



## **Hazardous Materials Cooperative Research Program**

On August 23, 2006, the Pipeline and Hazardous Materials Safety Administration (PHMSA) awarded a contract to the National Academies to initiate a pilot of a Hazardous Materials Cooperative Research Program (HMCRP). The Transportation Research Board (TRB), part of the National Academies, is responsible for managing the pilot program. The HMCRP is intended to be a stakeholder-driven, problem-solving, practical oriented, near- to mid-term research and development program advancing current knowledge and practice relating to hazardous materials transportation.

The pilot follows a concept study of a hazardous materials cooperative research program by the TRB, which was completed in March 2005. PHMSA, along with the Federal Motor Carrier Safety Administration, the Federal Railroad Administration, and the U.S. Coast Guard, sponsored the concept study. It concluded there is a demonstrable need for such a program, with a strong security component, for hazardous materials transportation. TRB Special Report 283 (see <http://onlinepubs.trb.org/onlinepubs/sr/sr283.pdf>), “Cooperative Research for Hazardous Materials Transportation – Defining the Need, Converging on Solutions,” documents study results. The “Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users” or “SAFETEA-LU” required PHMSA to enter into a contract with the National Academies to carry out research projects called for in Special Report 283 (see Annex 4-1 on page 71 for details). Funding from the Highway Trust Fund for each of fiscal years 2006 through 2009 is authorized to carry out these projects. Funding was \$882,528 for FY2006, \$968,147 for FY2007 and \$977,306 for FY2008. Similar amount is expected to be provided for FY2009 subject to Congressional appropriations but funding for 2010 and beyond is undetermined. Procedures similar to those employed in the existing National Cooperative Highway Research Program (NCHRP), Transit Cooperative Research Program (TCRP), and Airport Cooperative Research Program (ACRP) were used by TRB to provide for competitive, merit-based selection of research institutions, research project oversight, and dissemination of research results.

In a letter report to Congress dated June 9, 2006, Secretary Mineta described plans to conduct hazardous materials transportation research as authorized in SAFETEA-LU while testing the concept of a cooperative hazardous materials transportation research program. The program has been a huge success but the pilot is coming to an end and to

date there has not been any indication from Congressional leaders or the sponsor of the project (rep. Elijah Cummings (D-7<sup>th</sup> MD)) in relation to whether the project will be formalized and funded in the future.

On November 1, 2006 TRB appointed the HMCRP Oversight Panel, composed of a representative group of experts in hazardous materials transportation. The HMCRP Technical Oversight Panel consists of 14 members representing shippers, carriers, emergency response, and state and local stakeholders as well as the government and the academic community. PHMSA and the Federal Motor Carrier Safety Administration each have a voting representative on the Panel. Other Federal liaisons attending the meeting include the Federal Railroad Administration, the Federal Aviation Administration, the U.S. Coast Guard, the Bureau of Transportation Statistics, the Transportation Security Administration, the Department of Homeland Security (Science and Technology), and the Department of Energy.

Since the program was initiated 9 projects have been selected under the pilot:

HMCRP HM-01 [\$300,000]

*Hazardous Materials Commodity Flow Data and Analysis*

The objective of this project is to produce an updated, user-friendly guidebook for conducting hazardous materials commodity flow surveys to support local risk assessment, emergency response preparedness, and resource allocation and to support analyses across jurisdictional boundaries.

HMCRP HM-02 [\$300,000]

*Hazardous Materials Transportation Incident Data for Root Cause Analysis*

The objectives of this research are to (1) develop a set of practical recommendations for methods to improve the availability and quality of hazardous materials transportation incident data, (2) identify gaps and redundancies in reporting requirements, and (3) provide an estimate of the under-reporting of serious incidents. The scope of this research includes all transportation modes covered by 49 CFR Parts 100-180.

HMCRP HM-03 [\$350,000]

*A Guide for Assessing Emergency Response Needs and Capabilities for Hazardous Materials Releases*

The objective of this project is to develop a guide for conducting assessments of emergency response needs and capabilities for hazardous materials releases. The guide shall address four elements: (a) conducting state, regional, and local hazardous material emergency response needs assessments; (b) developing, maintaining, and sharing capability assessments; (c) aligning assessed needs with various levels of capability; and (d) identifying shortfalls where additional/different capabilities are warranted.

HMCRP HM-04 [\$350,000]

*Emerging Technologies Applicable to Hazardous Materials Transportation Safety and Security*

The objectives of this project are to (1) develop a list of near-term (less than 5 years) and longer-term (5–10 years) technologies that are candidates for use in enhancing the safety and security of hazardous materials transportation, as applied by shippers, carriers, emergency responders, or government regulatory and enforcement agencies; (2) identify emerging technologies that hold the greatest promise of being introduced during these near- and longer-term spans; and (3) identify potential impediments to and opportunities for their development, deployment, and maintenance (e.g., technical, economic, legal, and institutional). This research will review generic technologies and will not evaluate specific name-brand products.

HMCRP HM-05 [\$300,000]

*Evaluation of the Use of Electronic Shipping Papers for Hazardous Materials Shipments*

The objective of this research is to develop a roadmap for the use of electronic shipping papers as an alternative to the current paper-based hazardous materials communication system. The roadmap will address the electronic transfer of safety, operational, regulatory compliance, and emergency response data and documentation, for and amongst all transport modes.

HMCRP HM-06 [\$400,000]

*Assessing Soil and Groundwater Environmental Hazards from Hazardous Materials Transportation Incidents*

The objective of this research is to develop a quantitative system or model that will allow carriers, shippers, and regulators to assess, compare, and classify the environmental hazards to soil and groundwater posed by materials in transport.

HMCRP HM-07 [\$400,000]

*Accident Performance Data of Bulk Containers used for Hazardous Materials Transportation*

The objective of this research is to provide recommendations, guidance, and specifications for the collection and analysis of bulk transportation performance data for hazardous materials transportation by road, rail and water. This includes, without limitation, performance data on (as applicable) releases from various designs/thickness of the shell, head, and fittings from bulk containers. The research will identify and evaluate funding alternatives as well as institutional barriers to data collection and recommendations for overcoming them. Forms and a process for collecting the data will be proposed with a view toward creating a standardized incident reporting system for each mode that will allow analysis within that mode and meaningful comparisons between modes.

HMCRP HM-08 [\$250,000]

*Feasibility of a Single Transportation Worker Identification Credential and License*

The objective of this research is to identify the steps that can be taken at the state and national levels to enable the Transportation Worker Identification Credential (TWIC) to serve as the single security threat assessment of a worker in the transportation sector, as well as the national secure access control credential. The research would identify the relevant legal authorities, programs, and policies; identify overlapping requirements;

analyze the steps needed to convert the Commercial License(s) and similar licenses and credentials into a TWIC, or vice versa; and identify policy options for achieving the objective of a single, universally recognized credential that establishes identity, eligibility to access secure areas, authority to enter particular secure areas and transportation related licenses, credentials and other government certifications required of transportation workers in the various modes. The research would also consider the costs and benefits of the current program as well as the alternatives, and address tradeoffs that may exist between safety and security in the various options.

HMCRP HM-09 [\$250,000]

*Dry Ice Limits on Aircraft*

The objective of this research is to develop guidance for passenger aircraft and cargo-only aircraft that evaluates the influence of dry ice capacity on the air quality in the cockpit and passenger cabin. In both cases, maximum loading capabilities by aircraft should be defined on the basis of empirical research that can form a model for use by aircraft operators who have not performed their own testing. The model should consider operational condition such as: the extent of insulation in packages; the number of operational air conditioning packs; ambient air temperatures at the time of aircraft loading and percent occupancy of the cargo area.

This is a multi-year effort which will continue past FY2009 due to the time required to complete the projects although the funding based on authorization from SAFETY-LU will end with the FY2009.

There are many ways for stakeholders to participate in the pilot of the HMCRP. These include providing suggestions and feedback on the program and projects, serving on HMCRP panels, conducting HMCRP projects, and applying findings and recommendations from HMCRP research. Those interested are encouraged to check the PHMSA website periodically for the status and further information on the [TRB website](#). The primary points of contact at the PHMSA and TRB for the HMCRP are:

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