

2 Background and Purpose

The events of September 11th, 2001 mark a distinct change in how transportation agencies plan for emergency events. Prior to 9/11, the focus of transportation agencies was on their role during weather-related incidents such as snowstorms, floods, and hurricanes. Transportation agencies that faced the threat of severe weather events could depend on sophisticated tools to determine the effects of such an incident on the management and operation of the transportation system. These tools helped inform transportation planning for evacuations and system recovery, activities for which advance warning was often available.

Since 9/11, however, transportation agencies have shifted their attention to the wide range of potential terrorist strikes that could occur without notice and that would require immediate, coordinated response efforts. In particular, a biohazard emergency presents transportation challenges that are potentially even greater than those posed by a large-scale evacuation. A biohazard situation is unique in that it could simultaneously require restricting and facilitating mobility. For example, an transportation agency may need to restrict the movement of exposed populations or prevent access to a contaminated area, while it facilitates the passage of first responders and medical supplies and maintains mobility around a quarantine area.

The goal of this project, *Application of Technology to Transportation Operations in Biohazard Situations*, was to develop a more comprehensive and actionable understanding of the role of transportation during a biohazard situation so that communities can better plan for, respond to, and recover from such a situation. This project is one component of the Emergency Transportation Operations initiative of U.S. DOT's Intelligent Transportation Systems Joint Program Office (ITS/JPO).

ITS/JPO supports the overall advancement of ITS through investments in major initiatives, exploratory studies, and a crosscutting core program. In 2004, the ITS Management Council, which consists of senior U.S. DOT officials, reorganized the functions of the ITS program to focus on nine particular high pay-off areas. One of the new nine initiatives is Emergency Transportation Operations. The goal of this initiative is to use ITS technologies to improve the management of all forms of transportation during emergencies. The intended outcomes of this initiative are tools, techniques, demonstrated benefits, technical guidance, and standards necessary for state and local agencies and their private sector partners to effectively manage "no notice" emergencies.

The Federal Highway Administration's Office of Operations also supported this project. One of the objectives of the Office of Operations is to ensure that surface transportation operating agencies have the necessary tools, techniques, information, and understanding to prevent, prepare for, respond to, and recover from both natural and man-made disasters. To help meet these objectives, the Office of Operations is developing information-sharing and data exchange capabilities for the transportation system (including ITS) to support emergency management planning and operations.

2.1 Intended Audience

This project is intended to benefit planners and operations personnel in state and local transportation agencies, as well as private-sector entities that perform work for those agencies.

The products of this project could also benefit public health, emergency management, and agriculture officials at the state and local levels as they consider the needs they would place upon transportation agencies during a biohazard situation.

2.2 Project Components

The first component of this project was a *Literature Review*. The *Literature Review* contains background information on biohazard agents and the types of biohazard events that could occur. The document describes the role of the transportation system before, during, and after a biohazard incident. It also describes existing programs, plans, and guidance related to biohazards and existing emergency response models and tools.

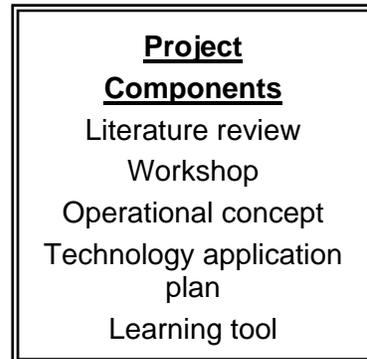
The second component of the project was a scenario-based *Workshop*. This workshop was held in Madison, Wisconsin, in July 2005 with the cooperation of the Wisconsin DOT and the Midwest Regional University Transportation Center at the University of Wisconsin-Madison. The workshop was attended by federal, state, and local officials from transportation, emergency management, public health, public safety, and agriculture agencies. The workshop was held to obtain information from these officials regarding:

- The roles expected of transportation agencies during response to biohazard emergencies,
- The current capability of transportation agencies to perform those roles, and
- The potential for ITS technologies to assist agencies in performing those roles.

The first two project components generated insights that were used to develop an *Operational Concept* for transportation operations in biohazard situations. The *Operational Concept* describes the emergency management framework and how state and local transportation agencies fit into that framework. It then outlines the activities that a transportation agency could be asked to perform before, during, or after a biohazard event. This document can serve as a guide and template for state and local transportation agencies as they prepare their own operational concept for biohazard situations.

The *Technology Application Plan* builds off of the *Operational Concept*. The plan assesses the activities identified by the *Operational Concept* and proposes communications and Intelligent Transportation Systems (ITS) technologies that can assist state and local transportation agencies in carrying out those activities. The plan then lays out functional requirements and specifications for these technologies that will ensure that the technologies perform their expected role during a biohazard event. Finally, the plan recommends a set of technologies that would be especially useful during a biohazard situation.

The *Learning Tool* synthesizes the information and findings from the previous tasks and presents them in an engaging format suitable for distribution via CD-ROM or the FHWA website. This tool provides a way for transportation professionals to learn about biohazard threats and the steps transportation agencies can take to prevent, prepare for, respond to, and recover from biohazard incidents.



This ***Final Report*** consists of the products from the previous tasks as well as a set of recommended practices and an identification of additional research needs.