

# Hazardous Materials Automated Cargo Communication for Efficient and Safe Shipments (HM-ACCESS)

## Synopsis: Carrier Efforts

### Stakeholder Group:

The carrier industry includes companies that transport all types of hazardous materials (HM) in various quantities (bulk and non-bulk) in assorted containers and packages on different types of vehicles, including vessels, planes, trailers, trucks, and railcars. Some carriers transport HM intramodally (i.e., within a single transportation mode: air, rail, road, or water); others transport HM both intramodally and intermodally (i.e., between modes). A shipping paper, prepared by the HM shipper, is required for the transportation of the HM. HM carriers are required to maintain the HM shipping paper when the HM is in commerce and for a certain period after delivery is completed. A Dangerous Goods Manifest must be created by the shipper for each HM transported internationally. This document is in addition to the HM shipping paper requirements identified in 49 CFR 172 for US HM shipments.

### Feedback and Opinions

Because of the wide variation among modal carriers, means for electronic HM (e-HM) communication will vary by carrier and by mode. Accuracy and completeness are the two most important e-HM information requirements for carriers. The carriers emphasized that allowing, rather than mandating, the use of e-HM information would be accepted within this stakeholders group as well as by others.

The air mode currently has sophisticated security protocols for other e-records (e.g., passenger information), so e-HM communication should fit within its existing protocols. In addition, international air shipments already allow for e-dangerous goods records, so HM-ACCESS should be able to leverage these international allowances for e-HM shipping papers. In addition, the main type of HM transported on airplanes is medical grade Class 7 radioactive substances<sup>1</sup>; these HM are required to be declared prior to shipment.

The rail mode transports HM in box and tank cars; all shipment data is received electronically in electronic data interchange (EDI) format. Hardcopy HM shipping papers are carried by the train crew for use by emergency responders in the event of an incident and to meet the existing regulatory requirement.

Maritime vessels can carry over 6,000 containers with many HM at a time, and most vessel operators have developed electronic business systems to manage HM shipping documents. Most international maritime commerce is currently performed electronically; these vessel operators need to be granted authority by the US government to exchange HM information electronically for US shipments. Most maritime carriers use EDI because of their interaction with railroad carriers. EDI currently has all the HM data elements required by 49 CFR 172 and the International Maritime Dangerous Goods (IMDG) Code. Using EDI in lieu of hardcopy shipping papers for exports would present a business benefit for many maritime carriers.

Carriage of HM by highway is significantly different from their modal counterparts, in that they generally travel shorter distances and thus have more individual transportation trips. In addition, many variations exist among roadway carriers: some transport a single commodity along defined transportation routes; others pickup and deliver multiple commodities along routes that change based on delivery needs. The following list includes some practices that take place in the motor carrier industry relating to HM communications:

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<sup>1</sup> Hazardous Materials Cooperative Research Program, Transportation Research Board, Project HM-05.  
Synopsis\_Carriers

- Motor carriers always receive HM manifests and bills of lading in hardcopy. Some companies scan these documents for billing purposes.
- Some motor carriers that transport chemicals via tank truck fleets have electronic or automatic on-board recording devices and use them for activities such as tracking drivers' hours of service and locations; commodity delivery confirmation; etc. The owner-operators pay the installation costs and a monthly fee for these devices. The possibility exists for additional capabilities to be added to these devices for additional costs.
- Motor carriers that transport fuel generally do not invest in electronic devices, because fuel pick-ups and deliveries are typically direct and routine shipments, and fuel companies generally have a lower profit margin than their chemical counterparts.
- For motor carriers who deliver a single HM or who always deliver the same HM to the same locations, e-HM communication should be easy to implement (assuming electronic devices are available).
- An e-HM system may provide a dual benefit for motor carriers who load HM from multiple sites, as it could help the driver determine HM compatibilities and segregation requirements prior to loading the HM.

### ***Concerns, Gaps, and Vulnerabilities***

The carrier stakeholder group wants the Federal government to ensure that e-HM communication be allowed, rather than mandated. They are concerned about security and business-related issues once e-HM communication is conducted outside of a controlled environment. They also see a difference in the need for electronic information for business purposes, which often already exists, and the need for information that accompanies HM shipments for emergency response purposes; they believe these different needs should not be tied together, as one side may be hindered. They also communicated that HM technical names can be difficult for carriers to determine, and trade names are currently not authorized for use by 49 CFR 172.

The motor carrier industry places importance of having an HM paper documentation trail (for billing purposes, delivery receipts, driver payment records, etc.). Some trucking companies either cannot afford to purchase an electronic system or do not see a business reason to invest in one; the carrier stakeholders recommended that PHMSA should establish the performance standard for e-HM communication and keep the existing requirements for hardcopy HM shipping papers. Implementation of e-HM shipping papers may also be difficult for smaller motor carrier companies that transport a wide variety of products; that do not have set delivery schedules; or that make multiple stops on a transport route delivering various HM contained in trailers with multiple compartments, because of the complexity of these HM shipments. In addition, existing electronic and automatic on board recording devices do not function in some areas of the US and Canada with internet connectivity dead spots; the same issue would likely exist for an e-HM communication system. Motor carriers who do not have on-board technology are also concerned that they will be unable to provide e-HM information directly and readily to inspection and emergency response personnel, scenarios that could delay shipments; cause loss of revenue for the driver and the carrier; and potentially contribute to incident liabilities.

Currently, an electronic means does not exist for the motor carriers to receive HM shipping documents from, or to send HM shipping documents to, any of the other carrier modes. The highway carrier mode serves a critical function in the HM transportation chain, and provisions for ensuring continuity of commodity as well as information flow need to be addressed.

A commonality exists within carrier modes; specifically; air and maritime carriers shared information regarding their providing e-HM shipping paper data to rail carriers. The rail carriers have been using EDI for many years, and require e-HM shipping paper data be provided to them in EDI format. To be able to perform intermodal transfers with rail carriers, and because a regulatory requirement for e-data does not

exist, the air and maritime carriers have been using EDI for e-HM shipping paper communication. The air and maritime carriers shared the following constraints regarding EDI:

- EDI elements may be different between individual carriers.
- EDI is not organized as a required sequence of information or fields.
- Data standardization is an issue, as is how and the order in which emergency response information is presented. Mandatory HM shipping paper fields need to be clarified and defined, and the most important emergency response information should be presented first.
- Each of the four major rail carriers has different EDI requirements for rail billing.
- Paperwork for imports is often missing information and often contains incorrect data. These issues provide additional challenges for verifying data accuracy provided in an EDI system for imports.
- Different requirements (format and sequence) of e-HM communication information for domestic and international HM shipments may need to be developed.
- Airlines historically used EDI for inputting cargo booking and financial accounting information, as EDI provides a structured message defined for teletype. The industry may be moving to exchange markup language (XML).
- The Standard Transportation Commodity Code (STCC), a rail publication containing specific product information used on waybills and other shipping documents, is now being used by rail carriers for HM transport. STCC codes are not specific to a particular material; are not used or understood internationally; and have no use for emergency response purposes. Maritime carriers indicated that some rail carriers insist each HM shipment have an STCC code prior to the rail's acceptance of the HM from a maritime carrier.