

Hazardous Materials and Terrorist Incident Planning Curriculum Guidelines

Commodity Flow Study

Planning
Training
Considerations

Planning
Orientation

Planning
Essentials

**Commodity
Flow Study**

Hazard Analysis
and Threat
Assessment

Capability
Assessment

Planning for
Protective
Actions

Plan
Implementation
& Maintenance

Facility
Planning

Planning for
Public Education

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Additional Planning
Resources

Introduction

Most communities, whether large or small, are origins, destinations, or through-routes for hazardous materials transportation. In order to plan and prepare for possible hazardous materials and terrorist transportation incidents, planners need basic data on the types and quantities of chemicals transported through the jurisdiction. The process of acquiring and analyzing this information, referred to here as a commodity flow study, is one of the first steps in preparing a community's integrated hazardous materials emergency plan. Results can be used to analyze current traffic patterns, focus planning efforts on existing needs, and reduce the potential for incidents to occur.

This training specialty area builds on *Planning Essentials* competencies to provide participants with the knowledge and skills they need to prepare a simple commodity flow study. Content areas covered by training should include the purpose and benefits of conducting commodity flow studies, an overview of appropriate data collection methods, generic steps in the process, related statistical concepts, and sources of additional assistance and information. Where appropriate, more specific models and procedures followed by the jurisdiction can be introduced. Applications and limitations of the study results in the planning process should also be reviewed.

Training Audience

Potential training audiences include all participants in the planning process that have been assigned responsibility for conducting a commodity flow study that exceeds the competencies covered under *Planning Essentials*. Possible audience members include:

- Community planning team members
- Facility planners and managers
- Response agency representatives
- Prevention personnel, transport inspectors
- Technical experts and consultants

Prerequisites or Presumed Prior Knowledge/Skills of Students

Students are assumed to possess *Planning Orientation* and *Planning Essentials* levels of competency in hazards analysis and related skills. Consideration should be given to students that have a defined responsibility for conducting a commodity flow study for a jurisdiction as a regular part of their job.

Typical Program Format

Seminar-type instructor-led program, approximately one to two days in length. Longer programs may be appropriate where more complex commodity flow studies are planned or when actual field surveys are included as training activities.

Methodology and Training Delivery Considerations

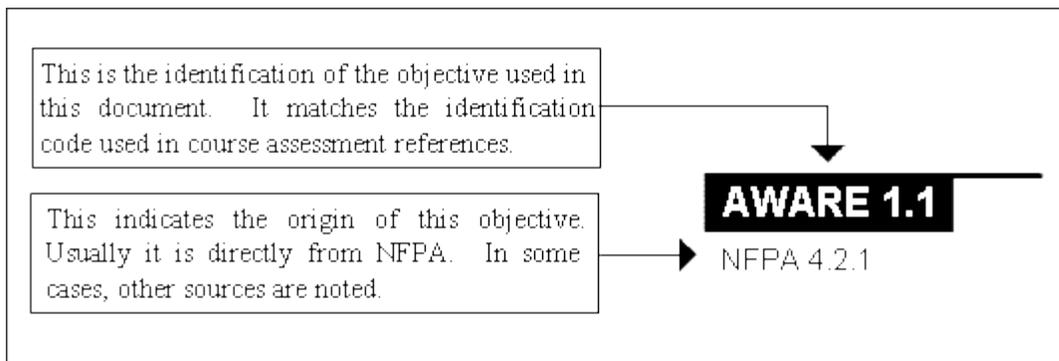
Training should provide students with knowledge of the steps and components of a generic commodity flow study, and skill in performing various data collection methods. Trainees must understand the significance and application of commodity flow study information, and develop the ability to recognize and develop useful and meaningful data on which to base subsequent emergency operations and prevention programmatic and organizational decisions.

Much of the subject matter in this specialty area can be introduced through self-study, but training should include formal classroom instruction with time spent in individual and small group work. Activities should focus on skill development in identifying, collecting, and interpreting various types of commodity flow data, and in using this information in the planning process. Limited field surveys, reviews of shipping papers, role plays of driver interviews, etc. are particularly appropriate for promoting learning. Realistic local situations and scenarios should be used as the basis for activities, when possible.

Integration of the information learned by trainees can be demonstrated in a post-class activity involving the development of a limited commodity flow study based on data from the jurisdiction or scenarios provided by the instructor. For this reason, members of jurisdictional planning teams should be trained together, if possible, using the planned study as the basis for activities. Content testing is appropriate for demonstrating knowledge of the steps involved in a commodity flow study and methods of data collection.

Recommended Training Objectives

Objective Identification Legend



Commodity Flow Study 1.

CFS - 1.1.	Given a jurisdiction with the need to develop an integrated hazardous materials emergency plan, describe the purpose and benefits of conducting a commodity flow study, including appropriate applications of the results in planning.
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Planning Training Considerations
Planning Orientation
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Commodity Flow Study
Hazard Analysis and Threat Assessment
Capability Assessment
Planning for Protective Actions
Plan Implementation & Maintenance
Facility Planning
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Appendix: Additional Planning Resources

CFS - 1.1.1.

Describe the purpose and benefits of conducting a commodity flow study in hazardous materials planning.

CFS - 1.1.2.

Describe appropriate applications of the results of commodity flow studies in hazardous materials planning.

CFS - 1.2.

Given an assignment to conduct a commodity flow study for a jurisdiction, identify major steps in the process, such as the following:

- Identify the specific purpose(s) of the study.
- Review baseline information appropriate to the study.
- Design the study.
- Conduct field surveys.
- Analyze the results.
- Apply the results to the study purpose and objectives.

CFS - 1.3.

Given an assignment to conduct a commodity flow study for a jurisdiction, identify the specific purpose(s) of the study.

CFS - 1.3.1.

Assess the emergency management needs and other possible applications and uses for hazardous materials transportation data in the jurisdiction.

CFS - 1.3.2.

Identify the specific types of hazardous materials transportation data needed for the study.

CFS - 1.4.

Given the specific purpose(s) of a commodity flow study for a jurisdiction, demonstrate the ability to identify and review existing baseline information appropriate to the study.

CFS - 1.4.1.

Describe common sources of existing information that can be used to identify roads available to hazardous materials transportation.

CFS - 1.4.2.

Describe common sources of existing information on vehicle traffic patterns, chemical flows, and accident histories in the jurisdiction.

CFS - 1.5.

Given the specific purpose(s) and baseline data of a commodity flow study for a jurisdiction, demonstrate the ability to design a field investigation appropriate to the study.

CFS - 1.5.1.

Compare baseline information with project goals to determine whether a field investigation should be undertaken.

CFS - 1.5.2.	Identify options and considerations for determining survey locations.	Planning Training Considerations
CFS - 1.5.3.	Identify options and considerations for determining survey times and repetitions.	Planning Orientation
CFS - 1.5.4.	Identify the personnel and other resource requirements associated with selected field survey methods.	Planning Essentials
CFS - 1.6.	Given an area to be surveyed and the commodity flow study design for a jurisdiction, demonstrate the ability to implement common data collection methods.	Commodity Flow Study
CFS - 1.6.1.	Describe common methods and demonstrate the appropriate use of placard surveys.	Hazard Analysis and Threat Assessment
CFS - 1.6.2.	Describe common methods and demonstrate the appropriate use of shipping papers reviews.	Capability Assessment
CFS - 1.6.3.	Describe common methods and demonstrate the appropriate use of driver interviews.	Planning for Protective Actions
CFS - 1.6.4.	Describe common methods and demonstrate the appropriate use of facility surveys.	Plan Implementation & Maintenance
CFS - 1.6.5.	Describe the advantages and disadvantages of various data recording procedures that can be used in field surveys.	Facility Planning
CFS - 1.7.	Given hazardous materials transportation data for a jurisdiction, demonstrate the ability to apply appropriate sampling techniques to the collection and interpretation of the data.	Planning for Public Education
CFS - 1.7.1.	Describe key statistical concepts (e.g., Poisson distribution, expected and observed value, confidence intervals) relevant to traffic flow analysis.	Appendix: Additional Planning Resources
CFS - 1.7.2.	Make appropriate conclusions and inferences based on sample characteristics and collected data.	

CFS - 1.8.

Given hazardous materials transportation data and analyses for a jurisdiction, demonstrate the ability to apply the results in planning.

CFS - 1.8.1.

Map or otherwise display and report the results of the commodity flow study to obtain a clear picture of hazardous materials transportation in the jurisdiction.

CFS - 1.8.2.

Compare the study results and project goals to identify action items and a schedule for implementing them through the jurisdiction's plan development and implementation process.