



US Federal Regulatory Oversight of Rail Transportation of Toxic by Inhalation (TIH) Material

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Outline

- Current regulatory requirements
- Rail industry and its role in the movement of security sensitivity materials
- New US Federal regulatory requirements associated with TIH shipments
- Conclusions



Background of Current Regulatory Requirements

- Rail system - critical component economy
 - 563 freight railroads operate on over 171,000 miles of track
 - 1.85 trillion ton-miles of freight (40% of all intercity freight volume)
 - 1.7 to 1.8 million carloads are hazardous material
- US PL 110-53 – protects Toxic by Inhalation (TIH) or Poison by Inhalation (PIH) material



Background of Current Regulatory Requirements (cont.)

- DOT hazardous material regulations
 - issued by : Pipeline and Hazardous Materials Safety Administration (PHMSA)
 - govern transportation of hazardous materials by all modes (highway, rail, ship, and air)
- Carriage by rail regulations:
 - 49 Code of Federal Regulations (CFR) parts 172, 173, 174 & 179
 - 172 defines the hazardous material classes
- Shipments of explosive (Class 1), gasses (Class 2), Flammables (Class 3), toxic by inhalation (Class 6.1) & radioactive materials (Class 7) are Special concern
 - propensity for use as a weapon of mass destruction
 - extreme impact on the human body



Impact of TIH Accidents

- Railways are critical and sensitive component of US infrastructure
 - Norfolk Southern freight trains in Graniteville South Carolina - January 6th 2005 - Direct and indirect damages exceeded \$40 million
 - Canadian Pacific derails in Minot, ND - January 18th, 2002 - release of anhydrous ammonia
 - 1 killed, 333 injured, 11,600 evacuated for 1 week
 - Worst Case Scenario Study of 90-ton car chlorine accident in center of DC -would leave 100,000 killed or injured



TIH Shipments (Source US Census Bureau)

Year	Tons (Thousands)	Ton Miles (Millions)	Average Length of haul (Miles)
2007	4005	2551	580
2002	6090	3226	549
1997	8868	6736	764



Statutory Obligations & Regulatory Requirements

- Carrier Obligation (49 U.S.C. 11101) creates interrelated requirements:
 - Railroads must provide common carrier rates to any requester
 - Railroads must provide rail service pursuant to those rates
- Railroads at risk of catastrophic liability when transporting TIH
- Cannot decline transportation of hazardous materials due to inconvenience or non-profitability
- Association of American Railways (AAR) has developed protocols to minimize risks - in the “United States Hazardous Materials Instructions for Rail, in OT-55, and CPC-1187



Rail - Voluntary Requirements

- Developed handling and routing requirements
 - List of hazardous and TIH materials
 - Technical and handling requirements of trains moving TIH
 - Main rail routes over which TIH is moved
 - Railroad operating practices and facilities
- OT 55
 - Tracking locations /Request security sensitive information
 - TRANSCAER - outreach program to assist emergency response and planning groups
 - Successful in mitigating unplanned release of TIH material
 - SHORTCOMING: OT-55 requirements are *recommended practices*
- Self Policing



Federal Safety and Security Regulations

- Recent federal regulatory efforts
 - Developed by FRA, PHMSA, and TSA
 - For example, includes the
 - 49 CFR 172 and 174 - satisfy the requirements of section 1551 of Implementing Recommendations of the 9/11 Commission Act of 2007
- Regulations establish risk-based protocols for evaluating the safety and security of TIH shipments



Requirements of Regulations

All rail carriers are now required to:

- Compile annual data on shipments of explosive, TIH, and radioactive materials
- Use the data to analyze safety and security risks along rail routes where those materials are transported
- Assess alternative routing options
- Make routing decisions based on those assessments.
- Address in their security plans en-route storage and in transit delays
- Inspect placarded hazardous materials rail cars for signs of tampering or the presence of suspicious items.

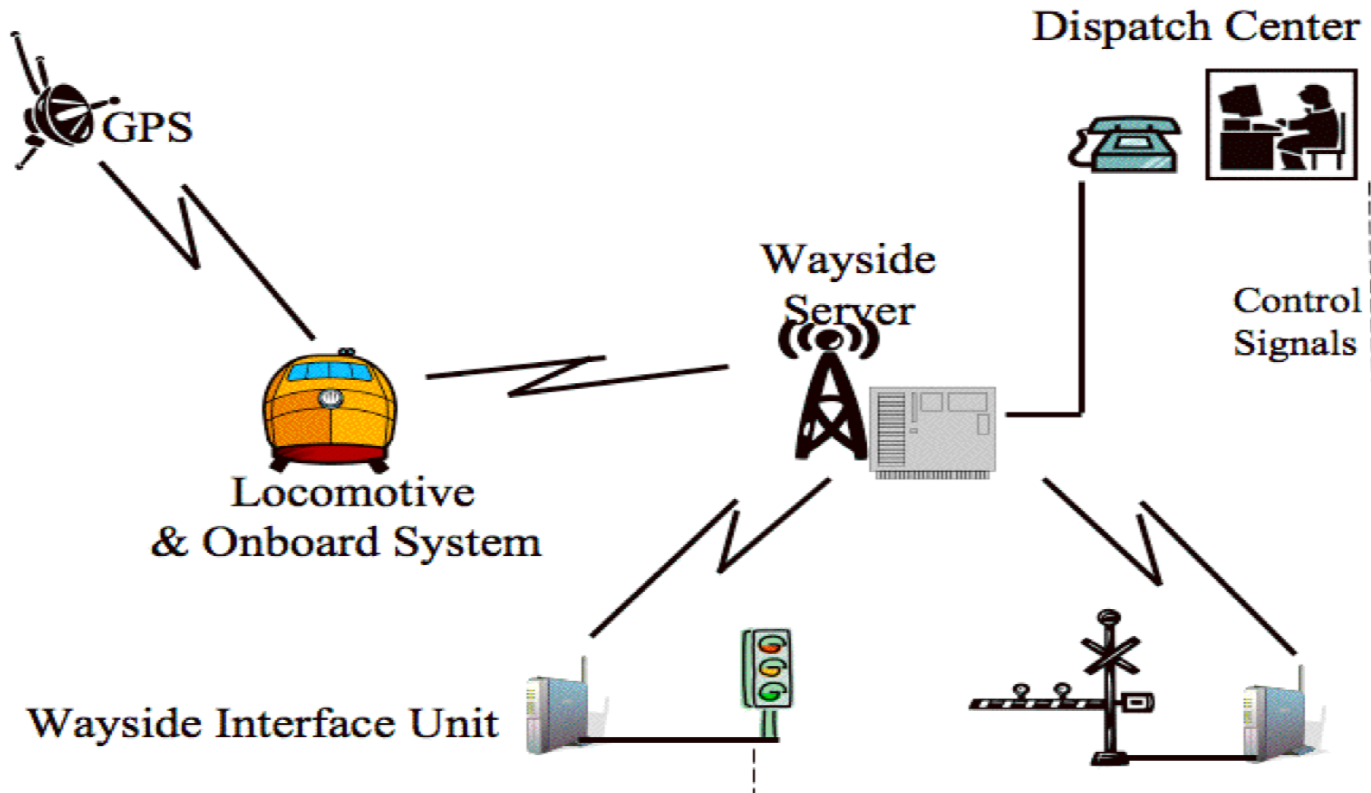


RAIL SAFETY IMPROVEMENTS ACT

- Known as RISA - established 2008
- Class 1 railroads must install Positive Train Control (PTC) Systems on any route segment transporting 5 million gross tons annual and carry any TIH materials
- PTC - a SCADA system
 - Ensures positive train separation
 - Prevents derailments
 - Protection for TIH
 - new implementing regulations of 49 CFR Subpart I for PTC SCADA systems
 - require cryptographically based message integrity and non-repudiation mechanisms to prevent misuse of the PTC system



PTC system





TSA Rail Transportation Security Regulations

- Requires bulk shipments of TIH materials be handled through a continuous chain of custody
- Improves security in 3 ways
 - freight rail carriers and certain facilities handling specified hazardous materials be able to report location and shipping information to TSA
 - railroads and shippers must ensure a chain of custody when exchanging extremely high-risk hazardous materials
 - shipment must be under “positive control” at all times
 - Improved safety regulations:
 - FRA may randomly conduct inspections for compliance
 - TSA has the same latitude with respect to security inspections



Conclusions

- Several shortcomings to current regulations
 - Leave out addressing some hazmat materials
 - Regulations limited to loaded cars
 - Only covers a limited number of high threat urban cities
- Railroads object to new unfunded mandates
- Shippers and others concerned railroads may use regulations to condense TIH traffic
- Regulations are too broad provide wide possible solution space - not sure what will be acceptable or unacceptable
- Formulation of these new regulations will improve overall safety and security of Critical Infrastructure