they do occur. Railroads are quick to point out that it is virtually impossible to guard America's rail network from all security threats and safety vulnerabilities, given the nature, size, and openness of rail operations, and that incidents can occur as a result of third party actions, such as track obstructions or even terrorism. Furthermore, hazardous materials are often shipped on trains that share the same right-of-way used by intercity or commuter passenger trains. While the National Railroad Passenger Corporation (Amtrak), various commuter rail agencies, and freight railroads all have good safety records, the mixing of passenger and freight trains on the same right-of-way entails certain risks, which can have significant liability consequences.²⁹

While a "nightmare scenario" that would result in ruinous liability is highly improbable, we realize that it is not completely impossible either – given the right circumstances. Indeed, incidents in the recent past highlight the fact that such events occur and can have significant liability consequences:³⁰

- Minot, ND – On January 18, 2002, 31 Canadian Pacific Railway (CP) rail cars derailed as a result of a cracked joint bar.³¹ Among the derailed cars were 5 tank

²⁹ Federal law (49 U.S.C. § 28103) caps awards of all rail passengers against all defendants arising out of a single accident or incident involving rail passenger transportation to \$200 million; however, this cap does not cover third party liability claims. As a condition of using their right-of-way, freight railroads typically require Amtrak and commuter rail agencies to procure insurance and enter into liability arrangements to protect the freight railroads in the event of an accident. The United States Government Accountability Office (GAO) has submitted a report to Congress on this topic titled "Many Factors Influence Liability and Indemnity Provisions, and Options Exist to Facilitate Negotiations" (GAO-09-282; February 2009).

³⁰ Additional information on these incidents can be obtained from corresponding National Transportation Safety Board (NTSB) Railroad Accident Reports; available at: http://www.nts.gov/publictn/R_Acc.htm.

³¹ A "joint bar" is a bracket that connects two rail sections.

cars that ruptured and released about 146,700 gallons of anhydrous ammonia. This event resulted in 1 fatality and 333 injuries. Damages to rolling stock and track, as well as monetary loss from the damaged or destroyed cargo, exceeded \$2.6 million. Other significant costs included evacuation costs, truck delay, rerouting and associated out-of-service expenses, expenses for disruption to non-railroad businesses, and expenses incurred in settling claims arising from the accident.³² As of March 15, 2004, over \$8 million had been spent on environmental remediation.

- Macdona, TX – On June 28, 2004, a Burlington Northern Santa Fe (BNSF) train collided with a Union Pacific (UP) train that failed to respond appropriately to a wayside signal. The accident caused one tank car to fracture, releasing about 16,000 gallons of chlorine. Thirty-three people were injured, three fatally (including the UP train conductor and two occupants of a residence located near the accident site). Damages to rolling stock, track, and signal equipment were estimated at \$6.3 million. Other significant costs included evacuation costs, truck delay, rerouting and associated out-of-service expenses, expenses for disruption to non-railroad businesses, and expenses incurred in settling claims arising from the accident. As of July 20, 2006, \$150,000 had been spent on environmental cleanup.
- Graniteville, SC – On January 6, 2005, a Norfolk Southern (NS) train collided with a parked train as a result of an improperly aligned switch. One tank car was breached and released about 14,000 gallons of chlorine. Nine people were fatally injured and 554 sustained other injuries (75 requiring hospitalization). The property damage, including damages to the rolling stock and track, exceeded \$6.9 million. Other significant costs included evacuation costs, truck delay, rerouting and associated out-of-service expenses, expenses for disruption to non-railroad businesses, costs to affected local governments and residents, as well as expenses incurred in environmental cleanup, penalties, and settling claims arising from the accident. According to financial documents produced by NS, the railroad recorded \$41 million in expenses related to the accident in 2005 and it is estimated that the costs of the Graniteville accident were approximately \$138 million, excluding chlorine cleanup costs.³³ This cost estimate likely underestimates the actual costs incurred by those affected by the accident. For example, preliminary estimates of costs to Aiken County, the jurisdiction in which the accident occurred, were in the millions, due to potential damage to electrical systems and equipment within homes and businesses, the cost of the first response and recovery operations, damage to fire and emergency medical service (EMS) response vehicles, and treatment of victims.

³² On October 9, 2007, a federal judge approved a \$7 million settlement in a class action lawsuit, brought by individuals affected by the accident, against CP.

³³ Norfolk Southern Corporation, Quarterly Financial Review, Fourth Quarter 2006, at p. 4; available at: http://www.nscorp.com/nscportal/nscorp/pdf/financial_q4_06.pdf.

Anecdotally, the fate of Avondale Mills, a textile manufacturing company with four facilities within the vicinity of the Graniteville incident, illustrates the significant long-term economic impacts that may result from catastrophic hazardous material transportation accidents. In July 2006, after spending \$140 million on cleaning, re-cleaning, repairs, and damage mitigation as a result of the derailment, Avondale Mills reported that it was unable to recover financially from the derailment and closed its 10 mills in South Carolina and Georgia. The company cited unrecovered damage to its core facilities, as well as market and production losses caused by the derailment.³⁴ For example, the company was unable to identify cleaning and restoration protocols that would successfully or economically halt the chlorine's corrosive effects, repair the damage caused by the chlorine exposure, and return the affected facilities and equipment to their pre-derailment condition. Consequently, the company was faced with the expensive replacement of damaged assets in addition to lost business, higher manufacturing costs, and lower profits related to the reduction in productive capacities resulting from the derailment.³⁵ Given these circumstances, Avondale Mills filed a lawsuit against NS for \$240 million and, in April 2008, the parties agreed to an undisclosed settlement.³⁶

The accidents in Minot, Macdonald, and Graniteville resulted in a relatively small number of fatalities compared to the potential that existed in each event. This is primarily because of a number of factors that worked in the favor of the public. These included time of day, ability of emergency responders to recover from exposure and formulate a plan, atmospheric conditions, release quantity, and location of populations in relation to the releasing material. A change in any one of these conditions could certainly have resulted in an increased number of fatalities and injuries, which accordingly could have resulted in liability commitments in excess of railroads' primary insurance. Based on costs incurred as a result of actual accidents and the potential for catastrophic outcomes resulting from accidents that may occur in the future, rail carriers have long argued that they should be exempt from their common carrier obligation to haul TIH materials, due to the excessive financial risk that they bear, which cannot be fully protected against through traditional means (e.g., commercial insurance).

While one Class I railroad recently went so far as to refuse to quote rates for particular movements of chlorine and petitioned the STB to, in effect, relieve the carrier of its obligation to haul TIH material under certain circumstances,³⁷ according to the

³⁴ We emphasize that while Avondale Mills faced unrecovered damages as a result of the Graniteville accident, there were other factors that likely contributed to the closure of the mill as well; nonetheless, this narrative demonstrates that (1) there are potential negative long-term economic impacts associated with a catastrophic accident involving TIH material and (2) railroads can face substantial liability suits.

³⁵ See Avondale Incorporated, Consolidated Financial Statements (Unaudited) August 25, 2006 (at note 1); available at: <http://www.sec.gov/Archives/edgar/data/911634/000095014406010483/g04184exv99w1.htm>.

³⁶ See "Norfolk Southern Settles Suit Over Accident." The Wall Street Journal, Apr. 8, 2008, pg. B.3.

³⁷ On February 18, 2009, Union Pacific (UP) filed a petition with the STB requesting that the Board "clarify" the extent to which the carrier is obligated to quote shipping rates for new, long-haul movements of chlorine that traverse HTUAs and/or are destined for locations with sufficient local chlorine sources. On June 11, 2009, the STB published a decision that stated that UP indeed has an obligation to establish rates and service terms for these movements and provide said service if requested in a reasonable fashion. See "Petition of Union Pacific Railroad Company for a Declaratory Order" (STB Finance Docket No. 35219).

Association of American Railroads (AAR), whose membership includes all seven Class I railroads, in general, rail carriers are no longer seeking an exception from their obligation to transport TIH material; rather they are attempting to establish liability sharing arrangements with TIH shippers in order to distribute risk more evenly. The AAR and its members argue that requiring shippers of extremely hazardous commodities to share the burden of liability is reasonable for three main reasons: 1) these movements require railroads to maintain a higher level of insurance than what they would otherwise, 2) insurance costs have risen significantly in recent years, and 3) the potential liability claims from a catastrophic incident could easily exceed the insurance coverage of most railroads.

3.4.1 Rail Insurance Coverage³⁸

Based on its tolerance for risk, a rail carrier may elect to self-insure for a greater or lesser portion of its liability exposure. Among Class I railroads, a self-insured retention of \$25 million is common, though it can be as much as \$50 million, especially when TIH material is involved. Smaller regional and short line carriers, i.e., Class II and Class III railroads, on the other hand, typically maintain retention levels well below \$25 million as they usually have a more conservative view of risk and usually do not have the cash-flow to support substantial self-insurance levels. This first layer of insurance, also known as the “working layer,” provides coverage for predictable claims that are low in severity and is funded by a firm’s working capital. For liability exposure that exceeds their working layer, railroads depend on commercial insurance to protect against liability claims that can reach up to several hundred million dollars. In general, there seems to be ample capacity for this layer of coverage within the commercial rail insurance market, and railroads seem satisfied with the premiums and product quality.

For carriers that haul TIH materials, which includes all seven Class I railroads and a number of Class II and III railroads, the insurance situation is more complex. These TIH haulers assert that they are forced to acquire insurance coverage well beyond what they would normally require because the liabilities of an incident involving TIH material could be exorbitant (up to several billion dollars). Class I railroads maintain about \$750 million to \$1 billion in coverage, which costs them between \$18 and \$25 million a year. Based on conversations we had with railroad and insurance industry representatives, this \$1 billion in coverage is more than what most Class I carriers believe would be necessary if not for the TIH risk. Absent the TIH risk, an industry source believes that Class I railroads would settle for insurance coverage in the \$250 to \$300 million range. Indeed,

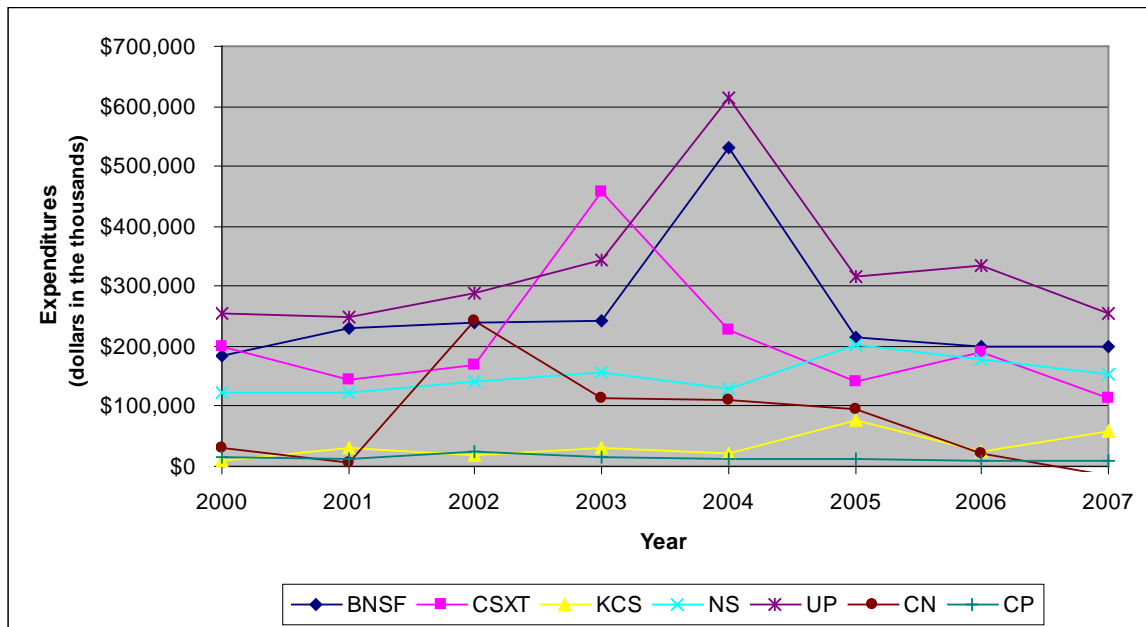
³⁸ Much of the insurance coverage and cost data presented in subsection 3.4.1 was sourced from two articles written by Sally Roberts in *Business Insurance*: “Toxic Spills Seen as Major Risk for Railroads” (2008) and “Small Railroads Buy Less Coverage than Larger Railroads Despite Risk” (2008); and an article written by Ron Panko in *Best’s Review*: “Risk on the Rails” (Dec. 2008: pg. 28-32). We note that these data have not been confirmed by railroad companies or their insurers (primarily because these data are confidential business information), but we believe they are nonetheless appropriate for illustrative purposes as we deem them to be reasonably accurate and reflective of realistic market conditions. Additionally, information contained in these articles is consistent with what we found in other sources.

according to an AAR representative, while TIH shipments only account for about 0.3% of total freight rail volume, they represent more than half of a railroad’s insurance costs.³⁹

3.4.2 Insurance Cost Analysis

Carriers complain that rail insurance costs have risen “dramatically” in recent years, particularly in light of recent accidents involving the release of TIH materials, such as the 2005 incident in Graniteville, SC. But we were unable to find any publicly available evidence, beyond oral testimony, to verify the claim that insurance costs have increased, for Class I carriers at least. In fact, our analysis of annual R-1 reports - prepared by Class I railroads and published by the STB - suggests the opposite. Schedule 410 of the R-1 report contains casualties and insurance expense data, broken down by cost component.⁴⁰ We derived annual aggregate casualty and insurance expenditures for each Class I railroad for years 2000-2007. Graph 3.4.2 (below) illustrates that, with the exception of Kansas City Southern (KCS), overall expenditures seem to have decreased for Class I railroads in recent years, after spiking around 2004. The reduction in overall casualty and insurance expenditures suggests that insurance costs have declined in recent years.

Graph 3.4.2: Class I Total Casualty & Insurance Expenditures



NOTE: The seven Class I railroads are: Burlington Northern Santa Fe (BNSF), CSX Transportation (CSXT), Kansas City Southern (KCS), Norfolk Southern (NS), Union Pacific (UP), Canadian National (CN), and Canadian Pacific Railway (CP).

³⁹ See: Panko, Ron. “Risk on the Rails,” *Best’s Review*, December 2008: pg. 28-32.

⁴⁰ The nine casualty and insurance cost components are: “Repairs and Maintenance” (lines 115-117), “Equipment Locomotives” (lines 206), “Freight Cars” (line 225), “Other Equipment” (line 310), “Train Operations” (line 415), “Yard Operations” (line 431), “Specialized Service Operations” (line 513), “Administrative Support Operations” (line 523), and “General and Administrative” (line 612).

We must note that the results from this exercise are implicative, and *not* explicative, due primarily to data limitations. For example, although the graph indicates that overall causality and insurance expenditures declined in the latter years, this is not a clear indication of declining insurance costs. An alternative explanation is that total expenditures decreased because Class I carriers acquired *less* liability coverage. Without detailed per unit cost data, we cannot conclude for certain that insurance costs have decreased in recent years, after spiking around 2004. We note that the STB is currently investigating the possibility of revising its accounting and financial reporting system for Class I railroads, known as the Uniform Railroad Costing System (URCS), to better capture the asset and operating costs of transporting hazardous materials.⁴¹

Furthermore, in our review of the freight rail market, we found no evidence that railroads are unable to pass along such costs or that they are required to transport hazardous materials at a loss. The current status of rail tariffs allows railroads discretion to impose surcharges on shipments based on risk. However, it is unclear whether railroads can obtain enough insurance from the commercial rail insurance market to adequately cover the risks that they assume on hazardous material movements, particularly when TIH or other extremely hazardous materials are involved.

3.4.3 Commercial Rail Insurance Market and Capacity

Rail insurance products are typically developed in the excess and surplus (E&S) line (insurance) market, where difficult and/or unusual risks are underwritten. One of the unique features of this specialty market is that insurers are not bound by rate and form restrictions (as is the case in the standard markets) since there is no standard approach to underwriting, given the complexity of the risks they tend to cover. In the niche rail market, the underwriting process requires highly specialized personnel whose expertise in rail operations and risk assessment allows for policies that are tailored to the unique needs and characteristics of individual railroads. Acquiring rail insurance is highly complicated, as the process involves multiple parties: railroad representatives, retail brokers, wholesale brokers, and insurance agents. There typically is no direct contact between railroads and insurers; rather, retail and wholesale brokers act as intermediaries. Because railroads are characterized as high-risk accounts and because rail insurance is a highly sophisticated product, the rail insurance market is fairly limited. The domestic market is relatively small; thus most of the capacity comes from foreign insurers in Europe and Bermuda.

Based on conversations we had with a number of sources in the rail and insurance industries, and review of relevant literature, at this time, in practice, the maximum

⁴¹ See “Class I Railroad Accounting and Financial Reporting-Transportation of Hazardous Materials” (STB Ex Parte No. 681). DOT has filed comments with the STB, in response to a recently issued Advanced Notice of Proposed Rulemaking, recommending that additional data be reported to identify and quantify costs attendant to hazardous shipments, and that the URCS should attribute these costs to hazardous material traffic alone, rather than to the entirety of a carrier’s business. This proceeding should help eliminate disagreements that might exist between shippers and carriers over the capturing of costs for rate purposes, including costs of insurance and regulatory requirements.

coverage available in the commercial rail insurance market appears to be \$1 billion per carrier, per incident. According to industry sources, as no single insurer or reinsurer is willing or able to absorb the full risk of a catastrophic incident, the \$1 billion in coverage that most Class I carriers maintain is usually pieced together from a consortium of insurers (up to 20). An American Short Line and Regional Railroad Association (ASLRRA) representative confirmed that, at this time, there is no insurance product that provides supplemental excess liability coverage specifically tailored for the rail market.⁴²

According to numerous sources, up until recently there had been about \$1.5 billion available in coverage, but this level has shrunk to its current state due to limitations within the commercial rail insurance market. One of the factors contributing to the capacity fluctuation is that the rail insurance market is highly variable over time; sometimes there are more and sometimes fewer insurers willing to assume particular tiers of risk. Indeed, multiple sources have informed us that the pool of insurers willing to take on risk in the rail insurance market has contracted recently. Additionally, the number of reinsurers who are willing to absorb all or a significant portion of the risk from primary insurers is also dwindling, according to conversations we had with industry experts and to the oral and written testimonies of rail carriers in STB Ex Parte No. 677 (Sub-No. 1). As such, there is not enough liquidity within the commercial rail insurance market to allow primary insurers to provide more liability coverage. Our review of the commercial rail insurance market found that insurers and reinsurers have exited the market in part because risk has become more apparent in the post-9/11 and Graniteville environment.

Based on our review of relevant literature, the current state of coverage capacity within the rail insurance market, which appears to be effectively stalled at \$1 - \$1.5 billion, is not necessarily reflective of a global capacity shortage within the overall global insurance market. While the global insurance market probably *can* bear more than \$1 billion, or even \$1.5 billion, as there is sufficient overall global capacity,⁴³ insurers that participate in the rail market seem reluctant to do so. One reason that insurers and their reinsurers do not provide more coverage is that they cannot calculate with reasonable confidence what the true risk is in moving TIH material by rail. Due in part to the absence of a comprehensive loss history in the TIH rail market, underwriters cannot accurately calculate the occurrence probability of a catastrophic TIH release, nor can they quantify with reasonable confidence the potential liabilities of such an incident. Put more simply, it appears that no one really knows what the “worst-case” scenario is or how frequently it might occur. As such, according to James Beardsley, Managing Director of Aon Risk Services’ national rail transportation practice, the maximum capacity available to railroads is really determined by “what the market *will* bear.”⁴⁴

⁴² The same source did inform us that some insurance companies are currently developing “excessive liability” insurance products for the rail market, but it will be some time before these products are commercially available.

⁴³ Based on the written testimony of James Beardsley, Managing Director of Aon Risk Services’ national rail transportation practice, submitted to the House Subcommittee on Railroads for the hearing titled “Current Issues in Rail Transportation of Hazardous Materials” 109th Cong., 2nd sess.; 13 June 2006.

⁴⁴ See: Panko, Ron “Risk on the Rails,” *Best’s Review*, December 2008: pg. 28-32.

While \$1 billion is more than sufficient to cover losses from “routine” TIH-related incidents, it is well short of the \$5-\$6 billion that Class I railroads estimate would be necessary in a “nightmare scenario,” e.g., an accidental release of TIH gas in close proximity to a large number of people.⁴⁵ Once their primary insurance has been exhausted, carriers would be held liable for the balance, forcing even the largest railroad into bankruptcy.

Class II and III railroads that haul TIH commodities claim that their situation is especially precarious, as they cannot acquire, or would have a difficult time acquiring, adequate insurance coverage. According to Keith Borman, Vice President and General Counsel for the ASLRRRA, small railroads cannot afford premiums for “meaningful” amounts of insurance coverage, necessary to protect against ruinous liability.⁴⁶ Based on a conversation we had with another ASLRRRA representative, Class II railroads would likely be content with \$200 million in coverage and Class III carriers would likely be satisfied with \$100 million in coverage. While there is sufficient capacity within the rail insurance market to satisfy this demand, many short line haulers simply do not have the cash-flow to pay for such insurance coverage. As such, Class II and III railroads that haul TIH material only maintain \$10 to \$100 million in coverage.

3.5 Liability Sharing Controversy

Railroads, particularly Class I carriers, assert that they are forced to “bet the farm” with every TIH movement because the liability from a catastrophic incident can potentially be in the billions of dollars – well beyond what carriers can protect against through current means (i.e., commercial insurance). Given that this level of risk is derived primarily from TIH movements, which only account for about 0.3% of total annual carload haulage, rail carriers are attempting to establish a liability sharing arrangement with TIH shippers. They hope to achieve this by either (1) requiring shippers to indemnify liability costs; (2) requiring shippers to maintain a second layer of insurance for “catastrophic coverage;” or (3) establishing a *Price-Anderson*-like arrangement in which shippers would contribute into a secondary liability coverage pool. The *Price-Anderson* model is derived from the Price-Anderson Nuclear Industries Indemnity Act, which was enacted in 1957 for the nuclear power industry as a means of indemnifying nuclear power producers against excess liability.⁴⁷ Under this arrangement, nuclear power reactor licensees are required to carry the maximum amount of insurance available to them in the insurance market to protect against the liability of nuclear-related incidents. Any monetary claims that fall within this insurance coverage would be paid by the insurance company. In the event that an individual power producer’s primary insurance has been exhausted, a liability pool, funded by a contribution of \$95.8 million from each of the U.S. nuclear power producers, could be tapped to cover the balance of its liability. Should this liability pool

⁴⁵ This figure was derived from testimony by Class I carriers in STB Ex Parte No. 677 (Sub-No. 1).

⁴⁶ Based on the written testimony of the ASLRRRA, submitted to the STB in Ex Parte No. 677 (Sub-No. 1).

⁴⁷ See Pub. L. 85-256.

also become exhausted, the Federal Government would fund the remaining liability gap.⁴⁸

Carriers maintain that establishing any of these conditions is permissible and fair since the common carrier obligation only requires them to provide service for a “reasonable request” and that being forced to transport TIH materials without excess liability protection constitutes an unreasonable request because it exposes them to grave risk. Shippers, on the other hand, maintain that the “grave risk” to which carriers claim to be exposed to as a result of TIH movements is an exaggeration. First, shippers assert that compliance with federal safety regulations substantially reduces the likelihood of an accident. Thus, shippers argue that an accidental release of TIH material would likely be the result of negligence on the part of railroad operators. In fact, according to FRA, in recent times, serious train accidents have mainly been the result of either human negligence or track and structure deficiencies.⁴⁹ Furthermore, shippers argue that the railroad industry is no more subject to risk than any other industry involved in the handling of TIH material, and thus is not entitled to special treatment. Shippers point out as an example that motor carriers haul high-risk hazardous materials routinely and do not demand liability protection. However, unlike rail carriers, motor carriers are not obligated to haul hazardous materials and instead opt to do so.

Second, shippers assert that liability protection is already built into the current system because, if railroads comply with applicable regulatory requirements, they will be shielded from liability as a matter of tort law.⁵⁰ To this end, while carriers assert that accidents can occur through the actions of a third party or due to a natural disaster, shippers contend that state tort law is fully capable of sorting out blame, thus protecting carriers from unjust liability. Shippers argue that this process is the most effective means of maintaining safety and that any shift in liability will have an adverse safety impact because such a shift will decrease rail carriers’ incentive to operate in a safe and secure manner.

Finally, shippers stress that it is in the public’s interest to maintain the common carrier obligation since rail is the safest, most secure, and most efficient mode of bulk transportation, especially for certain high-risk commodities – an assertion made frequently by railroads as well.⁵¹ The National Industrial Transportation League (NITL) points out that the public need for such commodities to be transported in the safest and

⁴⁸ See 42 U.S.C. § 2210.

⁴⁹ According to its written testimony submitted to the STB in Ex Parte No. 677 (Sub-No. 1), FRA attributes recent train accidents to the following factors: human factors (38%), track and structures (36%), equipment (12%), signal and train control (2%), and miscellaneous (13%).

⁵⁰ According to former FRA Acting Administrator Cliff Eby’s oral testimony in STB Ex Parte No. 677 (Sub-No. 1), FRA agrees that where DOT and DHS have issued railroad safety and security regulations covering a particular subject matter, these regulations establish a federal standard of care that preempts contrary state standards of care (except for state standards meeting the local safety or security standards exception set forth in 49 U.S.C. § 20106), and compliance with this federal standard of care affords protection against tort liability.

⁵¹ Railroads routinely point out that 99.9% of TIH material shipments reach their final destination unharmed.

most secure fashion should be the overriding factor in determining what constitutes a “reasonable request.”⁵² Indeed, the Sixth Circuit Court affirmed in its ruling in *Akron* that “[a] carrier’s statutory duties run not to shippers alone, but to the public. Therefore, public needs must shape the boundaries of these duties [common carrier obligation].”⁵³ We should note here that, in DOT’s view, a shipper has made a “reasonable request” for rail transportation services when it tenders its product to a railroad in conformance with DOT packaging and mechanical requirements.

Carriers counter these arguments by pointing out that if there is a public necessity for TIH shipments by rail, there should be an accompanying need for indemnification to protect railroads from ruinous liability inherent in such a policy. Carriers also note that, unlike other industries that handle TIH material in “static” environments (e.g., manufacturers), railroads are in the business of physically moving large quantities of TIH material through an uncontrolled environment for long distances at high speeds, thus increasing the risk and severity of an accident.⁵⁴ The situation is exacerbated by the fact that Class I carriers often haul TIH materials through urban areas, including HTUAs.

Furthermore, carriers argue that other industries elect to be in the TIH market and retain a great deal of their profit from direct market participation. Additionally, according to CSXT in its written response to our inquiry, other industry firms are legally permitted to establish limited-liability subsidiaries to isolate risk from a larger enterprise. These circumstances are in contrast to that of the railroad industry in which rail carriers do not have market discretion – as a result of the common carrier obligation – and do not, according to carriers, make substantial profit from transporting such commodities.

Rail carriers also note that “run-away” juries have in the past awarded large sums to plaintiffs even though the railroad in question was not criminally negligent or was only partially responsible (though they were held responsible for full compensation). CSXT stresses that, contrary to what shippers think, compliance with federal regulations does not necessarily shield railroads from liability because the Federal Railroad Safety Act (FRSA) only preempts state law claims “...when they cover the same subject matter.”⁵⁵ Because many state law negligence claims are not covered by federal regulations, railroads can and have been held liable by state juries for their actions.

⁵² According to NITL’s written testimony, submitted to the STB in Ex Parte No. 677 (Sub-No. 1).

⁵³ See *Akron, Canton & Youngstown R.R. v. ICC*, 611 F.2d 1162, 1169 (6th Cir. 1979).

⁵⁴ As noted by CSXT in its written response to our inquiry.

⁵⁵ *Ibid.*

4.0 CONCLUSION

4.1 Safety and Security Findings

The railroad industry's overall safety record is very positive, and most safety trends are moving in the right direction. Over the last three decades, the number and rate of train accidents, and the total number of third party and employee casualties arising from rail operations, have fallen dramatically. The industry's hazardous material operations record is equally positive; each year, the vast majority of hazardous material shipments arrive at their final destinations safely and without incident. For example, in calendar year 2007, out of the approximately 2 million shipments of hazardous materials transported by rail, there were only 46 accidents in which a total of 73 tank cars released some amount of hazardous material. Thus the risk of an accident-caused release is approximately 4 in every 100,000 shipments. Furthermore, the DOT Hazardous Materials Information System's ten-year incident data for 1997 through 2006 identifies a total of 17 fatalities resulting from rail hazardous materials incidents (14 fatalities were the result of accidents and derailments and three were related to an unloading incident that occurred at a facility). While even one fatality is too many, these statistics show that train accidents involving the release of hazardous materials that result in fatalities are very rare (one fatality per million shipments).

Well aware of the safety and security risks posed by the rail movement of TIH materials, Congress has tasked DOT and DHS with the responsibility to take steps to safeguard the public. To this end, DOT and DHS have analyzed the safety and security risks associated with the rail movement of TIH materials and have established comprehensive regulatory programs to address these risks. PHMSA's TIH rail routing and tank car standards rules and DHS' railroad security rule have recently gone into effect and should result in enhanced safety and security for the movement of TIH materials. Additionally, railroad safety will also be significantly enhanced as the rail safety rules required by RSIA are implemented.

As previously mentioned, two of the key RSIA mandates are the requirement that Class I railroads install PTC systems on their mainline tracks that carry TIH traffic and/or intercity/commuter rail passengers by the end of 2015 and the requirement that major railroads establish proactive safety risk reduction programs. It should also be noted that DHS is developing other security rulemakings to further enhance rail transportation security such as requiring certain railroad operators to conduct security training for frontline employees and requiring that certain railroad operators conduct vulnerability assessments and prepare security plans, as required by sections 1512 and 1517 of the Implementing Recommendations of the 9/11 Commission Act of 2007 (Pub. L. 110-53). Given DOT and DHS's stringent controls, we conclude that rail is the safest and most secure mode to transport large quantities of TIH materials. However, DOT recognizes that the safety and security risk associated with the rail transportation of hazardous materials, TIH material in particular, will never be zero.

4.2 Public Policy Concern

Based on our analysis, we conclude that current limitations within the commercial rail insurance market prevent carriers from acquiring what they believe to be an adequate level of liability coverage for hazardous materials traffic. Given the lack of adequate coverage, railroads that transport TIH materials, or any other highly-hazardous material for that matter, are exposed to risks that they cannot fully protect against, thus exposing them potentially to liability that could bankrupt the carrier. For example, if a rail tank car transporting chlorine, a TIH material, derailed and ruptured in close proximity to a large number of individuals, the liability from casualties alone could be in the billions – possibly forcing even the largest railroads into a bankruptcy proceeding.

From a public policy standpoint, the bankruptcy and possible liquidation of one of the seven Class I railroads could temporarily disrupt service in their respective service territory. This would adversely affect freight shippers across various sectors of the economy, that depend on the rail industry to deliver their goods, and ultimately hinder domestic commerce. Additionally, Amtrak and various regional commuter rail operators could also experience service disruptions, as they routinely operate on freight railroad lines – thus hindering the movement of people in addition to freight.

We note though that from DOT's perspective, the likelihood of a catastrophic hazardous material rail incident that would lead a carrier into a bankruptcy proceeding is very low, and is expected to continue to decrease as new DOT and DHS safety and security regulations are issued and implemented. Furthermore, even if a major railroad was forced into bankruptcy, it is unclear how severe an impact such a bankruptcy would actually have on service. Railroad bankruptcy law is designed to help ensure that service continues even if the railroad is in bankruptcy.

Nevertheless, personal injury and wrongful death claims arising out of a railroad's operations are entitled to administrative priority under the bankruptcy laws and would have to be settled before a railroad could emerge from bankruptcy. It is possible that a railroad might not be able to be reorganized if the claims for personal injury or death resulting from a hazardous materials incident exceed insurance coverage by a significant amount. In such a situation, the bankruptcy court would be forced to sell the railroad's rail lines, rolling stock, and other assets and distribute the proceeds in accordance with prescribed statutory priorities – though even in liquidation, most of a larger railroad's rail lines would be likely to be acquired for continued rail service.

4.3 Policy Options

DOT and DHS do not believe that any changes to the common carrier obligation that would grant rail carriers discretion in carrying hazardous materials are either warranted or consistent with public safety and security. Particularly for large quantities of hazardous materials, the only viable alternative to rail transportation on many routes is motor carrier transportation. Both DOT and DHS agree with shippers that a substantial shift in TIH

shipments from railroads to trucks would increase overall safety and security risks, since trucks are more prone to accidents than are rail tank cars. Additionally, a wholesale transfer is not feasible since the infrastructure is not in place to support an influx of motor carrier shipments. It would require a substantial increase in fleet size to match the capacity of rail transportation as it takes about four tank trucks to haul the amount of product that can be moved in a single rail tank car. Motor carriers, and ultimately shippers and consumers, would incur costs to source new motor tank trucks and expenses to retrofit loading and unloading facilities to handle such trucks.⁵⁶ With limited trucking infrastructure in place, allowing railroads to opt out of moving TIH materials could potentially cause significant gaps in the availability of TIH material that industrial consumers rely on for such applications as water treatment, electricity generation, and agricultural production. Furthermore, moving TIH commodities by truck would also lead to increased fuel consumption, air pollution, and highway congestion.

We recognize, however, that liability risks facing railroads are real and might warrant action. One option would be a solution based on the *Price-Anderson* model, currently employed in the nuclear power industry. The *Price-Anderson* model brings in the Federal Government as an insurer of last resort, but requires the first \$10 billion in liability to be covered with individual and collective funds provided by U.S. nuclear power producers. If a similar model were adopted in the freight rail industry, rail carriers would be required to carry the maximum amount of insurance available to them in the insurance market and fund a secondary liability pool that, in the event of a TIH material accident, could be tapped should a railroad's primary insurance be exhausted.

Two other options, which could be stand-alone measures or be combined with an arrangement similar to the one described above, are as follows:

- Require hazardous material shippers to carry a specified amount of insurance coverage to supplement coverage provided by the railroads, or contribute to a fund that would be available to help pay claims arising from a hazardous material release. Indeed, some carriers are currently in discussion with chemical shippers about possible legislative proposals that would establish similar liability sharing arrangements. CSXT, for example, recently reported that the carrier and its chemical shippers have reached a consensus on a liability sharing framework whereby railroads would continue to assume responsibility for "at fault" liability up to a defined level, at which point shipper-funded coverage would cover any outstanding liabilities, capped at \$2 billion.⁵⁷ Some shippers appear willing to consider such arrangements and DOT encourages the parties to continue working together to develop a private, market-based solution that can ease the liability exposure associated with the rail movement of TIH materials and allocate risks and costs equitably.

⁵⁶ For example, the purchase cost for a new chlorine cargo tank truck could be as much as \$110,000.

⁵⁷ See CSXT's filing in STB Finance Docket No. 35219.

- The Federal Government could impose a cap on liabilities that can result from an incident involving extremely hazardous materials shipments. Similar measures exist in other sectors of the transportation industry – though these measures typically cover accidents of all kinds, not just those involving hazardous materials.⁵⁸ But one drawback of this approach is that it limits compensation for third party victims. Additionally, it can potentially decrease shippers’ and carriers’ incentive to handle extremely hazardous materials in the safest and most secure manner. This potential effect could be mitigated to some extent by setting the liability cap at an appropriate level wherein the responsible party would still face significant financial damage, but not financial ruin.

There are several advantages to granting railroads liability protection, one of which is that it might stabilize rail rates for the transport of TIH commodities. Currently, the cost of providing such services is not completely defined. While carriers and shippers are capable of quantifying most cost factors, such as the cost of safety and security regulation compliance, they are not able to quantify the liability factor, as no one is sure what the potential risk is. As such, carriers can argue in favor of charging whatever rate they believe is appropriate to capture the cost of risk, so long as it is within reason. However, if there is a defined liability point at which risk protection from shippers or the Federal Government becomes available, then the liability factor could be quantified. Thus, railroads would not be able to increase carriage rates for hazardous commodities on the basis of an “unknown” risk since risk would be defined (i.e., there would be a maximum loss that a carrier could face in the event of a catastrophic incident).

In our continuing effort to enhance the safety and security of hazardous material transportation, DOT and DHS will continue to work aggressively with the railroad industry, chemical shippers, and tank car manufacturers to address the causes of train accidents that have resulted in the release of hazardous materials, to identify and mitigate risks associated with the rail transportation of hazardous materials, and to continue to improve TIH tank car standards to minimize hazardous material releases in railroad accidents that do occur. We believe that as railroad safety and security continues to be enhanced, liability and insurance costs should decrease. Furthermore, DOT will continue to (a) monitor market conditions, particularly within the rail sector, (b) assess the effects of new rulemakings by DOT and DHS, and (c) assess the developments and results of the three on-going STB proceedings. Furthermore, DOT will be glad to work with Congress, railroads, and hazardous materials shippers should Congress choose to consider legislation limiting the railroads’ liability exposure for the transportation of hazardous materials.

⁵⁸ For example, international air carriers, Amtrak, and commuter railroads are protected from excessive liability by way of statutory liability caps.