STATEMENT OF

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BEFORE THE
U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

SUBCOMMITTEE ON RAILROADS, PIPELINES, AND HAZARDOUS MATERIALS

HEARING ON THE REAUTHORIZATION OF THE FEDERAL RAIL SAFETY PROGRAM

JANUARY 31, 2007

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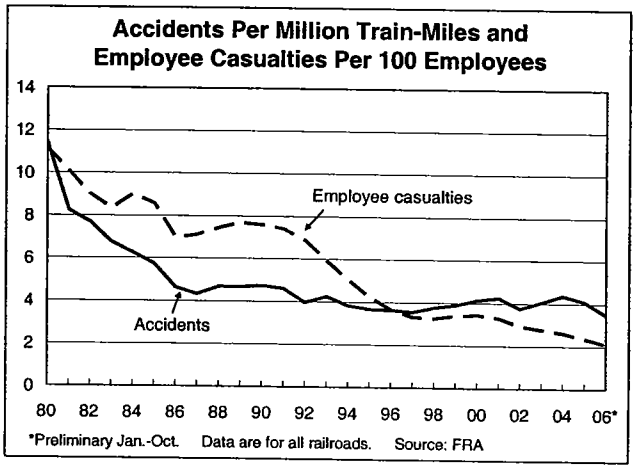
Introduction

On behalf of the members of the Association of American Railroads (AAR), thank you for the opportunity to address rail safety. AAR members account for the vast majority of freight railroad mileage, employees, and traffic in Canada, Mexico, and the United States.

For railroads, pursuing safe operations is not an option, it is an imperative. It makes business sense and it's the right thing to do. And railroads have become much safer. In fact, based on preliminary data for the first ten months, 2006 was the safest year ever for the railroads by the three most commonly cited rail safety measures. The train accident rate, the employee casualty rate, and the grade crossing collision rate all reached record lows.

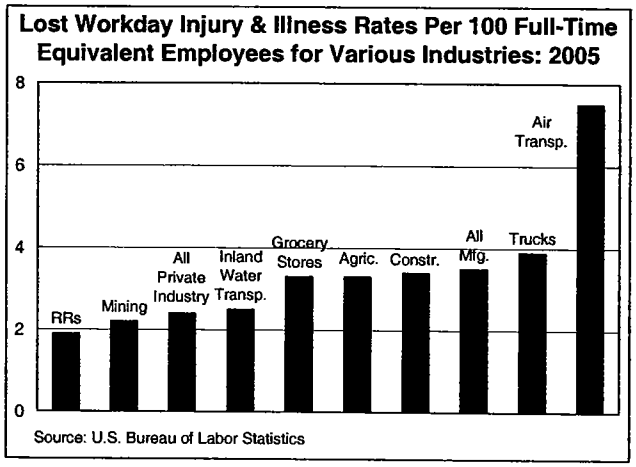
Overview of Rail Safety

Through massive investments in safety-enhancing infrastructure and technology (much of it made possible by the deregulation embodied in the Staggers Rail Act of 1980); extensive employee training; cooperative efforts with labor, suppliers, customers, communities, and the Federal Railroad Administration (FRA); cutting-edge research and development; and steadfast commitment to applicable laws and regulations, railroads are at the forefront of advancing safety.



The overall railroad industry safety record is excellent, reflecting the extraordinary importance railroads place on the safety of their employees and the communities they serve. From 1980-2005, railroads reduced their overall train accident rate by 64 percent and their rate of employee casualties by 79 percent. And rail safety is continuing to improve. As noted above,

data for 2006 through October show continued improvements in the three major rail safety measures, with record lows for the train accident rate, the employee casualty rate, and the grade crossing incident rate. Railroads have lower employee injury rates than other modes of transportation and most other major industry groups, including agriculture, construction, manufacturing, and private industry as a whole. Available data also indicate that U.S. railroads have employee injury rates well below those of most major foreign railroads.



Railroads are proud of their safety record, which results from railroads' recognition of their responsibilities regarding safety and the enormous resources they devote to its advancement. At the same time, railroads want rail safety to continue to improve. The rail industry is always willing to work cooperatively with you, other policymakers, the FRA, its employees, and others to find practical, effective ways to make this happen.

Below I will discuss several important topics associated with rail safety, discuss ways that railroads are working to advance safety in those areas, and discuss steps that we believe policymakers should take (or not take) to promote rail safety.

Role of Technology

Numerous past and current initiatives to research, test, and apply advanced technologies are enhancing safety on our railroads.

Much of this new technology has been (or is being) developed and/or refined at the Transportation Technology Center, Inc. (TTCI) in Pueblo, Colorado. A wholly-owned subsidiary of the AAR, TTCI is the world's finest rail research facility. Its 48 miles of test

tracks, highly sophisticated testing equipment, metallurgy labs, simulators, and other diagnostic tools are used to test track structure, evaluate freight car and locomotive performance, assess component reliability, and much more. The facility is owned by the FRA but has been operated (under a competitively-bid contract with the FRA) by TTCI — which is responsible for all of its operating costs and some of its capital costs — since 1984. The rail industry is pleased that some members of this committee have had the opportunity to see TTCI in person, and I extend an open invitation to others on this committee, especially the new members, to visit the facility when they can.

Just a few of the many technological advances that contribute to improved rail safety are described below. Many of these advances are preventive, designed to help protect freight cars, locomotives, track, and cargo before accidents or damage occurs.

- *Wayside detectors* identify defects on passing rail cars — including overheated bearings and wheels, dragging hoses, deteriorating bearings, cracked axles and wheels, and excessively high and wide loads — before structural failure or other damage occurs. Some of the newest wayside detectors use *machine vision* to perform higher-accuracy inspections through the use of digitized images. Tests at TTCI have revealed that it is possible to inspect wheels of moving trains using *ultrasonic probes*. Further tests of this system are underway, as are tests on ways to better understand and prevent *axle fatigue*.
- *Wheel profile monitors* use lasers and optics to capture images of wheels. The images show if wheel tread or flanges are worn and, consequently, when the wheels need to be removed from service before they become a problem.
- Trackside *acoustic detector systems* use "acoustic signatures" to evaluate the sound of internal bearings to identify those likely to fail in the near term. These systems supplement or replace existing systems that identify bearings already in the process of failing by measuring the heat they generate. This technology allows bearings to be replaced before they overheat and fail.
- Wheels constructed with stronger *micro-alloy metals* that resist damage and withstand higher service loads are being developed.
- Advanced *track geometry cars* use sophisticated electronic and optical instruments to inspect track conditions, including alignment, gauge, and curvature. TTCI is developing an on-board computer system that provides an even more sophisticated analysis capability of track geometry, predicting the response of

freight cars to track geometry deviations. This information helps railroads determine track maintenance needs.

- *Improved metallurgy* and *premium fastening systems* have enhanced track stability, reducing the risk of track failure leading to derailments.
- *Rail defect detector cars* are used to detect internal rail flaws. The AAR and the FRA have jointly funded a Rail Defect Test Facility at TTCI that railroads and suppliers use to test improved methods for detecting rail flaws. In 2005, the capabilities of a prototype of the world's first laser-based rail inspection system were tested at TTCI. It is now being demonstrated in revenue service.
- *Ground-penetrating radar* and *terrain conductivity sensors* are being developed that will help identify problems below the ground (such as excessive water penetration and deteriorated ballast) that hinder track stability.
- Major U.S. railroads are deploying *remote control locomotive technology* (RCL) to improve rail safety. RCL allows rail personnel on the ground to operate and control locomotives in rail yards through the use of a hand-held transmitter that sends signals to a microprocessor on board a locomotive. In a March 2006 report, the FRA found that "[e]mployee injury rates were approximately 20 percent lower for RCL operations than for conventional switching operations..."
- *Electronically-controlled pneumatic (ECP) brakes* are being tested in revenue service. In an ECP braking system, an electronic signal applies the brakes on each car in a train almost instantaneously, resulting in a much shorter stopping distance, reduced slack, and improved train control. (The standard air brake system in use today sends an air pressure signal for cars to brake, slowing the cars one-by-one as the air pressure moves from car to car.) The FRA recently announced its intent to issue a notice of proposed rulemaking later this year to revise the federal brake system safety standards to encourage railroads to invest in and deploy ECP brake technology.
- Because a relatively small percentage of freight cars (so-called "bad actors") can cause an inordinately high percentage of track damage and have a much higher than typical propensity for derailment, TTCI is working on ways to identify poorly performing freight cars as they pass across *truck performance detectors* and *hunting detectors*.[1]
- Much of the research underway regarding track and infrastructure is related to *heavy-axle load* (HAL) service, which entails the use of heavier (and often longer) trains. HAL-related work is underway on rail steels, insulated joints, bridges, welding, specialized track components, and more.
- *Tank car enhancements* have helped railroads reduce the overall rail hazardous materials accident rate by 86 percent since 1980 and by 28 percent since 1990,

[1] In terms of rail cars, "truck" refers to the complete four-wheel assembly that supports the car body. "Hunting" is an instability, more prevalent at higher speeds, that causes a rail car to weave down a track, usually with the flange of the wheel striking the rail.

and railroads are constantly investigating ways to further enhance tank car safety. Hazmat safety will be discussed in much more detail below.

- Advanced *fault detection systems* monitor critical functions on locomotives. State-of-the-art locomotives today can have 20 or more sophisticated micro-processors that measure and check several thousand characteristics of locomotives and their operation.
- Railroads are constantly expanding their use of state-of-the-art global positioning systems, wireless technologies, and other *communications advances.*
- The *Integrated Railway Remote Information Service (InteRRIS)*, an advanced Internet-based data collection system with wide potential applicability, is under development at TTCI. An early project using InteRRIS collects data from wheel impact detector systems (which identify wheel defects by measuring the force generated by wheels on tracks) and detectors that monitor the undercarriage of rail cars (which identify suspension systems that are not performing properly on curves) along railroad rights-of-way. InteRRIS processes the information to produce vehicle condition reports. These allow equipment which is approaching an unsafe condition to be removed from service and repaired before an accident occurs.

Many of the technology advances mentioned above have been incorporated in the rail industry's Advanced Technology Safety Initiative (ATSI). ATSI has already improved safety. For example, preliminary data indicate that the rate of main track broken rail and broken wheel accidents per million freight train-miles in the 25 months following the October 2004 implementation of ATSI was 13 percent below that of the comparable 25-month period prior to implementation. That's equivalent to a reduction of 50 potentially serious main track accidents nationwide over the more recent 25-month period, or about two per month.

Train Control Technology

A technological advancement that deserves special mention is train control technology, which railroads believe will reduce the incidence of human-factors caused accidents.

Several major railroads are now developing and testing train control systems that can prevent accidents by automatically stopping or slowing trains before they encounter a

dangerous situation. Through predictive enforcement, train control technologies, in certain circumstances, could significantly reduce the incidence of train accidents caused by human error, especially train collisions and derailments due to excessive speed.

Train control systems are extremely complex. At a minimum, they must include reliable technology to inform dispatchers and operators of a train's precise location; a means to warn operators of actual or potential problems (*e.g.*, excessive speed); and a means to take action, if necessary, independent of the train operator (*e.g.*, stop a train before it reaches the physical limits of its operating authority). Some systems will also include additional features, such as expanding the ability to monitor the position of hand-operated switches. Perhaps the most critical element is sophisticated software capable of accommodating all of the variables associated with rail operations. When successfully implemented, these enhanced train control capabilities will enable trains to operate more safely than trains operate today.

Several major railroads are engaged in various projects to test elements of this new technology. For example, BNSF has done extensive and successful pilot testing of its version of train control (Electronic Train Management System – ETMS) in Illinois and elsewhere. As you may know, BNSF recently received final approval from the FRA to implement the technology on lines elsewhere on its system.

Additionally, train control projects in progress on other railroads promise to provide similar or enhanced functionality and safety benefits. These include CSX's Communications-Based Train Management (CBTM) system, Norfolk Southern's Optimized Train Control (OTC) system, and Union Pacific's Communications-Based Train Control (CBTC) system.

Implementing train control technology will require significant capital investments in wireless networks; sophisticated location determination systems; highly-reliable software; and

digital processors on board locomotives, in dispatching offices and, for some systems, along tracks.

Hazmat Transport

Each year, 1.7 to 1.8 million carloads of hazardous materials (hazmat) are transported by rail in the United States, with two-thirds moving in tank cars. "Toxic inhalation hazards" (TIH) — gases or liquids, such as chlorine and anhydrous ammonia, that are especially hazardous if released — are a subset of hazardous materials and are a major (though by no means exclusive) focus of hazmat-related rail safety efforts. In each of the past couple of years, railroads have transported just over 100,000 carloads of TIH, virtually all in tank cars.

Railroads recognize and deeply regret the occurrence of a few tragic accidents involving hazardous materials over the past couple of years. Nevertheless, the rail hazmat safety record is extremely favorable. In 2005, 99.997 percent of rail hazmat shipments reached their final destination without a release caused by an accident. Railroads reduced hazmat accident rates by 86 percent from 1980 through 2005.

Despite these positive trends, the current environment for the rail transportation of highly-hazardous materials, especially TIH, is untenable. Today, the federal government, through the railroads' common carrier obligation, requires railroads to transport these materials, whether railroads want to or not. But every time a railroad moves one of these shipments, it faces potentially ruinous liability. The revenue that highly-hazardous materials generate does not come close to covering the potential liability to railroads associated with this traffic, and the insurance industry is unwilling to insure railroads against the multi-billion dollar risks associated with highly-hazardous shipments.

Railroads face these huge risks for a tiny fraction of their business. In 2005, railroads moved just over 100,000 TIH carloads and nearly 37 million total carloads. Thus, shipments

of TIH constituted only about 0.3 percent of all rail carloads. And while accidents involving highly-hazardous materials on railroads are exceedingly rare, history demonstrates that railroads can suffer multi-billion dollar judgments, even for accidents where no one gets hurt and the railroads do nothing wrong.

For this reason, if the government continues to require railroads to transport highly-hazardous materials, the railroads' liability in the event of an accident should be limited. If railroads' risks are not limited, they will be forced to seek an elimination of their common carrier obligation to carry highly-hazardous traffic, or to challenge its applicability with regard to TIH and other highly-hazardous materials.

In the meantime, railroads support prompt, bold actions by all stakeholders to reduce the risks associated with hazmat transport.

What Railroads Are Doing

Railroads themselves are taking the lead. Indeed, railroads are constantly working to ensure the continued safety of hazmat transport:

- In December 2006, an industry committee approved a new standard for chlorine and anhydrous ammonia tank cars that will significantly reduce the risk of a release. (Anhydrous ammonia and chlorine combined account for around 80 percent of rail TIH movements.) The standard will be phased in beginning in 2008.[2]
- Railroads help communities develop and evaluate emergency response plans; provide training for more than 20,000 emergency responders each year through their own efforts and the Transportation Community Awareness and Emergency Response Program (TRANSCAER); and support Operation Respond, a nonprofit institute that develops technological tools and training for emergency response professionals.
- Railroads work closely with chemical manufacturers in the Chemical Transportation Emergency Center (Chemtrec), a 24/7 resource that coordinates and communicates critical information for use by emergency responders in mitigating hazmat incidents.

[2] The delay in implementation is due to an FRA request.

- Upon request, railroads provide local emergency response agencies with, at a minimum, a list of the top 25 hazardous materials transported through their communities. The list helps responders prioritize emergency response plans.
- For trains and routes carrying a substantial amount of highly-hazardous materials, railroads utilize special operating procedures to enhance safety.
- Railroads participate in a variety of R&D efforts to enhance tank car and hazmat safety. For example, the Tank Car Safety Research and Test Project (which is funded by railroads, tank car builders, and tank car owners) analyzes accidents involving tank cars to help identify the causes of tank car releases and prevent future occurrences.
- Railroads have developed and implemented a comprehensive Terrorism Risk Analysis and Security Management Plan and are working with the Department of Homeland Security and the Department of Transportation to identify opportunities to reduce exposure to terrorism on rail property.
- Railroads offer basic hazmat awareness training to all employees who are involved in hazmat transportation. Employees responsible for emergency hazmat response efforts receive far more in-depth training.
- As discussed earlier, railroads are pursuing a variety of technological advancements to enhance rail safety, including hazmat safety.
- Railroads are working with TIH manufacturers, consumers, and the government to explore the use of coordinated routing arrangements to reduce the mileage and time in transit of TIH movements.

What Manufacturers and Consumers Should Do

Manufacturers and consumers of hazardous materials should take a number of steps to help ensure hazmat safety.

First, concerted efforts should be made to develop and utilize "inherently safer technologies," which involve the substitution of less-hazardous materials for highly-hazardous materials, especially TIH, in manufacturing and other processes. As noted in a recent report by the National Research Council (part of the National Academy of Sciences), "the most desirable solution to preventing chemical releases is to reduce or eliminate the hazard where possible, not to control it." Ways this can be achieved include "modifying processes where possible to minimize the amount of hazardous material used" and "[replacing] a hazardous

substance with a less hazardous substitute."[3] In a similar vein, in a January 2006 report, the Government Accountability Office (GAO) recommended that the Department of Homeland Security "work with EPA to study the advantages and disadvantages of substituting safer chemicals and processes at some chemical facilities."[4]

One real-world example of product substitution occurred at the Blue Plains wastewater treatment facility just a few miles from the U.S. Capitol. Like many wastewater treatment facilities, Blue Plains used chlorine to disinfect water. Not long after 9/11, the facility switched to sodium hypochlorite, a safer alternative. Similarly, Milwaukee has substituted ozone treatment for chlorine purification.

Railroads recognize that the use of TIH cannot be immediately halted. However, over the medium to long term, product substitution would go a long way in reducing the risks in the hazmat logistical chain.

Second, manufacturers and receivers of TIH, in conjunction with railroads and the federal government, should continue to explore the use of "coordination projects" to allow TIH consumers to source their needs from closer suppliers. For manufacturers and users, this could involve "swaps." For example, if a chlorine user contracts with a chlorine supplier located 600 miles away, but another supplier is located 300 miles away, the supplier located 600 miles away might agree to allow the closer shipper to supply the user.

Third, hazmat consumers and manufacturers should support efforts aimed at increasing the safety and reliability of tank cars. You may have read recently, for example, about a collaborative public-private alliance involving the FRA, Dow Chemical, Union Pacific, and

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[3] *Terrorism and the Chemical Infrastructure: Protecting People and Reducing Vulnerabilities*, National Research Council – Board on Chemical Sciences and Technology, May 2006, p. 106.

[4] *Homeland Security: DHS is Taking Steps to Enhance Security at Chemical Facilities, but Additional Authority is Needed*, Government Accountability Office, January 2006, p. 7.

the Union Tank Car Company that focuses on the design and implementation of a next-generation rail tank car with enhanced ability to safely transport highly-hazardous materials.

What the Government Should (and Should Not) Do

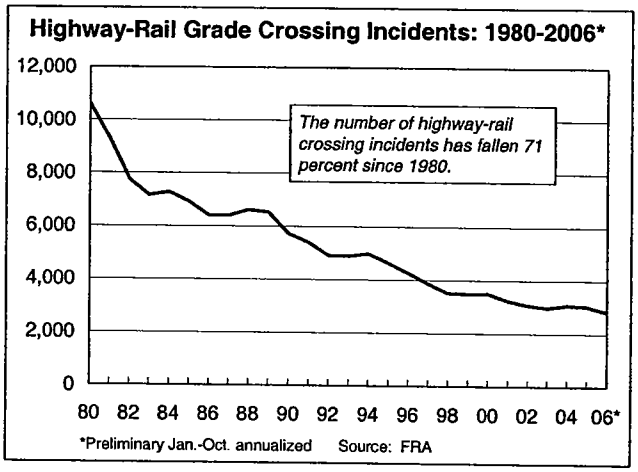
The government too has a key role in issues associated with hazmat transport by rail. First, if the government requires railroads to transport highly-hazardous materials (via their common carrier obligation), it must address the "bet the company" risk this obligation forces railroads to assume.

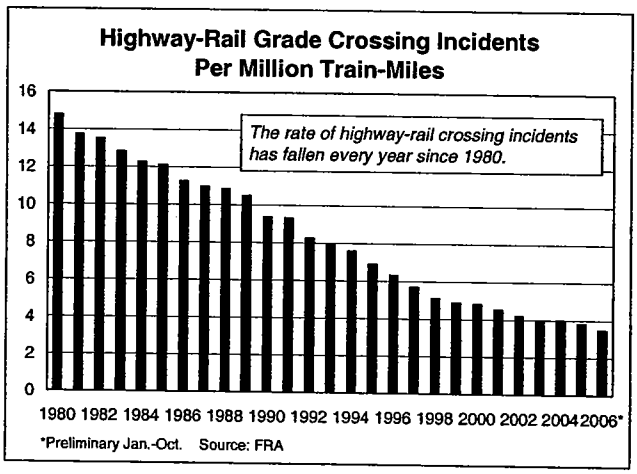
Congress could address this inequity by creating a statutory liability cap similar to the one for Amtrak. (Amtrak's total liability for all claims from a single accident is capped at $200 million.) Alternatively, Congress could enact a Price-Anderson type solution. Price-Anderson limits liability in incidents involving the release of nuclear material and provides for a fund (to which owners of nuclear power plants contribute) to cover any damages that exceed the limit. Under a similar proposal for highly-hazardous materials, a railroad would be liable for some defined amount of damages arising from a rail accident involving these materials. Damages above that amount would be paid from a fund to which producers and end-users of these materials would contribute.

Both of these options would leave railroads liable for substantial amounts, thereby giving them a further incentive — on top of their already aggressive pursuit of safe operations — to continue their ongoing, successful record of safety improvement.

Absent these two alternatives, Congress should relieve railroads of their common carrier obligation to haul TIH and other highly-hazardous materials. Like other transportation providers, railroads should be able to decide for themselves whether to accept, and at what price they are willing to accept, such materials for transportation.

Much success has already been achieved. In 1980, according to FRA data, 10,611 grade crossing collisions resulted in 833 fatalities and 3,890 injuries. In 2005, 3,041 collisions (down 71 percent) involved 357 fatalities (down 57 percent) and 1,010 injuries (down 74 percent). The rate of grade-crossing collisions per million train-miles fell 74 percent from 1980 through 2005, and has fallen every year since 1978. Preliminary data for 2006 show further reduction of more than 4 percent. And because total exposure (train-miles multiplied by motor vehicle-miles) has risen sharply over time, the reduction in crossing incidents and casualties per unit of exposure has been even higher.





The Section 130 program, a national highway safety program created by the Highway Safety Act of 1973, is a major reason for the impressive grade crossing safety gains. Under the program, funds are apportioned to states each year for the installation of new active warning devices such as lights and gates, upgrading existing devices, and replacing or improving grade crossing surfaces. The Safe, Accountable, Flexible, and Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU), which Congress passed in the summer of 2005, increased to at least $220 million per year (from approximately $155 million per year) the federal funding directed to the Section 130 program. The rail industry

commends and thanks the members of this committee and others in Congress for their support of this critical program.

Railroads continue to work hard to improve grade-crossing safety, including cooperating with state agencies to install and upgrade grade crossing warning devices and signals (and bearing the cost of maintaining those devices); helping to fund the closure of unneeded or redundant crossings; and supporting the national Operation Lifesaver grade crossing and pedestrian safety program. Railroads spend more than $250 million annually to improve, operate, and maintain grade crossings.

A recent initiative that will result in improved safety is the use of "stop" or "yield" signs along with crossbucks at grade crossings. The National Committee on Uniform Traffic Control Devices has recommended revising the Manual of Uniform Traffic Control Devices (MUTCD) to require the use of stop or yield signs in conjunction with crossbucks to make it clear what is expected of motorists at crossings. The AAR strongly supports amending the MUTCD as recommended by the National Committee and follow through on the installation of signs. AAR also supports FRA's recommendation, included in its May 2006 report to Congress on emergency notification systems for grade crossings, that signs comply with the MUTCD recommendations.

The report to Congress also recommended that Class I railroads continue their emergency notification programs, which provide the public with telephone numbers, posted at grade crossings, that can be called in the event of grade-crossing emergencies. AAR's member railroads, of course, will continue these programs.

Comprehensive Highway-Rail Grade Crossing Safety Agenda

A comprehensive agenda of engineering, education, and enforcement actions should be implemented so that further improvement in crossing safety can be achieved. Congress and

the federal government should adopt and implement the following set of grade crossing safety and trespasser prevention initiatives:

- Adopt a uniform national grade crossing closure process, combined with a freeze on the overall number of grade crossings within each state.
- Require the adoption of highway design standards that ultimately eliminate grade crossings on the National Highway System.
- Redefine "private grade crossings" in such a manner that all grade crossings that are routinely accessible to the general public are eligible for Section 130 funding.
- Fund a research and development program to design effective low-cost active warning systems for grade crossings, and continue evaluations of the effectiveness of more advanced warning device systems such as four quadrant gates.
- Enhance grade crossing traffic law enforcement by requiring grade crossing safety as part of commercial driver's license educational curricula and by maintaining tough grade crossing traffic violation penalties.
- Initiate active enforcement programs with local police agencies — *e.g.*, encourage video enforcement and establish and fund a program for state and local law enforcement officers to serve in FRA's regional offices as liaisons for grade crossing and trespassing matters with state and local law enforcement organizations.
- Require a minimum set-back or physical safety barrier between active railroad tracks and adjacent parallel trails and paths.
- Continue to fund the national Operation Lifesaver grade crossing and pedestrian safety program.
- Increase federal liability insurance requirements for contractors whose funded projects interface with or impact a railroad.

Trespassers

For many years, significantly more fatalities on railroad property have been associated with trespassers than with highway-rail grade crossing accidents. It is an unfortunate reality that too many people inappropriately use railroad property for short cuts, recreation, or other purposes, sometimes with terrible results. Railroads are engaged in ongoing efforts to educate the public that, for their own safety, they should stay off rail property.

Each year, scores of people tragically choose to end their life by stepping or lying in front of a train. To help prevent the tragedy of suicide, railroads support the Suicide Prevention Action Network (SPAN USA), a charitable organization dedicated to preventing suicide through public education and awareness; community action; and federal, state, and local grassroots advocacy. In addition, through its Railroad Research Foundation, the AAR is researching the prevalence of, and underlying causal factors for, rail-related suicides. Such understanding could facilitate countermeasures to reduce suicides on railroad rights-of-way.

Performance Standards

There are two general approaches to workplace safety regulation: design-based standards and performance standards.

Design-based standards specify the precise characteristics of facilities, equipment, and processes a firm must use in the manufacture or delivery of its product or service. The FRA relies overwhelmingly on design-based standards in regulating rail safety. Design-based standards are costly for both railroads and the FRA to administer and maintain. They also tend to impede innovation by "locking in" existing designs, technology, and ways of thinking.

The discolored wheel rule provides a classic example of a design-based standard that discourages new technology. This FRA rule required railroads to remove freight car wheels that showed four or more inches of discoloration, on the grounds that such discoloration could portend wheel failure. However, research demonstrated conclusively that discoloration in new heat-treated, curved-plate wheels did not portend failure. Despite this evidence, the FRA took more than a decade to exempt such wheels from the requirement. During this period, railroads had to discard perfectly safe wheels at a cost that reached $100 million per year.

anhydrous ammonia and chlorine tank cars incorporate performance standards. The committee standards mandate tank thickness, head shields, and top-fittings protection. However, tank car owners or builders can petition the committee to accept a tank car that, in lieu of the specified tank thickness and head shields, achieves the same safety improvement.

Performance standards have been used elsewhere in government. For example, the 1990 Amendments to the Clean Air Act directed electric utilities to limit their emissions of sulfur dioxide and nitrogen oxide, but did not tell the utilities how to meet those standards. The 1996 Accountable Pipeline Safety and Partnership Act promotes the use of risk management plans that are essentially a performance-standard approach.

Conclusion

Thank you for the opportunity to testify on this critical topic. The railroad industry is committed to working with Congress, the FRA, its customers, its employees, and others to ensure that rail safety continues to improve.