Ensuring Tank Car Safety

A Government and Industry Partnership

Proceedings from a Public Information Meeting
Federal Railroad Administration
Washington, D.C.
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Forward

SECTION 21 OF THE HAZARDOUS MATERIALS TRANSPORTATION UNIFORM SAFETY ACT OF 1990 [Public Law 101-615 (Nov. 16, 1990] calls for the Secretary of the U.S. Department of Transportation (DOT) to

> [e]nter into a contract with an appropriate disinterested expert body for a study of: (1) the railroad tank car design process, including specification development, design approval, repair process approval, repair accountability, and the process by which designs and repairs are presented, weighed, and evaluated, and (2) railroad tank car design criteria, including whether head shields should be installed on all tank cars that carry hazardous materials.
>
> In carrying out the study described in paragraph (1), such expert body shall also make recommendations as to whether public safety considerations require greater control by and input from the Secretary with respect to the railroad tank car design process, especially in the early stages, and such other recommendations as such expert body considers appropriate.

DOT, acting through the Federal Railroad Administration (FRA), contracted with the Transportation Research Board (TRB) to conduct the study of railroad tank car design. TRB found that the process for ensuring tank car safety is fundamentally sound, consisting of government and industry procedures and activities that are compatible with those used for containers and vehicles in other transportation modes.[1] Although DOT and industry have taken significant steps to improve the process in recent years in response to changing safety concerns and needs, TRB made several recommendations. Each recommendation is aimed primarily at ensuring that safety decisions are well supported and guided by long-range safety goals and strategies. Long range strategies, according to TRB, call for:

< *Greater government and industry cooperation in anticipating future tank car safety needs and committing to specific actions to achieve them.*

> Both government and industry have important roles in ensuring safety, ranging from monitoring tank car safety performance and researching safety improvements to instituting safety standards and ensuring their implementation. These roles are performed most constructively when accompanied by coordination and planning.

[1] *Ensuring Railroad Tank Car Safety*, National Research Council, Transportation Research Board, Washington D.C., Special Report 243 (1994).

< *Development of more objective and quantitative measures for assessing the safety performance of tank car designs and for ensuring that commodities posing the greatest risk are shipped in the safest designs.*

A thorough assessment of the need for using tank cars equipped with head protection and other safety features requires a strong technical understanding of the safety performance of individual designs and the risk characteristics of the commodities shipped in them.

< *Greater emphasis on and acknowledgment of those functions of the Tank Car Committee (TCC) that are most important in ensuring broad compliance with tank car design safety standards and good design and construction practices.*

Identification and thorough understanding of the TCC's most critical functions are vital to ensuring TCC implementation and DOT oversight procedures.

To implement these strategies, TRB made the following recommendations to encourage greater cooperation and planning for safety improvements:

< FRA and RSPA should define tank car safety goals for the next decade or longer and develop a strategic plan prescribing actions to attain them.

The plan should be developed in cooperation with industry, labor, and other interested parties to elicit their expertise and perspectives. Their commitment to specific safety goals and actions, including nongovernmental actions, should be sought. FRA and RSPA should consider the various approaches being implemented by other regulatory agencies to enhance public dialogue and cooperation, including use of advisory panels, public workshops, and negotiated rulemaking.

< In cooperation with industry, FRA and RSPA should develop a long-range research plan to define major research needs and programs to meet them.

Consideration should be given to all areas of inquiry having significant impacts on tank car safety, from tank car design to the railroad operating environment. Coordination with industry is critical to ensure that important research areas are not overlooked and that government and industry research activities are complementary to the extent possible.

The government agencies responsible for ensuring tank car safety agreed in principle with the TRB recommendations. In support of them, and to advance tank car safety into the next century, the Department of Transportation, Transport Canada, railroads, shippers, and the emergency response community participated in a two-day cooperative Public Information Meeting at Houston, Texas on February 13 and 14, 1996. The purpose of the meeting was to begin the process of ensuring that the results of government and industry initiatives were both mutual and compatible with the needs of safety. To encourage an

open discussion at the meeting, recognized leaders within government and industry presented background information on selected topics and then opened the forum for discussion.

At the conclusion of the day-and-a-half session, a survey form was distributed to allow each participant the direct opportunity to help define and prioritize long-range research, rulemaking, and industry initiatives.

This paper summarizes the presentations made at the meeting in Houston last February and gives the results of the survey.

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Government and Industry Partnerships

Jolene M. Molitoris
Administrator
Federal Railroad Administration

The success of any organization depends on the cooperative efforts of all. Through cooperation, ideas are found, plans are laid, and improvements are made that benefit society as a whole. At the Federal Railroad Administration, the Administrator has stressed this basic concept beyond the organizational boundaries and applied it to the working relationship of all stakeholders in safe railroad transportation. By "partnering" with railroad labor and management, solutions to safety issues are found and unified policy decisions are made. The involvement of all parties in this process ensures that the most appropriate business decisions are made early and that key safety areas are not overlooked. The essence of government and industry partnerships will further lead to an effective and efficient Government, since less government resources will be spent arbitrating labor and management disagreements over safety concerns.

In penalty collection, the Administrator focused on the need to narrow the turnaround between the inspector's observation of a violation and the closure of the enforcement case by the Office of Chief Consel. The less gap there is between these events, the more likely that enforcement will be an effective teaching tool for the violator.

With respect to tank car safety, the Administrator focused on the need to reduce the number of non-accident releases of hazardous materials each year. On the average, 1,100 non-accident releases occur each year, resulting in the injury of about 52 railroad employees. Most of these releases are attributed to poor pre-trip shipper inspection. If the thoroughness of pre-trip shipper inspections were improved, the Administrator remarked that the number of non-accident releases would fall. Proper training of loading and unloading personnel is a key factor in reducing the number of such releases. To help the industry meet the challenge, the Administrator asked the industry to review their training programs and she offered Federal funds, for at least two companies, to work with FRA on a pilot training program. As an example, the Administrator talked briefly about the government's role in "seeding" the development of *Operation Respond*, an accident and incident communication tool for the emergency response community.

Government and Industry Partnerships

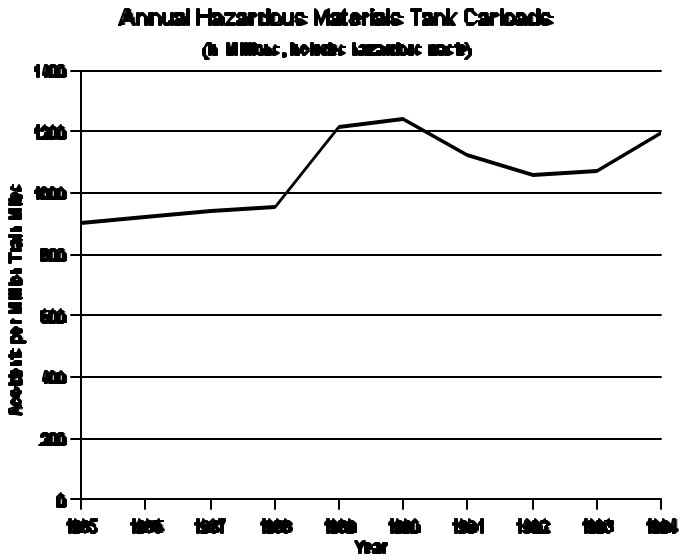
Edwin L. Harper
President and Chief Executive Officer
Association of American Railroads

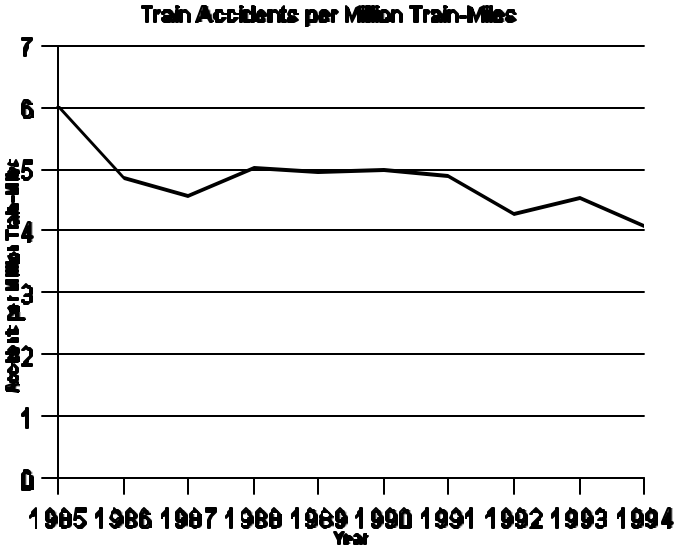
Mr. Harper opened by re-emphasizing the railroad industry's commitment to safe movement of hazardous materials. He acknowledged the FRA Administrator's efforts to build partnerships among carriers, labor and shipper groups, and agreed that by working together, safety improvements will be realized more rapidly than if each group worked separately and in disharmony.

The role of different groups in efforts to achieve safety improvements was outlined. Mr. Harper emphasized that car builders, rail carriers, shippers, car owners, and government regulators all have a vital stake in achieving hazardous materials transportation safety. In addition, carrier and industry associations, like the AAR, the Railway Association of Canada, the Chemical Manufacturers Association, the Canadian Chemical Producers Association, and the Railway Progress Institute have combined forces to extend transportation safety efforts across international borders. Tank car improvements like head shields, double shelf couplers and thermal protection systems were cited as examples of such inter-industry cooperation.

Mr. Harper turned to railroad safety statistics to highlight recent improvements in rail transportation safety. While the number of hazardous materials shipments has increased dramatically, the number of accidents has declined. The data shows that both train accidents and derailments have fallen more than 50% since 1981. Additionally, Mr. Harper pointed out that the likelihood of a release in a derailment has also diminished, citing statistics showing that in 1994, only 16% of hazmat cars involved in a derailment released product compared to 44% releasing product in 1984. This improvement can be attributed to work that has been done to strengthen and improve tank cars over the past ten years.

While the trends are downward, Mr. Harper also noted that additional work still remains, particularly in the area of non-accident releases (NARs) - those releases of product not caused by a railroad accident or derailment. Trends since 1990 have remained relatively flat. It was noted that a program begun in Canada in early 1992 resulted in a 32% decrease in NARs over a two year period, and that a similar program was under way in the U.S., drawing on the successful experience of the Canadian effort.





With respect to AAR's research efforts aimed at improving tank car safety, Mr. Harper highlighted the principal resources available to the industry, including the Association's own Transportation Technology Center (TTC) in Pueblo, Colorado, two industry Working Committees (Tank Car and Hazardous Materials), and the joint AAR/RPI Tank Car Safety Research and Test Project. A recent over-the-road test conducted with an instrumented tank car to gather in-service load data was highlighted, and plans to verify theoretical

damage tolerance work by testing a tank car on the TTC "Simuloader" test apparatus were mentioned. Mr. Harper asked for a volunteer organization to donate a test car for this project.[2]

Mr. Harper closed by reviewing current on-going cooperative work to address tank car safety issues. Programs highlighted included the seven year stub sill inspection effort, the damage tolerance studies being conducted by tank car owners and the new North American Non-Accident Release Reduction Program. Future work on the horizon includes renewed emphasis on tank car steels, new risk assessment tools and design enhancements for general service tank cars. With a continuing atmosphere of cooperation, Mr. Harper expressed confidence that rail transportation of hazardous materials will become even safer than it is today.

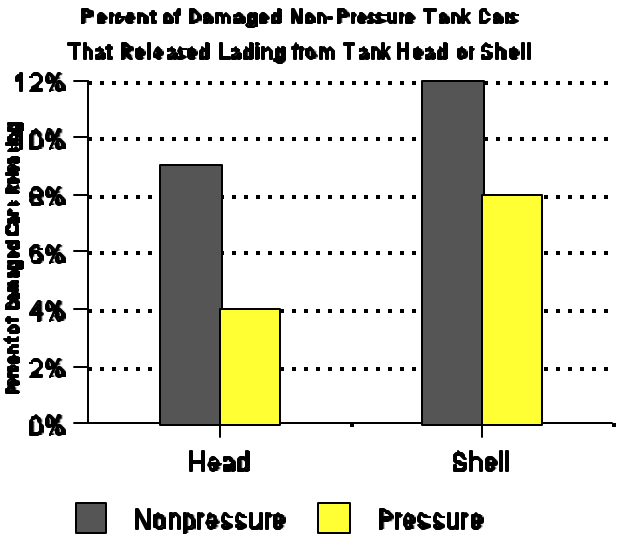
[2]Since the February Public Information meeting, G.E. Capital Railcar Services Corporation responded to Mr. Harper's request and donated a tank car for the Simuloader tests at Pueblo.

Analysis of Tank Car Accident and Incident Statistics in the Railroad Industry

Todd Treichel
Senior Research Engineer
Association of American Railroads

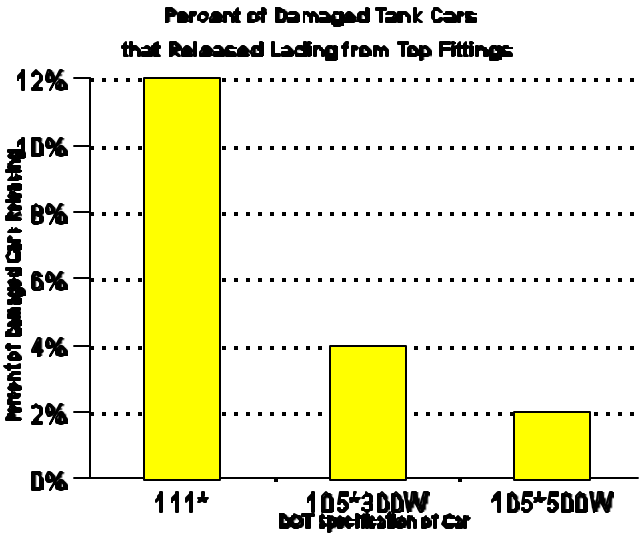
The movement of hazardous materials throughout the railroad industry provides an excellent example of the dynamic interrelationship between shippers, carriers, freight car builders, repair companies, and the Federal government. The synergy of this relationship gives the American public an outstanding transportation safety program highlighted by a reduction in the number of hazardous materials releases despite the rise in traffic flow. It is against this background that the measures and elements of tank car safety with respect to the train accident rate, severity of derailment, fraction of a derailed tank car losing lading, a non-accident release, and the resultant consequence of a release are weighed.

Throughout the last two decades, Federal safety laws and regulations were set in motion to improve the crashworthiness of tank cars. For example, the percentage of damaged non-pressure tank cars that released lading from the tank head or shell is greater than the percentage released from pressure tank cars. The distinction between the percentages lies in the fact that a pressure tank car has thicker tank shells and heads made of higher specification steels, and maybe protected by metal jackets and head protection.



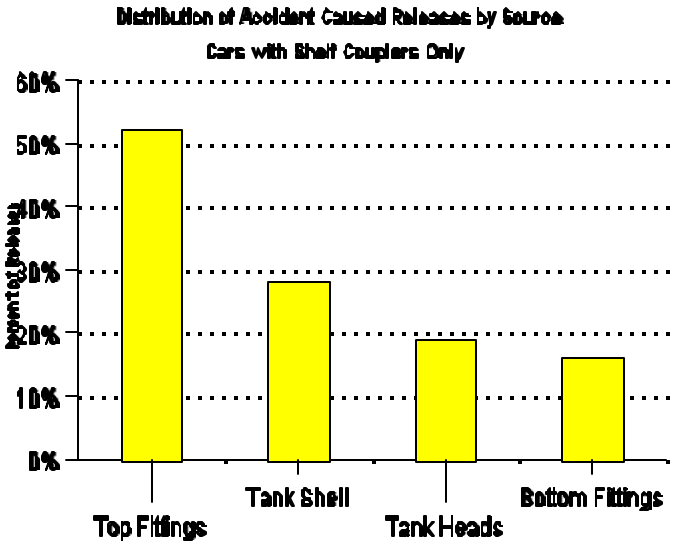
In reviewing the accident data of hazardous material releases from damaged tank cars, the number of releases from the top-fittings on pressure tank cars compares favorably against their non-pressure tank car cousins. The following chart shows the percent of damaged tank cars that released lading from top fittings. On average, for every 100 DOT 105*500W tank cars damaged in a derailment, only two release product through a top

fitting. In comparison, for every 100 DOT 111* tank cars damaged in a derailment, 12 release product from a top fitting.

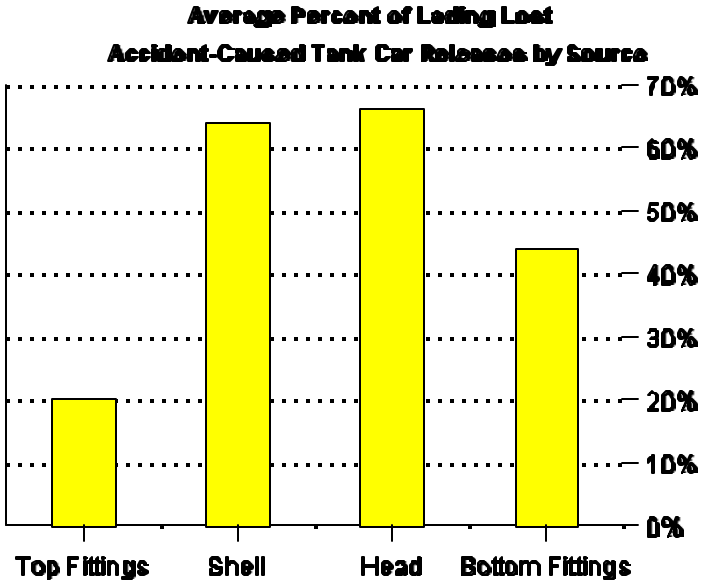


In 1992, the AAR and the Railway Progress Institute reviewed the accident data for lading releases from bottom outlet damage. The accident data suggests those tank cars with damaged bottom outlets had a 30 percent failure rate when protected. When compared with non-protected bottom outlets with a 66 percent failure rate, the data suggests that bottom outlet protection is essential although not 100 percent effective.

A source-distribution of accident-caused releases shows that damaged top fittings account for more than 50% of the total number. This is largely related to the number of non-pressure tank cars in the national fleet and their traditionally non-protected top fittings. The following chart shows the distribution of an accident caused releases by source, through 1991.

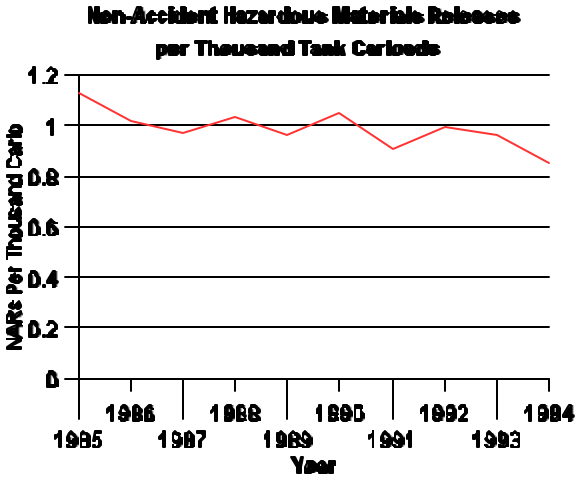


Although the distribution of accident-caused releases shows that top fittings account for more than 50 percent, the average percent of lading lost is about 1/3 of that from other sources. The data suggests that the quantity of product released from damaged fittings is less than that from a head or shell puncture or sheared-off bottom outlet. The following chart shows the average percent of lading lost in accident-caused releases by source.



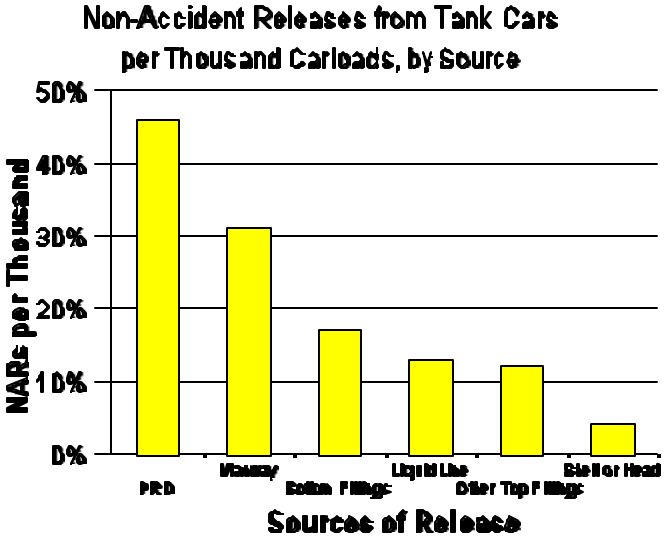
The AARs Bureau of Explosives maintains a data base on railroad incidents involving hazardous materials. The derivation of the data is from DOT's Hazardous Materials Incident Reports, AAR field inspection activities, and CMA incident reports. An incident is classified as an unintentional release of a hazardous material while in transportation (including loading and unloading of the product). An incident may also include a Non-Accident Release (NAR), that is, a release of a hazardous material from a packaging that is not attributed to an accident, such as releases from tank shell and head cracks, from loose closures, and venting from pressure relief devices.

Based on the BOE data, the yearly trend of NARs per loaded shipment is down. Although the trend is down, the number of NARs is undesirable, and to the extent possible, the AAR and Federal government have embarked on several programs to improve the downward slope of the NAR curve. For example, the Federal government has recently proposed rules to authorize a reduced pressure relief device orifice and it has also issued several exemptions to allow for an increase in the frangible disc burst pressure.[3] The AAR and RPI have also supported research on nonreclosing pressure relief devices. Recent research programs include flow testing of non-reclosing pressure relief devices and a series of impact tests to estimate the effectiveness of surge baffles and other surge reduction devices. The following chart illustrates, since 1985, the downward trend in NARs.

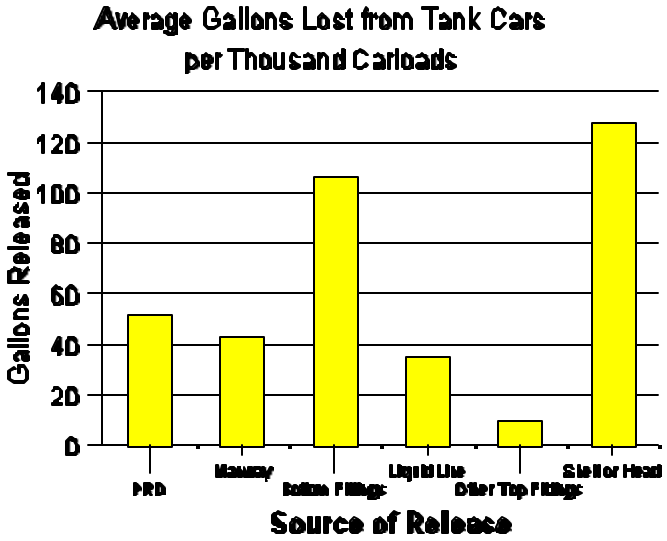


[3]The Research and Special Programs Administration published a final rule on June 5, 1996, to authorize a reduction in the upstream nozzle of a non-reclosing pressure relief device and to require the use of a frangible disc designed to burst at 33 percent of the tank burst pressure. (*see* Docket HM-216, *Transportation of Hazardous Materials by Rail; Miscellaneous Amendments*, [61 FR 28666]).

To improve the downward slope of the NAR curve, the AAR, and others, have investigated the mechanisms blamed for the release. The Bureau of Explosives data shows that pressure relief devices account for nearly a third of all NARs. When considering the types of pressure relief devices used on tank cars, nonreclosing pressure relief devices incorporating a frangible disc designed to burst at a predetermined pressure account for about 80% of all such releases. Nonreclosing pressure relief devices are used predominantly on tank cars in corrosive material service, such as sulfuric acid, hydrochloric acid, and phosphoric acid. The following chart shows the percentage of NARs from tank cars by source.



The distribution of lading loss by source shows that pressure relief devices and manways account for the majority of the non-accident releases. Like accident-caused releases, the data suggests that the quantity of product released from damaged fittings is less than that from a head or shell puncture or sheared-off bottom outlet. The following chart shows the average gallons of lading lost by source, per thousand car loads. This graph depicts gallons leaked, its gallons lost per trip, a risk-like measure incorporating both how often leaks occur and how much product is lost.



Safety policy decisions must reach beyond data on accident and incident frequency to address risk, which incorporates both frequency and consequences of undesired events. Catastrophic events are rare, but must nevertheless be guarded against. Spills of different materials in different circumstances lend to very different consequences; simply counting spills does not recognize this. Measuring risk allows policy makers to identify the most cost-effective safety measures, while recognizing that the properties of different materials require different packaging designs and practices. When measuring risk, the effects to a particular individual, to society as a whole, or to the environment are often weighed. Within the railroad industry, references to risk are explained as risks per carload, risks per year, risks at a specific location or a specific route, and as risks to a nation or continent as a whole. For example, the following activities increase an individual's chance of dying by one in a million: receiving a chest x-ray, drinking a half liter of wine, living two months in an average brick building, and living next to a rail line carrying 10,000 annual chlorine carloads. Although the data presented shows releases of hazardous materials from rail cars, going beyond this by measuring risk and prioritizing risk-reduction efforts is important. Clearly, eliminating high-risk releases must take priority over those that present low risk because they occur infrequently or are of limited consequence.

Transport Canada's Clear Language Regulations, Performance Standards, and the Need for Tank Car Ownership Manuals

Dr. John Read
Director General, Transport Canada

Referencing Napoleon's efforts for writing laws into plain language, Dr. John Read emphasized his agency's role in the re-drafting of their regulations. Writing the regulations so that they are clear and easily understood will ensure greater compliance and promote safety. To gain opinions on the Transport of Dangerous Goods regulations, Transport Canada operates an Internet site for public consultation (www.tc.gc.ca). Further, at the end of each Dangerous Goods course, Transport Canada surveys each student about their perspective on the regulations. After receiving more than 10 months of written and oral comments, Transport Canada began a complete review of their regulations. Regulations that aided in the prevention of an accidental release of dangerous goods or that aided in mitigating an accidental release were retained. Other regulations that were obsolete, redundant, or that provided no safety benefit were removed. Further, Transport Canada's plain language regulations use "*explanatory material*" to clarify particular points. Following the United States lead, Transport Canada has also adopted packaging performance regulations, regulations that specify basic performance criteria that must be satisfied.

Transport Canada's regulations today authorize a person to operate unsafely. For example, tank shell inspections only occur every 10 years, even if a person places a commodity into the tank car that "eats away" at the tank shell so that most of the shell thickness has deteriorated within five years. Based on the current standard, the owner is "legal" because the standard is met. The clear language regulations will clarify what "in standard" means, that is the containment must meet the minimum standard to which it was built.

The importance of establishing a "cradle-to-grave" owner's manual was fully discussed by Dr. Read. An owner's manual, or shop manual, is similar to the manual you get when you buy a car. The manual lists the specifications and operating characteristics of the car and preventive maintenance practices. The decisions on how to inspect tank cars should not be based solely on the conversations with the repair shop, but made in conjunction with the manufacturer, repair shop, and the tank car owner.

Research Initiatives and Test Programs - Ensuring Tank Car Safety

Dexter Pasternak
Director, Railway Progress Institute-Association of American Railroads Tank Car Safety Research and Test Project

Chris Barkan
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Phil Daum
Union Tank Car

The railroad environment includes over 1.34 million freight cars (including 221,000 tank cars), 218,000 miles of track, and 312,000 railroad employees. Some 27.5 million car loading per year (including 1.3 million HAZMAT tank car shipments) generates over 1.45 trillion ton-miles of freight annually. Managing this environment, including train handling guidelines, train make-up instructions, vehicle-track dynamics, and the design and maintenance of track and freight cars, provides elemental-challenges in railroad safety research. To meet the research needs, the industries have invested more than $585 million in tank car safety research since 1970. This total does not include professional time, donated equipment and transportation services, or the research efforts of individual companies.[4]

In past years, tank car safety research focused on crash survivability (or crashworthiness), of the tank and its components. Industry and government efforts lead to the development of shelf couplers, to prevent coupler override; thermal protection, to prevent thermal ruptures of the tank and its contents; head protection, to prevent tank head punctures; pressure relief device flow rates, to prevent excessive pressure build-up within the tank; and the use of pressure tank cars for certain materials that pose a threat to human health and the environment. Punctures and ruptures have declined 86% for pressure tank cars and 66% for non-pressure tank cars, and releases of product from damaged bottom outlets have declined 55%. In addition, train accidents per million-train miles have declined 30% in the past ten years.

In recent years, new technologies that are capable of finding critical flaws in principal structural elements on rail equipment have received much attention. Government and industry funded research in this area includes the use of acoustic emission technology and damage tolerance analysis. Another current research topic involves the investigation of lading loss from non-reclosing pressure relief devices. Under this program, the effects of reducing the diameter of the upstream nozzle and the installation of surge baffles will be

[4]Based on the available data at the time of this publication, since 1975 Congress had appropriated nearly $694 million to FRA's railroad safety research program. This amount includes $18 million in hazardous materials research since 1984.

researched to help the industry understand the dynamics of product surge on frangible discs.

To improve safety, industry must commit to policy decisions that will enable it to identify and detect safety issues early. Policy directives should focus on pro-active research and test programs that involve not only industry and the government, but also the public. Further, the policy should solicit financial support from all dedicated "partners." When industry and government policy initiatives are mutual and compatible, safety is advanced.

Vice President Gore's Goal to Reduce Unnecessary, Redundant and Obsolete Regulations

Alan I. Roberts
Associate Administrator
Research and Special Programs Administration

The Associate Administrator for the Research and Special Programs Administration (RSPA), Alan I. Roberts, discussed his agency's role in the transportation of hazardous materials. Mr. Roberts expressed his appreciation for the great working relationship between RSPA and the Federal Railroad Administration (FRA) toward improving tank car safety.

To meet Vice-President Gore's goal to reduce unnecessary, redundant, and obsolete regulations, RSPA sponsored 12 outreach meetings throughout the country. Based on the comments received, RSPA has initiated several actions. Many are constructive in nature, such as changes in the requirements for training, reporting, and limited quantities while others are simply non-substantive reductions in unnecessary regulations. RSPA is excited about its participation in the regulatory reform initiatives of the current administration.

The Department's first significant issue with the railroad industry (carriers and shippers) was in 1973 regarding Docket HM-109, which proposed new tank head protection requirements. After much debate, DOT withdrew the HM-109 rule, but pursued other courses of action until the passage of a successful head protection rule. Recent rulemakings to improve the crashworthiness of tank cars include Dockets HM-175A and HM-201. These rules will have an impact on the authorized use, maintenance, repair, and requalification of tank cars. Perhaps the most innovative provision of both rules is permitted use of nondestructive testing for tank car requalification in place of hydrostatic pressure testing.

DOT is now faced with several questions with respect to the establishment of a North American Code to harmonize international hazardous materials regulations. What path should we choose for the future? Is there support for such a code? For example, the CFR incorporates the tank car manual by reference. When the CFR or the tank car manual changes before the other, such changes create application and dual compliance issues. Two methods require approval, one by DOT, and one by the Tank Car Committee. However, there is little confusion, because people involved in the rail industries understand it. However, without question, some lawyers raise issues about this process. Points raised include antitrust issues and proprietary advantage. RSPA and FRA have questions about how much we should micro-manage a car owner's maintenance and repair procedures. How should RSPA and FRA handle disagreements? One idea to remedy such issues is to incorporate by reference into the CFR the entire Tank Car Manual and the termination of corresponding DOT regulations in Part 179. Incorporating the manual by reference would ensure government and industry involvement in addressing safety issues. If Canada were to do the same, both countries would be closer to implementation of a North American Code. This could be more efficient and effective for all concerned.

On a final note, Mr. Roberts said that people generally see their role in the rulemaking process to only comment on the proposed changes they oppose. Mr. Roberts asked the group to also comment on the changes they support. Such comments can make a difference in a final rule. The Administration asks why we are putting together a rule that everyone is against. While rulemaking is not vote taking, we want to hear both the pluses and minuses to ensure we are getting the complete picture.

Operating Transportation Circular Number OT-55

John Carroll
Senior Assistant, Vice-President
Association of American Railroads

The Association of American Railroads issued Operation Transportation Circular letter OT-55 to its members to implement six recommendations of the Interindustry Rail Safety Task Force. The recommendations call for special railroad operating measures on trains transporting at least five carloads of a material poisonous by inhalation (PIH) or 20 carloads of a combination of a PIH material, flammable gas, or Class A explosives. The recommendations for these "Key Trains" call for a maximum train speed of 50 miles per hour, minimum requirements for the class of track, restrictions on operation following an emergency brake application or a reported defect by a wayside bearing detector, and prohibition of use of cars with friction type journal bearings.

For rail routes that carry 10,000 loads of hazardous materials or 4,000 carloads of a combination of a PIH material, flammable gas, or Class A explosives per year (key routes), the recommendations call for a maximum interval of 40 miles between defective bearing detectors, more frequent inspections of main track and sidings, and minimum requirements for class of track for meeting and passing trains (Class 2 or better).

Yard operating practices for loaded placarded tank cars include a maximum car-coupling speed of 4 miles per hour and restrictions on the number of coupled cars that can be handled together. No more than two free-rolling cars containing a PIH or flammable gas can be coupled to other cars, and no more than two other cars can be allowed to couple to any tank car containing those commodities.

There was much discussion concerning the potential for over-speed impacts of tank cars in railroad yards by railroads. In general, the shipping and car leasing communities expressed concern that railroads were not held accountable for accidental over speed impacts to tank cars. Shippers and car owners expressed interest in having railroads inspect the underframe of the tank after an over-speed impact and report such events to the car owner. Railroads reported that they have speed data information for multiple car types but not segregated for tank cars handling hazardous materials. Car owners reported that they had speed recorder data for tank cars and that data would be provided to the Association of American Railroads.[5]

[5]On July 3, 1996, the Chemical Manufactures Association provided a copy of a report on tank car impact speeds to the Association of American Railroads. The report is currently under review.

North American Non-accident Release Program

Doug Mullins
Manager Materials Engineering and Quality Assurance
Canadian Pacific Rail

and

Pat Brady
Assistant Director, Hazardous Materials
Burlington Northern Sante Fe Railroad

Doug Mullins began the presentation with a review of the highly successful Canadian Non-Accident Release (NAR) Reduction Program started in 1992. That program, begun under the sponsorship of the Railway Association of Canada, realized a 32% reduction in NAR's over the next two years.

Mr. Mullins explained the concept as being a four phase effort: data collection, data analysis, communication of results and follow-up with shippers. Non-accident releases were reported to a central data collection point where they were entered into a computerized database. On a quarterly basis, the data were analyzed and sorted by shipper, identifying the event, the cause and any other relevant information. Shippers who had three or more NAR's over the preceding 18 months were sent what is known as an "Action Package," detailing the information about the incidents and asking for shipper response. By making shippers aware of the incidents, action could be taken to remedy deficiencies at the loading/unloading facilities that were responsible for the release.

Pat Brady described the evolution of the Canadian NAR Program into a "North American" Program, structured around a "General Committee" and two Subcommittees. A Technical Subcommittee works toward developing recommendations for preventing NAR's through adoption of "hardware" oriented solutions while the Communications Subcommittee develops tools for promoting increased awareness of the problem and communicating proven solutions.

Mr. Brady outlined the activities of the new General Committee, advising that the first North American NAR Action Packages would be distributed by the beginning of March. It is intended that by July, Canadian data will be integrated with U.S., data and combined Action Packages will be distributed by third quarter 1996.[6]

[6]Since the February Public Information Meeting, two sets of Action Packages have been distributed, the second set incorporating Canadian data. One carrier has reported a 9% decrease in NARs compared to 1994, and one shipper has reduced NARs from over 60 in 1994 to fewer than 10 in the first six months of 1995. In addition, the General Committee invited the governments of the U.S., and Canada to participate in the NAR Reduction Program. Both governments have accepted and are now members of the Committee.

Transport Canada's Tank Car 2020 Program

Doug Dibble
Chief Program Support
Transport Canada

As the Canadian agency responsible for regulating tank car design and construction, Transport Canada initiated a review of the current regulations concerning tank cars in order to determine if performance standards, based on engineering analysis, were appropriate. At this time, a long-term research program will develop performance standards covering the life-time of a tank car. As the standards are developed, the focus will be on two key areas, the inspectability of the tank and its components such as standardized valves, improved designs of pressure relief and venting devices, and tank monitoring equipment and the features of the tank that assist emergency responders in mitigating the effects of a distressed tank.

In the area of tank inspection, the research program focuses on the following key areas:

- Implementation of a fundamental training package;
- Establishment of stub sill testing criteria
- A review of programmable electronic tags or "smart placards"
- Determination of pressure relief device conditions
- Improved valve sealing
- Nondestructive test criteria
- Field inspection criteria for exterior insulation and interior linings
- Determination of the liquid level in the tank, and
- Establishment of a tank car data base.

In the area of emergency response, the research program focuses on the following areas:

- Standardization of valves
- Provisions for crash protection of valves
- Development of cold tapping kits
- Establishment of tank shell damage criteria
- Provisions for emergency response kits
- Pressure relief device criteria
- Tank car lifting protocols, and
- Tank visibility.

The Chemical Manufacturers Association's Rail Tank Car Project

Joel Langhoff
Technical Manager
Dow Chemical Company

The Chemical Manufacturers Association recently reviewed tank car design performance issues in an effort to define strategic plans for transport. The objective of the CMA project is the development of performance requirements with respect to the design of a new rail tank car while considering safety, environmental protection, and cost-effective operation. As part of its review, CMA researched the National Transportation Safety Board recommendations, derailment and spill data, and the Responsible Care™ initiative to help aid in the development of improving each design.

The CMA tank car project focused on 33 specific design-performance areas:

1. Access to tank valves and fittings
2. Crash performance of fittings
3. Durability of small fittings and fasteners
4. Fitting location and protection
5. Non-accident and fugitive releases from fittings and closures
6. Safety relief device performance
7. Tank instrumentation
8. Tank opening securement
9. Tank openings and fasteners
10. Cargo heating systems
11. Insulation features
12. Cargo sampling system
13. Closed system load and unload capability
14. Minimum cargo retention (zero heel)
15. Crash performance of tanks
16. Materials of construction
17. Interior corrosion
18. Structural performance
19. Stub-sill performance
20. Cleaning and serviceability
21. Coupler performance
22. Hand brake location
23. Electrical grounding
24. Emergency response
25. Exterior corrosion and appearance
26. Night visibility
27. On-board markings and information
28. Placard holder
29. Personnel access to car
30. Tank platform and work area
31. Truck suspension

32. Fabrication quality, and
33. Public expectation of a different tank car

Regulatory Reform to Ensure Tank Car Safety: Advisory Councils and Negotiated Rulemaking

Grady C. Cothen Jr.
Deputy Associate Administrator for Rules and Regulations, FRA

The FRA's Associate Administrator for Rules and Regulations, Grady Cothen, Jr., expressed the agency's concern about the historic practice of the government's role of "pushing for action," as opposed to the role of today "not impeding progress." Mr. Cothen stated that FRA is concerned about multi-modal standards and railroad transportation issues, such as in-train placement of rail cars containing hazardous materials, over-speed impacts of rail cars in rail yards, and inspection and maintenance practices, and that government and industry must play within an international dimension, dimensions of past, present, and future.

Both government and industry have different paths and goals and limitations in resources. To achieve a desired outcome, Mr. Cothen expressed the need for government and industry cooperation and a process that is open and as straightforward as possible. FRA will use a variety of mechanisms and tools to do this job and the agency must know how to use its research efforts to its greatest efficiency. Reducing the Federal budget makes things more difficult. FRA will be less and less successful as advocates for finding research dollars from the shrinking general fund. We need to enlist the assistance of the railroad industry.

The government is making a paradigm shift from a legislative model toward a consensus-based model. Administrator Molitoris has held round table discussions, and the agency has been looking for every possible way, within the system, to make this shift. Advisory committees provide the framework for the government to realize a paradigm shift. FRA has taken a practical stance in deciding the makeup of advisory committees. Generally, people who are involved in the process and have a stake will participate. FRA envisions about 48 people. The advisory committee is responsible for the establishment of subcommittees and working groups to gain a consensus on regulatory and policy issues. FRA did exclude several areas from the advisory committee process: grade crossing safety, locomotives, and hazardous material rulemaking are just examples. The reason is the large number of people with a stake in the process and FRA does not have rulemaking authority in the hazardous materials transportation field.

The FRA has experimented with the process of negotiated rulemaking. This option is, however, labor and time intensive and administratively difficult. Also, there are issues of working with our international partners in this area. A second option is to get some kind of legislation that can derive results. Another option is to just "wing it," proceeding by proceeding. We have simple matters that we could resolve, perhaps, through a public meeting, issue by issue. What is important is that the issues are solved and safety is improved. Certain issues within the reach of the participants include, life-cycle engineering maintenance manuals, quality assurance programs, and chemical property data from shippers. This group can get these things done.

Appendix A