

# **Information Paper on Hazardous Materials Automated Cargo Communications for Efficient and Safe Shipments (HM-ACCESS): Electronic Shipping Papers for Shippers and Carriers**

## **Background**

For several years, the hazardous material (HM) transportation community has invested in developing and implementing internal electronic systems to meet business needs and the growing demands of global transportation. Advancements have accordingly been made in both domestic and international electronic communication (e-communication) and electronic commerce. Moreover, the United Nations (UN) Model regulations incorporate recommendations for the use of electronic shipping papers (e-shipping papers). Creating a transportation environment without e-communication boundaries improves global harmonization and promotes performance-based electronic systems that strive to provide an equivalent or better level of safety to the current HM hard copy shipping paper requirement.

## **Introduction to HM-ACCESS**

HM-ACCESS is a pilot project under the Moving Ahead for Progress in the 21st Century Act (MAP-21). The Pipeline and Hazardous Materials Safety Administration's (PHMSA's) Office of Hazardous Materials Safety (OHMS) is collaborating with modal administrations, law enforcement, emergency response providers, and industry representatives to evaluate the feasibility and effectiveness of allowing the use of paperless HM (e-HM) communications systems (e-systems) for HM shipments to:

- Improve the availability and accuracy of hazard and response information for shipments and packages;
- Improve the speed by which information is available to emergency responders when accidents occur;
- Improve the security of imported containers through better knowledge of shipments and reduced potential for diversion; and
- Allow U.S. companies to compete more effectively in the global economy by using the best tools available.

Based on interactive dialogues, information was gathered to determine the needs of stakeholders: shippers, carriers, emergency response providers, and law enforcement. Workshops were held with these stakeholders on September 27-28, 2012 to receive feedback on the information compiled thus far in synopsis papers, and to identify concerns, gaps, and vulnerabilities not previously discovered. The following are the results of the research conducted to date, including a prioritization of those issues.

## **Description of Stakeholders**

Shippers are required to prepare an HM shipping paper for most HM placed in transport, and carriers are required to maintain the HM shipping paper when the HM is in commerce. Both shippers and carriers are required to maintain shipping papers for a certain period of time after delivery is complete.

## **Shipper and Carrier Feedback and Opinions**

Collectively, shippers and carriers identified a need to:

- Examine the existing domestic and international requirements;
- Understand the variances in the modes of transportation;
- Recognize the impact on carriers when implementing e-shipping papers;

- Better understand the needs of emergency responders and the law enforcement community; and
- Consider the relevance of freight forwarders and brokers in the implementation of e-shipping documents.

Some shippers stated they use e-systems for business purposes that contain the HM information/fields currently required on the HM shipping paper. These stakeholders print hardcopy shipping papers from these systems. Shippers with access to e-systems should be able to transition to an electronic format. Many carriers also have e-systems that can serve as starting points for e-shipping documentation.

Shippers and carriers stated that e-shipping papers should be: permitted, not mandated; performance based; and flexible – not based on a single technology. The majority of workshop participants expressed the view that e-systems should have “open architecture,” while others asserted that there should be a common information transfer standard. Virtually all participants agreed that there should not be a single repository for shipment information.

The majority of stakeholders recognized that, without a standard information format, e-shipping papers could vary by shipper, mode, and carrier. Furthermore, accuracy and completeness of information are critical. Various existing and planned e-systems, such as the Environmental Protection Agency’s (EPA’s) e-hazardous waste manifest, may provide valuable “lessons learned” for HM-ACCESS. Finally, it is important to be able to identify shippers and carriers with e-HM communication capability.

Additional discussion items included:

Air carriers have sophisticated security protocols for electronic records (e.g., passenger information). Some e-systems may therefore be implemented using existing protocols. In addition, international air shipments already allow for electronic dangerous goods records, so e-shipping should be able to leverage these present systems.

For maritime carriers, the ability to use electronics, in lieu of hardcopy shipping papers, for exports would present a business benefit. Most maritime vessel operators have developed electronic business systems to manage HM shipping documents, and international maritime commerce is currently performed electronically. Moreover, the U.S. Government (USG) grants vessel operators the authority to electronically exchange HM information for U.S. shipments.

Train crews carry hardcopy HM shipping papers for use by emergency responders, in the event of an incident and to meet the existing regulatory requirement. Railroad headquarters can also provide shipping papers to emergency responders, if not readily available from the crew in the event of an accident. Currently, it is not possible to view HM information electronically on the train. The transition to e-HM communication for most rail carrier operations is nonetheless possible because information is already exchanged via electronic data interchange (EDI). However, differences in business processes mean that carriers have different EDI requirements for commercial data. To provide both flexibility for growth and uniform implementation by trading partners, rail carriers annually publish guidelines for all EDI transaction sets utilized by the rail industry. While the commercial data requirements within these documents may vary from carrier to carrier, the regulated requirements for HM information is uniform across all transactions and users. In addition to the guidelines, an industry workgroup under the Association of American Railroads (AAR) meets regularly to discuss emerging regulatory requirements and uniform implementation within the rail EDI standards.

Motor carrier transport is significantly different from other modes of transportation. Motor carriers may transport a single commodity along defined transportation routes; pickup and deliver multiple commodities along routes that change based on delivery needs; or engage in long haul or local movements. Motor carriers generally travel shorter distances, conducting more individual transportation trips than other modes. Motor carriers often serve as connectors to the other modes in the movement of HM. Presently, motor carriers receive hardcopy HM manifests and bills of lading. However, some motor carriers scan shipment information for billing purposes.

Many trucks transporting HM are equipped with automatic or electronic on-board recording devices (EOBRs) to track drivers' hours of service, delivery confirmation, etc. To field such a system, the user pays installation costs and a monthly service fee. E-HM communication capability could be added to these devices, but this action would increase the cost and the service of the device. For motor carriers who deliver a single HM, or who always deliver the same HM to the same locations, e-HM communication could be implemented, assuming electronic devices are available and cost-effective. Current legislation mandates future adoption of EOBRs for all trucks, although a specific adoption date has not been set. Because motor carriers encounter en-route enforcement personnel more than any other mode, it is essential that e-systems use data transmission that can interface with law enforcement equipment.

### **Shipper and Carrier Concerns, Gaps, and Vulnerabilities**

Stakeholders expressed concern about security and business-related issues, once e-HM communication is conducted outside of a controlled environment. These stakeholders communicated a difference in the need for electronic information for business purposes, and the need for electronic information for HM emergency response purposes. The prevalent opinion was that these different needs should not be tied together, as one objective may hinder the other.

Stakeholders also expressed a concern that the issues of inaccurate and missing information in the paper-based system could be carried over to an e-system. Therefore, a successfully implemented e-system would have to be able to accept corrections, but only from a designated administrator with the proper authority to upload and manage shipping paper information.

Existing EOBRs can retain shipping paper information and log driver performance, but cannot transmit information in areas of the U.S. and Canada without satellite- or cellular-based Internet connectivity or other wireless access spots. These same issues would likely exist for e-HM communication systems. Stakeholders expressed concern regarding the capability of emergency response providers and inspectors in rural, remote, and geographically challenging areas, and in some small/volunteer departments, to receive e-HM communication.

Stakeholders stressed that e-HM communication implementation should not make compliance requirements more complicated. That is, the USG should not mandate that shippers provide e-HM information in both hardcopy and electronic formats after a reliable e-HM transmission system is adopted. If the USG decides to require e-HM communication, some shippers believe some companies will be at a disadvantage because of associated implementation costs. Moreover, different domestic and international requirements may be necessary to ensure the responsibilities for data provided to domestic emergency response providers and law enforcement personnel are clearly defined and understood.

The carrier industry places high importance on the current HM shipping paper documentation trail for billing purposes, driver payment records, etc. Some small motor carrier companies either cannot afford to purchase an e-system, or do not see the business case to invest in one. Motor carriers recommend

that PHMSA establish the performance standard for e-HM communication, but keep the existing requirements for hardcopy HM shipping papers as a failsafe.

Additional discussion items included:

Air and maritime carriers reported that EDI is not organized in a manner that requires sequence of information or fields; neither the data, nor how and in what order emergency response information is presented is standardized. In addition, different requirements for the format and sequence of e-HM information for domestic and international HM shipments may need to be developed. The air and maritime carriers recommend that mandatory HM shipping paper fields be clarified and defined, with the most important emergency response providers information presented first. Further, air and maritime carriers mentioned that, because each of the four major rail carriers has different EDI requirements for rail billing, providing e-HM information to multiple rail carriers for intermodal HM transfers is time-consuming and redundant.

Rail carriers permit e-shipping paper data to be provided to them in EDI format. To perform intermodal transfers with rail carriers, air and maritime carriers have been using EDI for e-shipping paper communication. EDI currently has all the HM data elements required by 49 CFR 172 and the International Maritime Dangerous Goods (IMDG) Code.

Motor carriers who do not have on-board electronic technology are concerned that they will be unable to provide e-HM information directly and readily to enforcement and emergency response personnel. Different data transmission standards could nullify e-shipping paper benefits if the truck and enforcement equipment use different e-shipping paper technology that are not compatible. Currently, an electronic environment does not exist for some motor carriers to receive HM shipping documents from, or to send HM shipping documents to, other carrier modes.

### **Top Considerations and Gaps**

PHMSA aggregated similar considerations and gaps; then, PHMSA identified the top issues in each of two information papers, for shippers/carriers (this paper) and for emergency response providers/law enforcement personnel, respectively. The goal of this prioritization is to identify the key considerations and gaps that need to be addressed to ensure the successful implementation of e-systems.

The top considerations and gaps for shippers and carriers are:

#### Considerations

- E-HM communication should be regulated by means of a flexible, performance-based approach to allow current business systems to be utilized;
- E-HM format requirements should be standardized, sequenced, and linked to international requirements to support electronic-mapping efforts; and
- While e-HM communication is being evaluated through HM-ACCESS to determine feasibility and equivalent level of safety, hardcopies of shipping papers still should be carried to meet the needs of emergency response providers and law enforcement personnel;

#### Gaps

- E-HM communication should be allowed, but not mandated, so as not to potentially create a competitive disadvantage for some companies;
- The transmission of e-HM information should: satisfy multiple agency needs, ensure continuity, and allow the responsible party (shippers or carriers) to exchange e-HM information to emergency response providers and law enforcement personnel as needed; and

- Existing connectivity limitations (limited equipment and connectivity/dead zones) could hinder access to electronic information by emergency response providers.

### **Common E-System Requirements among All Stakeholders**

Common requirements for the implementation of e-shipping papers identified by shippers, carriers, emergency response providers, and law enforcement personnel are:

- Equivalent or higher level of safety to current requirements;
- Internationally harmonized and uniformed information;
- Secured from unauthorized access;
- Capable of allowing shippers to be responsible for data entry and error correction;
- Cost-effective;
- Able to allow e-shipping papers to be accessible through wireless capabilities; and
- Protect commercially-sensitive information.

### **Summary**

The use of e-communication will continue to grow in all sectors, including transportation. PHMSA understands that emergency response providers, law enforcement personnel, shippers, and carriers are critical stakeholders in helping to ensure that safety remains paramount in the use of e-systems for the transportation of HM.

This paper outlines the issues and challenges identified and prioritized by shippers and carriers that must be taken into account and tested in any e-HM communication pilot program. Coupled with the results of a similar paper on emergency response providers and law enforcement feedback, these findings take PHMSA closer towards developing the parameters of the HM-ACCESS test program under MAP-21.