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# HAZARDOUS MATERIALS –

*for* **Automated Cargo Communications**  
**Efficient and Safe Shipments**

Office of **Hazardous Materials Safety**

Pipeline And Hazardous Materials  
Safety Administration (PHMSA)

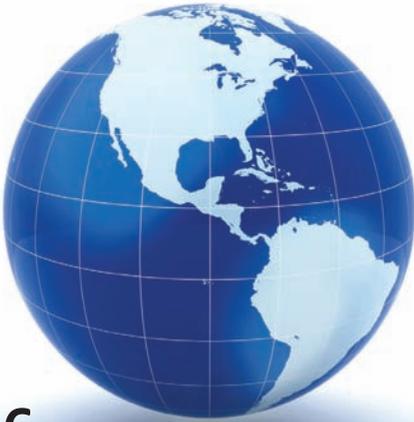


U.S. Department  
of Transportation  
**Pipeline and  
Hazardous Materials  
Safety Administration**

**HM-ACCESS** Hazardous Materials —  
Automated Cargo Communications for Efficient  
and Safe Shipments

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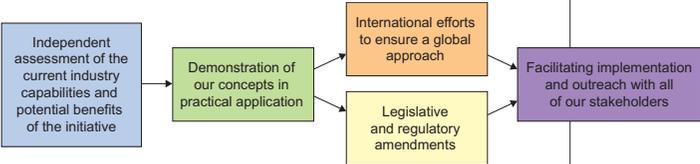
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**CHANGE** has a considerable psychological impact on the human mind. To the fearful it is threatening because it means that things may get worse. To the hopeful it is encouraging because things may get better. To the confident it is inspiring because the challenge exists to make things better.

— King Whitney Jr.

**WORLD VIEW ...** The U.S. is among the world's leaders in developing and advancing new technologies related to computing, communications, and the Internet. PHMSA sees an opportunity to ride the wave of innovative information technology to improve safety and significantly reduce potential consequences of a hazardous material transportation incident.

In this roadmap for the future, we present a framework to facilitate better communication of hazards, improve safety through improving the efficiency of the transportation network, and most importantly to provide our first responders timely information to maximize the effectiveness of their response efforts.

This roadmap lays out a strategy for PHMSA, in cooperation with our stakeholders, to make HM-ACCESS a reality in the coming years. We are committed to realizing these goals to provide immediate and long-term benefits for the American people.

– Theodore L. Willke, Ph.D.

Associate Administrator for Hazardous Materials Safety  
Pipeline and Hazardous Materials Safety Administration

## World View...

### Summary

Widespread use of the personal computer, the internet, and the expansion of global wireless communication has changed nearly every aspect of our world. Technology permeates even the most mundane, everyday tasks, changing the way we work, play, conduct business, and keep the world safe. As this technological revolution expands, we must seize opportunities to leverage technology to enhance the safe transportation of hazardous materials in commerce.

The global transportation system is remarkably complex, involving countless transactions, constant communication among supply chain partners, and far-reaching impacts on American interests. Transportation cuts across all industries, both large and small and literally drives the global economy. Efficient transportation combined with rapid communication has effectively shrunk the size of the world. Markets are now more interconnected than ever, and any disruptions to the transportation system can have serious ripple effects throughout the world's economy.

Hazardous materials are an important part of the national and global economy, and the public expects a safe, efficient and reliable transport system. The Department of Transportation (DOT) is responsible for managing the national hazardous materials transportation safety program, covering transportation by air, highway, railroad, and vessel. DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) is the focal point for the hazardous materials safety program. Under PHMSA's leadership, and with the active and vital assistance of DOT's other modal operating administrations, the program is focused on reducing risk, minimizing disruptions to the transportation system, facilitating intermodal transportation, and responding to incidents as they occur.

As a part of the DOT, PHMSA also shares responsibilities in protecting the environment, keeping America secure, reducing congestion, and enhancing reliability. We do that through a combination of rulemaking, public education, enforcement, information analysis, and inter-agency cooperative activities.

Around the globe, governments and industries are beginning to make effective use of new and emerging technologies to automate supply chains, provide better information to carriers and emergency responders, and make certain the system works safely,

**Imagine** the seamless movement of hazardous materials from origin to destination, across international borders and via three separate modes, with real-time information about the content, condition, and location of the shipment. In the event of an en route incident, imagine which emergency message would be more beneficial to a fire fighter preparing to leave a fire station:



- “There is a motor vehicle accident in Stafford, Virginia on I-95, mile marker 140, large truck possibly involved” – or
- “There is an overturned cargo tank motor vehicle transporting 8,300 gallons of ethanol on I-95 at mile marker 140 in Stafford, Virginia.”

Although the amount of additional information in the second message is minimal, the specificity is paramount. Imagine now that Geographic Information System (GIS) mapping, wind direction, traffic camera images and specific chemical information accompanied the message — would this allow for a more effective, efficient and safer response?

securely, and effectively. For example, chemical manufacturers, rail carriers and the emergency response community are collaborating to leverage current Global Positioning System (GPS) and communication technologies to monitor shipments in real time. Remote monitoring of hazardous material shipments will help companies strengthen their efforts to prevent and respond to hazardous material releases by warning of changes in temperature, pressure, and other transport conditions and by providing immediate, targeted, and reliable information to carrier personnel and emergency responders.

Spurred by competitive demands, just-in-time delivery requirements, and the globalization of supply chains, the transportation and logistics industries have embraced modern communication technologies. Yet hazardous materials transport remains in a world of paper. The hazardous material sector has harnessed many of the same technologies for streamlining commercial interchange, but information about shipments and packages is conveyed by markings on the package, placards on the vehicle, and shipping papers. Paper-based communication is slow, limits the information available, and is fraught with the potential for error. Inefficiencies and errors in the handling of hazardous materials produce increased risk throughout the transport chain due to increased storage time, mishandling, and ineffective or inaccurate hazard communication. Moreover, paper-based communication may be less effective at the very time when hazard communication is most critical — in the immediate aftermath of a transportation incident.

Along with our public and private sector stakeholders, overseers of the national hazardous materials transport system must ask: How can we improve this system?

## Scope

### PHMSA's Role in Hazmat Transportation

PHMSA is a small agency with a big job. “To protect the American public from the risks to life, property, and the environment that are inherent in the transportation of hazardous material in intrastate, interstate, and foreign commerce.”

Because hazardous materials move by every mode of transportation, we continuously coordinate activities with each of our modal partners: the Federal Aviation Administration (FAA); Federal Railroad Administration (FRA); Federal Motor Carrier Safety Administration (FMCSA); and United States Coast Guard (USCG). Because our mission and jurisdiction intersect those of other agencies outside of DOT we also work with other Departments and agencies, including the Department of Homeland Security (DHS); Environmental Protection Agency (EPA); Occupational Safety and Health Administration (OSHA); Department of State; and Department of Agriculture (USDA) to achieve our goals. PHMSA also shares technical expertise with industry and works closely with the response community to enhance transportation safety. For example, we collaborated with FRA to improve the safety and security of rail shipments of the most dangerous hazardous materials. During the aftermath of Hurricane Katrina, PHMSA worked with DOT administrations and federal, state and local agencies to support restoration activities in the Gulf area by facilitating the safe and continuous movement of energy products and essential hazardous goods to affected communities.

We believe that leveraging the power of personal computing, wireless infrastructure, and web-based technologies will enhance the safety of the American people, reduce risk, enhance national security, reduce congestion, and reduce the potential of shipments becoming diverted, lost, or misused. The HM-ACCESS initiative



aims to identify and eliminate barriers to the use of paperless tracking and hazard communications technologies, thereby (1) improving the availability and accuracy of hazard and response information for shipments and packages which are tracked electronically; (2) improving the speed by which information is available to emergency responders when accidents occur; (3) improving the security of imported containers through better knowledge of shipments and reduced potential for diversion; and (4) allowing American companies to compete more effectively in the global economy by using the best tools available.

## Philosophy of Facilitation

To achieve our goals we're going to build on our strengths. We have access to information and expertise, and we continue to build strong relationships with stakeholders, who have a variety of interests in modernization of the hazardous materials supply chain. We see our role in this process as one of facilitation. We will engage, lead, coordinate, and monitor the progress but we are not developing technology or implementing solutions. We can provide transparency and predictability while allowing the latest, most efficient technologies to be used in the most effective way.

## Goal

To realize our goals, we must remain on the forefront of technology and best practices, developing a strategy for facilitating these advances while continuously improving transportation safety. The ability of U.S. businesses to compete effectively in the global economy depends on it. This document presents a "roadmap" toward a safe, modern, secure, and efficient hazardous material transportation system. It describes our objectives, specific actions we are taking, the organizations with which we are working and our vision for the future.



## Road Map Objectives

When offering hazardous materials for transportation, a shipper is required to create a “shipping paper” identifying the material and its hazard properties. The shipping paper is intended to notify the carrier and other transportation partners of the risks involved in handling and transporting of the material. Shipping papers also provide specific information intended to inform emergency responders of mitigation measures and precautions that must be taken in the event of an incident.

The DOT’s Hazardous Materials Regulations (HMR) require carriers to keep hard copies of shipping papers with the shipment at all times. Shipping papers have long been the established method of communicating hazards to carriers, operators, emergency responders, and compliance inspectors.

But there must be a better way.

In this era of smart phones, digital signatures, on-line auctioning, and global e-commerce, it is time to consider alternatives to our paper-based business practices. PHMSA believes that the electronic communication of hazard information will improve safety and increase efficiencies in the transportation system by:

- ***Improving communication to emergency responders*** by supplying timely, complete, and accurate information in the event of an incident;
- ***Reducing the overall risk in the transportation system*** by reducing the likelihood of delayed or diverted shipments;
- ***Reducing intermodal impediments*** by eliminating discrepancies in information and time delays associated with the physical transfer of shipping papers;
- ***Reducing congestion and improving system reliability*** by facilitating the effective electronic transfer of information using readily available technologies and standard communication protocols;
- ***Enhancing the security of imported materials*** by increasing the completeness and accuracy of information obtained from international trading partners; and
- ***Reducing environmental impacts*** by improving information flow to response agencies and expediting clean-up and remedial actions.

Evolving the regulatory framework and business practices related to hazardous materials shipping papers is an ambitious endeavor. This roadmap blends the use of current technologies with cooperative efforts to ensure the successful and beneficial implementation of HM-ACCESS.



## Learning From the Past

The use of internationally-standardized electronic communication technologies will revolutionize the method by which hazard information is communicated among shippers, carriers, regulatory agencies, and emergency responders. The ability to track hazardous material shipments in real-time and rapidly communicate hazard information to appropriate entities will reduce errors in information exchange, improve efficiency, enhance security, and improve the speed, safety, and effectiveness of incident response efforts.

*Consider how electronic access to hazard information could have improved the outcome in a recent serious hazardous material incident. In the early morning hours of July 10, 2005, two freight trains collided head-on in Anding, Mississippi. The collision derailed six locomotives and 17 rail cars, released about 15,000 gallons of diesel fuel and sparked an inferno that enveloped both engines and killed all four crewmen. Emergency responders arrived on the scene within 30 minutes of the collision and immediately contacted the rail carrier to determine the contents of the cars, including any hazardous materials.*

*A confluence of bad circumstances and the inability to provide accurate emergency response information made a bad situation worse. The train consists (the hazardous material shipping paper required to be kept in the engine of the train) for both train sets were destroyed in the collision. Thick, black smoke emanating from the burning debris blanketed the train, inhibiting the responders' ability to view hazardous material placards. The area of the accident scene had poor cellular reception, which made communication with the rail carrier more difficult.*



*Two hours after the initial request, the rail carrier provided the on scene commander a train consist that did not represent the hazardous material present on the train. One of the trains had picked up cars containing hazardous materials after passing the last Automatic Equipment Identification (AEI) reader; therefore the carrier did not know the exact configuration and composition of the train set.*

*In the event of a hazardous material incident, communication of hazard information is paramount for emergency responders to protect themselves and the public, extinguish fires, minimize property damage, and reduce the potential for water and soil contamination. The inability of the rail carrier to accurately convey train consist information in this incident led the National Transportation Safety Board to make the following recommendation to the Pipeline and Hazardous Materials Safety Administration:*

*With the assistance of the Federal Railroad Administration, require that railroads immediately provide to emergency responders accurate, real-time information regarding the identity of all hazardous materials on a train. (R-07-4)*

# VISION

“Any sufficiently advanced technology is indistinguishable from magic.”

— Arthur C. Clarke

# The Vision

**HM-ACCESS** will allow both regional and global transportation partners to **communicate hazard information electronically**, which will **enhance shipment efficiency, safety and security**, while **improving emergency response capabilities**.

PHMSA is working to identify available technologies and current initiatives that can be leveraged to improve the communication of hazards to emergency responders and others involved in the transport of hazardous materials. Improved communication of hazard information benefits all participants in the transportation system — not only the immediate hazardous material shipper and carriers and their employees but law enforcement officials, emergency responders, and, ultimately, all who use or depend on the transportation system. As the discussion of electronic shipping papers continues, it is important to consider how existing technologies may be integrated to enhance the capabilities of all parties involved.

*Improving communication to emergency responders by supplying timely access to information in the event of an incident:*

- **Vehicle Telematics** — Popularized by its incorporation into certain Ford and General Motors vehicles, this technology combines GPS and electronic data exchange to provide remote vehicle diagnostics and, in the event of a collision, communicate vehicle location and information to public service answering points. These types of automatic devices can improve the efficiency of emergency response through better communication.
- **Computer Aided Dispatch (CAD)**— CAD is increasingly becoming a standard tool in the emergency response community. This technology allows public safety answering points or other dispatchers to access online information, such as maps and weather reports, in order to recommend the best unit to respond to a particular incident. CAD systems often include a records management system that allows a department to create, store, search and share incident data.

*Information Site:*

<http://www.intergraph.com/publicsafety>





- **Electronic Emergency Response Guidebook (ERG)** — The ERG was developed jointly by the DOT, Transport Canada, and the Secretariat of Communications and Transportation of Mexico (SCT) for use by firefighters, police, and other emergency services personnel who may be the first to arrive at the scene of a transportation incident involving a hazardous material. It is primarily a guide to aid first responders in (1) quickly identifying the specific or generic classification of the material(s) involved in the incident; and (2) protecting themselves and the general public during this initial response phase of the incident.
- **Wireless Information System for Emergency Responders (WISER)** — The WISER system provides a wide range of information on hazardous materials, including:
  - Assistance identifying an unknown substance;
  - Physical characteristics, human health information; and
  - Containment and suppression advice.



*WISER Information Site:* <http://wiser.nlm.nih.gov>

*Reducing the overall risk in the transportation system by reducing the likelihood of delayed or diverted shipments:*

- **The International Trade Data System (ITDS)** — Operated by Customs and Border Protection (CBP), ITDS is a single window through which the data required by government agencies for international trade transactions may be submitted. Participating government organizations represent eleven cabinet level and six independent departments/agencies spanning the breadth of the federal government. Successful integration of all government agencies that require information for clearing and licensing cargo will:
  - Eliminate the need for multiple and redundant government data reporting and inefficient paper-based systems;
  - Result in higher trade compliance and a more vibrant economy through lower time-to-market costs;
  - Increase the accuracy and completeness of international trade data and facilitate a more efficient flow of information between and among federal agencies; and
  - Improve inter-government collaboration at the border, resulting in faster and more efficient cargo release for legitimate trade.

*ITDS Information Site:* <http://www.itds.gov>

*Reducing intermodal impediments by eliminating discrepancies in information and time delays associated with the physical transfer of shipping papers:*

- **Radio Frequency Identification (RFID)** — This technology is coming into increased use as an alternative to bar codes and can be incorporated into virtually anything. RFIDs do not require a direct line of sight to the transceiver and can operate across a long range. RFIDs are already being used to track freight containers and pay tolls on our nation's highways.

*RFID Information Site:* <http://www.rfidjournal.com>

- **Smartphones** — Enhanced versions of conventional cellular phones combine the portability of a cellular phone with the features of a personal computer into a single device. These devices are readily adaptable to a variety of applications including inventory management, navigation, and emergency response. Smartphones and similar handheld devices can increase transportation efficiency and provide immediate notification of transportation incidents.

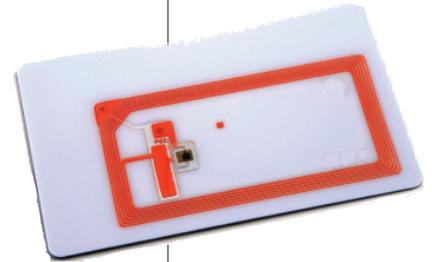
*Reducing congestion and improving system reliability by facilitating the effective electronic transfer of information by utilizing readily available technologies and standard communication protocols:*

- **International Standards for internet-based information exchange** can drastically decrease costs and improve the speed and accuracy of global communication. Current electronic data exchange standards (EDI, ISO 17687, and XML) were developed to be independent of technology. As the number of trading partners utilizing the internet as the method of information exchange increases, more robust standards continue to emerge.

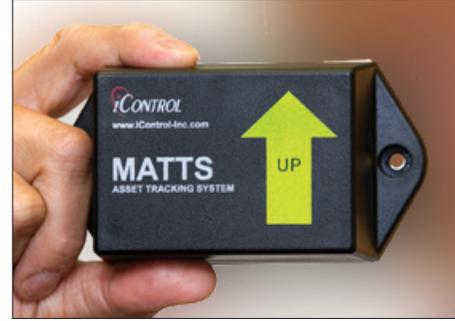
*Enhancing the security of imported materials by increasing the completeness and accuracy of information obtained from international trading partners:*

- **The Global Positioning System (GPS)** — This technology allows position identification anywhere on the earth by measuring the distance between the GPS receiver and the satellites. Emerging applications involve integrating a GPS receiver with other technologies to provide the location and condition of cargo as it moves through the global supply chain.

*GPS Information Site:* <http://www.gps.gov>



- **Marine Asset Tag Tracking System (MATTS)** — Developed for the Department of Homeland Security, MATTS is used to monitor shipping containers. This small device integrates “a miniature sensor, data logging computer, radio transceiver, and GPS tracking system,” and will indicate the approximate location of the container and whether any part of it has been opened.



*MATTS Information Site:* <http://www.secprodonline.com/articles/50190>

*Reducing Environmental Impacts by expediting clean-up and remedial actions based on prompt and accurate hazard communication:*

- **EDI and other Electronic Communications Protocols** — Electronic Data Interchange (EDI) and various other communications protocols have been used in some form or another for many years. The most common and simple methods of electronic information exchange occur over telephone, email and fax. These methods are highly dependent on paper documentation and can be inefficient. Increasingly, the government and commercial sectors are utilizing internet based systems to generate shipping documents and confirm the accuracy of information provided against applicable government standards such as the hazardous materials regulations. By expediting the information to emergency and environmental remediation crews, we are creating a more efficient response.

*Other Projects to Improve Cargo Logistics, Security, and Emergency Response Communications* — Other public and private sector organizations have developed programs that should be considered in developing improved hazard communication strategies:

- **Next Generation 9-1-1** — This initiative intends to expand and improve 9-1-1 interface capabilities, enabling operators to receive not only voice but also text, images, video, and other data from all types of mobile devices such as cellular phones.
- **Federal Communications Commission (FCC) approves emergency alert text-messaging system** — Cell phone users will get text message alerts of emergencies under a new nationwide alert system approved on April 9, 2008 by the FCC. An emergency text message would be sent in the event of a widespread disaster, severe weather or child abduction.

*FCC Information Site:* <http://www.fcc.gov>





- **Electronic Freight Management (EFM) Program** — Managed by the Federal Highway Administration (FHWA), EFM is a research effort that partners with freight-related industries to improve the operating efficiency, safety, and security of goods movements. The EFM Program focuses on the exchange of information among the shipper, carrier and recipient of goods, regardless of transportation mode used or international border crossed.

*EFM Program Information Site:*

<http://ops.fhwa.dot.gov/freight/intermodal/efmi/electronic.pdf>

- **International Air Transport Association (IATA) e-freight initiative** — This program focuses on air freight supply chain simplicity and efficiency. The program intends to drive the air freight industry toward a paper free environment, in which information required by industry, customs and other government entities is transmitted electronically.

*IATA Information Site:* <http://www.iata.org>



The wide spread use of cellular phones and the ever-increasing availability of wireless broadband communication offer new means for communicating the



safety, security and emergency response information that must accompany hazardous materials in transportation. Automatic identifier technologies, such as RFID, magnetic buttons, and barcode systems, may also be integral to advancement of the HM-ACCESS initiative. However, this initiative will not be tied to any one specific technology. We anticipate that a blend of technologies and capabilities ultimately will support and define HM-ACCESS.

## Strategy and Plan

The electronic data sharing inherent in HM-ACCESS could incorporate all hazardous material safety information, including information currently required on a shipping paper and the more detailed, response-focused information from the Emergency Response Guidebook (ERG). By electronically tracking shipments, companies would have real-time information about shipment locations. In the event of an incident, the location of shipments and associated ERG information could be automatically dispatched to all local emergency response agencies. The ability to immediately disseminate appropriate hazard information to local officials will improve the capability of emergency responders, thereby reducing the impacts of hazardous material incidents.

Numerous transportation organizations and government agencies are spending considerable resources to investigate the feasibility of using electronic communications, in lieu of paper waybills, manifests, bills of lading, etc., for intermodal and international shipments. To realize the full potential of electronic communication, the network must be capable of linking not only the parties to the commercial and transportation arrangements but also the officials who may be called upon to respond to a transportation incident. We believe HM-ACCESS will increase the efficiency of goods movements, reduce congestion, and enhance the safety, security, and performance of transportation systems.

**Cooperative Efforts** — PHMSA must continue to work with all affected parties to ensure thorough understanding of the initiative’s challenges. PHMSA has vetted this initiative through government, industry, and safety organizations, as outlined in the following table:

FEDERAL	SAFETY	INDUSTRY
FRA	NENA	AAR
USCG	APCO	VOHMA
FMCSA	CVSA	ATA –Truck
FAA	IAFC	IATA
NHTSA	IAFF	Interested Parties
RITA	NASFM	ACC
TSA	NVFC	ALPA
FCC	COMCARE	NTTC
CBP		ATA – Air

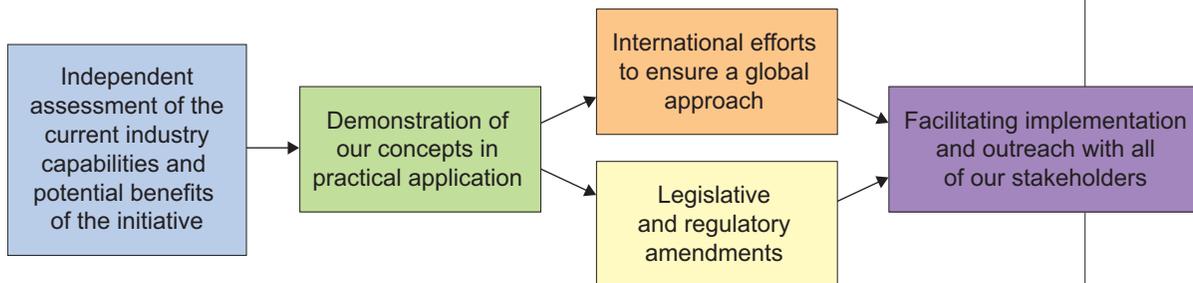
*\* See page 23 for list of abbreviations and acronyms*

These organizations will have critical roles to play in the advancement of HM-ACCESS, as they will be among the implementers, and beneficiaries of the initiative.



## PHMSA’s Plan of Action

We expect the integration of electronic transfer of shipping information to be generational. Among hazardous materials carriers, vessel, rail, and air transport organizations have stated that they are ready to begin utilizing electronic shipping paper technology, subject only to regulatory authorization. In the highway mode, the larger, technologically-advanced companies are prepared to implement electronic systems, but widespread use among the industry is a longer-term proposition. In any case, however, we cannot transition any part of the hazardous material transportation sector to new hazard communication systems without assuring that emergency response officials are prepared and equipped to receive the hazard information at least as quickly and reliably as under the current system. PHMSA will continue to work with all modes and safety groups to facilitate this transition. Our plan incorporates a comprehensive approach that takes into account:



### **Hazardous Materials Cooperative Research Program (HMCRP) Project 05 —**

This research program is funded by PHMSA and managed by the Transportation Research Board. HMCRP 05 will address the electronic transfer of safety, operational, regulatory compliance, and emergency response data and documentation, for and amongst all transport modes and how the use of electronic shipping papers can improve safety, responsiveness and cargo efficiency. The project will also examine the different approaches and technologies currently in the market place and the costs and impediments, business or regulatory, for adoption of such a system.

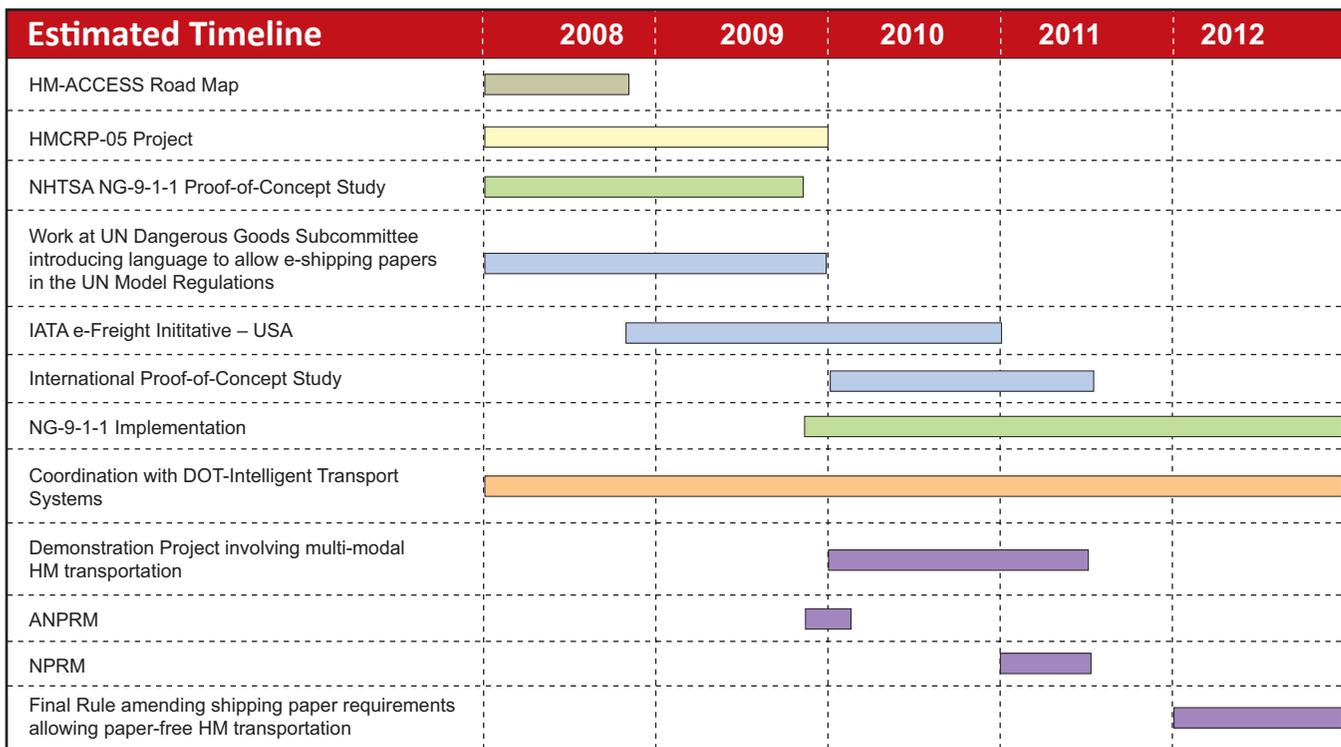
**Demonstration/Proof-of-Concept Projects** — PHMSA plans to demonstrate the capabilities of HM-ACCESS in international and intermodal transportation through cooperative partnerships and coordination with other DOT and government initiatives. PHMSA intends to work with the DOT Intelligent Transport Systems group to leverage knowledge gained through existing projects such as Electronic Freight Management and Next Generation 9-1-1. PHMSA believes that the DOT will realize greater results through combination of related projects.

**Reauthorization** — Reauthorization of the Federal Hazardous Materials Transportation Safety program provides an opportunity for renewed focus on the safety and efficiency of the transportation system and for prioritizing the development of electronic communications systems. Amendment of statutory requirements related to shipping papers also would facilitate HM-ACCESS by clarifying PHMSA’s regulatory authority to authorize paperless hazard communications.

**Change in the Hazardous Materials Regulations** — Following thorough research and extensive cooperative efforts, performance-based regulatory guidelines for the use of electronic shipping papers can be developed. PHMSA does not intend to abolish paper-based communication. Our goal is to facilitate improved hazard communication by establishing appropriate safety controls and conditions for the use of electronic communication. PHMSA aims to develop and define the regulatory guidelines necessary to allow the electronic transfer of hazard information in lieu of a paper document. It is expected that any regulatory change will allow electronic shipping papers only if specific guidelines are met, such as:

- The ability to electronically communicate hazard information between shipper and carrier;
- The ability to electronically communicate hazard information between carrier and operator (driver, captain, pilot, etc);
- The ability to electronically communicate hazard information between carrier/shipper and appropriate emergency response agencies;
- The ability to electronically communicate hazard information between carrier/shipper and federal and state inspection personnel; and
- The ability to immediately produce a paper document upon request.

**Change in International Dangerous Goods Regulations** — PHMSA will continue to work with international regulatory institutions such as the United Nations Sub-Committee of Experts on the Transport of Dangerous Goods, the International Civil Aviation Organization, and the International Maritime Organization on amendments to the international regulations to allow a safe and efficient method of sharing hazard communication information through electronic means.



## A Better Future

In 1988, a public pay phone could be found on most city blocks and in every public building across America. Twenty years later, the pay phone has been rendered virtually obsolete. Fueled by the convenience, ease, and relatively low cost of cellular and internet technology, mobile communications have been transformed. As Americans increasingly demand immediate access to information in all facets of their daily lives, the public will expect innovation in the critical hazard communication system that underpins our hazardous materials safety program. It is time to harness the same, and newer, technologies to improve the safety, effectiveness and efficiency of hazardous material transportation.

PHMSA's HM-ACCESS initiative strives to facilitate the use of existing technologies to improve hazard communication between and among transportation partners, the emergency response community, and the public at large. PHMSA's intention is not to abolish the use of paper; it is to find ways to facilitate system efficiencies by allowing shippers, carriers, and others in the hazardous material transportation system to use electronic documentation, in lieu of paper. HM-ACCESS will allow industry and public safety organizations to capitalize on new and developing communications technologies, which will maximize efficiency and safety and minimize risk. Effective use of electronic communication of hazard information will:

- ***Reduce intermodal impediments*** by eliminating discrepancies in information and time lags associated with the physical transfer of shipping papers. This will expedite the movement of hazardous materials through ports and allow intermodal transportation partners to seamlessly communicate without having to hand over or recreate a shipping paper.
- ***Permit effective electronic transfer of hazardous material information*** by utilizing readily available technologies and standard communication protocols.
- ***Improve communication to emergency responders*** by supplying timely access to information in the event of an incident. Whether you are a volunteer firefighter in a rural area or a HazMat Technician in New York City, receiving more information prior to arrival on scene will facilitate a safer and more efficient response. It is imperative that any progress made toward implementation of HM-ACCESS take into account the capabilities of all emergency responders.
- ***Enhance the security of imported materials*** by increasing the completeness and accuracy of information obtained from international trading partners. The consolidation and standardization of information will assist companies with customs processes and the transfer between modes of transport.
- ***Reduce environmental impacts*** by expediting clean-up and remedial actions through improved flow of information to response agencies.

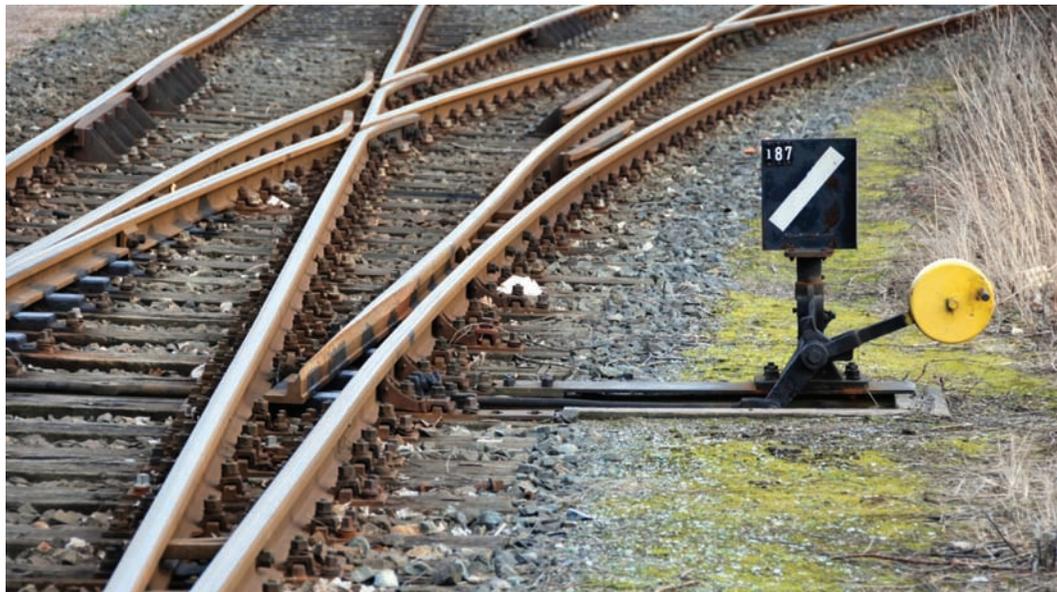
*A more efficient response will reduce the time that hazardous materials are in contact with the environment. Rapid response to hazardous material incidents also reduces environmental impacts by minimizing vehicle emissions associated with incident-related traffic congestion.*

If we consider our case-study from Anding, Mississippi, we can quickly recognize how the innovations contemplated by HM-ACCESS would lead to a much different result.

Unfortunately, HM-ACCESS would not have prevented the collision and the deaths of carrier employees. But the firefighters would have responded to the incident with all of the information that they needed to extinguish the flames and prevent environmental contamination without having to wait for the rail carrier. Information about the types and locations of hazardous material on the train would have been communicated directly to emergency responders, along with other relevant information, such as the appropriate MSDS, weather reports, wind direction, and even satellite photos of the incident area. Instead of spending time determining what they are faced with, emergency responders could have arrived on the scene with a fully executable plan.

Reduced time in responding to emergencies like this one will:

- Reduce the risk faced by responders;
- Improve the efficiency of emergency response;
- Reduce the environmental impact of hazardous material incidents by preparing responders to react more quickly and appropriately; and
- Permit the carrier to reopen the rail line more quickly, reducing delays and congestion of redirected traffic.





# Abbreviations and Acronyms

ABBREVIATION	MEANING
AAR	American Association of Railroads
ACC	American Chemistry Council
ALPA	Airline Pilots Association
APCO	Association of Public Safety Communications Officials
ATA	Air Transport Association
ATA	American Trucking Association
AEI	Automatic Equipment Identification
CBP	U.S. Customs and Border Protection
CAD	Computer Aided Dispatch
CVSA	Commercial Vehicle Safety Administration
DOT	Department of Transportation
DHS	Department of Homeland Security
EDI	Electronic Data Interchange
EFM	Electronic Freight Management
EPA	Environmental Protection Agency
ERG	Emergency Response Guidebook
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
GIS	Geographic Information System
GPS	Global Positioning System
HM-ACCESS	Hazardous Materials – Automated Cargo Communication for Efficient and Safe Shipments
HMR	Hazardous Materials Regulations
IAFC	International Association of Fire Chiefs
IAFF	International Association of Fire Fighters
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IFTWG	Intermodal Freight Technology Working Group
IMDG	International Maritime Dangerous Goods Code
IMO	International Maritime Organization
ITDS	International Trade Data System
MATTS	Marine Asset Tag Tracking System
NASFM	National Association of State Fire Marshals
NENA	National Emergency Number Association
NHTSA	National Highway Traffic Safety Administration
NTTC	National Tank Truck Carriers
NVFC	National Volunteer Fire Council
OSHA	Occupational Safety and Health Administration
PHMSA	Pipeline and Hazardous Materials Safety Administration
RFID	Radio Frequency Identification
RITA	Research and Innovative Technology Administration
TSA	Transportation Security Administration
USCG	United States Coast Guard
USDA	United States Department of Agriculture
VOHMA	Vessel Operators Hazardous Materials Association
WISER	Wireless Information System for Emergency Responders



U.S. Department  
of Transportation  
**Pipeline and  
Hazardous Materials  
Safety Administration**

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