



HAZARDS ANALYSIS

ON THE MOVE



Between 1987 and 1989, U.S. Department of Transportation (DOT) officials reported almost 60,000 transportation incidents that resulted in an unintentional release of hazardous materials. How can you assess the transportation risks facing your community? Is your community prepared to face these risks?

The purpose of this document is to help you as local planners (e.g., tribal and state LEPCs, and other planners) and responders, develop a method to determine what hazardous materials are being transported through your community and the priority areas of

SARA Title III (EPCRA) and Conducting a Commodity Flow Study

risk that warrant further analysis and study. By doing so, you can assess and improve existing strategies to minimize risk (both public and private) and the response capabilities within your jurisdiction.

In the Emergency Planning and Community Right-to-Know Act (EPCRA), Congress recognized the risk to communities posed by the transportation of hazardous materials and required that emergency response plans developed by LEPCs identify the "routes likely to be used for the transportation of substances on the list of extremely hazardous substances...."

One way to approach this requirement, and to address all of the hazardous materials being transported through your community, is to conduct a hazardous materials commodity flow study (CFS). A CFS is an assessment of the types and volumes of materials moving through your community. For some communities, especially those in rural areas, transportation may pose the only hazardous materials risk. In light of the number of accidents that occur (see chart at left), identifying and understanding transportation-related risks are critical components of emergency preparedness and prevention. The goal of the CFS is to use the information collected to increase your preparedness, prevention, and response capabilities.

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Number of Hazmat Accidents by Transportation Mode (1981-1989)

Mode of Transportation	Number of Incidents	Associated Deaths*	Associated Injuries*
Highway	48,907	113	1,762
Rail	8,620	0	611
Air	1,177	0	127
Other (includes freight forwarders and water transportation)	1,108	1	91
TOTAL	59,812	114	2,611

* Directly attributable to the presence of hazardous materials.

Source: U. S. DOT statistics on incidents reported as required by the Hazardous Materials Transportation Act of 1975.

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What are the objectives.

A CFS is the hazards identification step of transportation hazards analysis, described in *Technical Guidance for Hazards Analysis*, an EPA, DOT, FEMA publication (see page 7). A CFS is the collection of existing and

new data on transportation patterns in your jurisdiction. Combined with accident histories, geography, and other local conditions, a CFS will help you characterize hazardous materials transport, identify locations of risk and other vulnerable areas, and formulate emergency planning, prevention, and response measures. Some specific objectives of performing the CFS are:

- Identify major hazardous materials traffic corridors:
- Characterize types of substances, shipment frequencies, container types, and container capacities;
- Specify the location, length, and nature of priority highways, rail

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Lessons Learned

The **National Institute for Chemical Studies (NICS)** is in the process of conducting a CFS as part of a comprehensive hazards analysis in the Kanawha Valley region of West Virginia—an area with a very high concentration of chemical facilities. NICS is characterizing hazardous materials transportation and the potential risk it presents in order to improve emergency response plans in the vulnerable areas of the region. A specific goal of the NICS study is to develop lessons learned for other communities that might conduct a CFS. How can NICS' experience help your CFS? Although the study is not yet complete, several helpful suggestions can be made from the work completed to date. There are several points to keep in mind.

The effort put into a CFS should match the community's goals and its resources. In some cases, a great deal of detail or expense may not be needed for useful emergency planning. NICS' CFS indicates that there are many different types of hazardous materials being transported through the study area. In other communities, hazardous materials transportation may be dominated by a few specific classes of chemicals, such as flammables or corrosive liquids. In these cases, focused hazards analysis and emergency planning efforts may be possible by addressing each of these classes, rather than all of the individual chemicals in each class. A CFS, however, could show that specific hazardous materials, such as spent nuclear rods or military munitions, are transported infrequently through the community, but pose enough hazard to warrant special attention from emergency planners. Other helpful hints from the NICS study include:

- ◇ Hazardous materials transportation can vary by the time of day and the day of the week. Be sure to account for this when planning field surveys.
- ◇ Questionnaires mailed to facilities will often require follow-up telephone calls for clarification and to improve the rate of response.
- ◇ A CFS that includes many field observation efforts, such as placard or waybill surveys; can generate large quantities of data -- computerized data management may be needed or you may wish to scale back the focus of your study.
- ◇ Effective training and supervision of field survey personnel will improve the quality of the observations and data collected.
- ◇ Shipping papers are often in many different formats. Decide what data you will need and develop a standardized table for entering the information.
- ◇ Police and other emergency responders can identify highways and intersections where accidents have occurred in the past to guide data gathering and hazards analysis efforts.
- ◇ Incorporate the results of other data gathering efforts. For example, total traffic volume figures developed by transportation agencies can be used to estimate the percentage of vehicles carrying hazardous materials over a given route. These figures can help you address planning issues such as the potential exposure to drivers should a hazmat accident occur during peak travel times.
- ◇ Access existing databases and inventories, such as those developed by railroad companies and district offices of the Army Corps of Engineers.

A final guidance document based on the NICS study will be developed upon completion. Contact Dr. Jan Taylor or Dr. Paul Hill at (304) 346-6264 for more information.

SARA TITLE III (EPCRA) AND CONDUCTING A COMMODITY FLOW STUDY

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tracks, and other routes (paying special attention to those that pass through or along densely populated or sensitive environmental areas);

- Characterize any local terminals or other gathering areas for hazardous materials transport vehicles such as truck stops and weigh stations; and
- Compile data on any travel and route restrictions in effect for the region.

Many communities have conducted CFSs that identify the types, amounts,

and routes of hazardous materials being transported in and through their region. You can learn from their experiences, several of which are discussed throughout this document.

You will see that conducting a CFS involves some methods different from those used for hazards identification at your fixed facilities. Instead of referring to information on conventional facility reports such as Material Safety Data Sheets or Tier II Reports, you will need to collect data that may or may not be readily available from public or private sources. You must account for different modes of transportation (e.g., railways, highways, pipelines, waterways), and develop an estimate of

the types and amounts of hazardous materials being transported in and through your region.

Our discussion begins by presenting tips for getting organized, looks at methods for gathering the necessary data, and then examines the ways in which you can apply the results of a CFS. Finally, we consider some technological and legislative changes that may be of help to your transportation planning efforts. ■



A New Funding Opportunity: Utilizing HMTA

Section 17 of the Hazardous Materials Transportation Act (HMTA) provides funds to states to enhance the consideration of transportation-related risks in current chemical emergency planning efforts, and to support the implementation of EPCRA. (There is also an HMTA training grants program, available to both states and tribes.) Conducting a commodity flow study is one of the activities identified by Congress as eligible for funding under the HMTA planning grants program, and could lead to other HMTA activities such as assessing local response capabilities, improving the comprehensive emergency plans required under EPCRA, and assessing the need for regional hazmat teams.

LEPCs should contact the agency selected by their Governor as the “designated agency” for implementation of the HMTA program to learn more about developing a proposal for receiving grant funds under the new law. Call the U.S. DOT HMTA Grants Manager at (202) 366-0001 if you are unsure as to which state agency has been selected to head the effort. Because of HMTA, the number of commodity flow studies conducted will increase. Keep an eye out for other communities in your area who receive these funds so that you can learn from their experiences as well.

Getting Organized

Who needs to be involved?

As an LEPC, you may wish to form a separate transportation hazards advisory committee to lead the effort, or the LEPC as a whole may take the lead role. Whether or not you are able to form a committee that meets regularly, the LEPC should identify state and local professionals to assist in identifying sources of information and to review drafts.

To cultivate broad-based support, an advisory committee should reflect local conditions and include representatives from the LEPC, local planning

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Getting Organized

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councils, the public works department the State Department of Transportation, the U.S. Coast Guard, airport and port authorities, industry, police and fire departments, and the SERC.

Once the advisory committee has been formed, it must formulate a workplan for the study itself. In developing this workplan, the advisory committee should take the time to determine specific objectives, what data are available, and what data are needed in order to accomplish the goals of the CFS quickly and efficiently. This will give the CFS a clear focus and give the committee a better idea of what resources will be necessary to complete the study. **Throughout this document different methods are suggested. You should evaluate your needs against available resources, and modify your approach accordingly.**

Don't re-invent the wheel!

Several agencies at the national and state level compile some of the data that you will need. The advisory committee should identify these agencies and determine what data already exist. This is why having a broad-based advisory committee is so important. Everyone, especially the state DOT representative, will have access to different and valuable information. Industry associations such as the Chemical Manufacturers Association, the Association of American Railroads, the American

Trucking Association, and others may have already collected and analyzed additional data.

Nearby municipalities may have already completed a CFS or may want to join forces and combine resources. For example, LEPC representatives from Alexandria, Virginia, serve on a multi-jurisdictional task force that is an important forum for addressing resource-sharing issues and is developing a transportation hazards-based emergency response plan. The task force is devising a set of response procedures, but is also working to reduce the amount of hazardous materials transported through, and the number of accidents in, the region.

You can also integrate your CFS data collection efforts with other on-going data collection or inspection programs. Once again, Alexandria, Virginia, provides an example of effective inter-agency coordination in its policy of using fire department Title III Facility Data Sheets to highlight likely transportation routes for carriers of extremely hazardous substances. The LEPC incorporates this information on transportation routes and chemicals transported into its emergency planning process to better respond to transportation incidents.

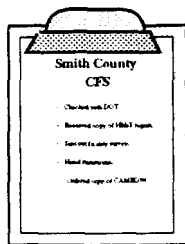
Recruiting outside help.

Using volunteer personnel, students, and local environmental groups can be a great cost and time saver for the LEPC. The Hancock County, Ohio, LEPC took advantage of an innovative program in environmental and hazardous materials management at a

nearby university to obtain qualified volunteers for its study on hazardous materials transportation on the county's highways. Following initial training sessions, a total of 37 students from the University of Findlay's "Hazmat Club" were assigned survey times and locations to conduct placard surveys. Their assistance proved to be an important time saver for the LEPC.

A prison inmate volunteering for the Butler County, Kansas, health office, developed and implemented the county's emergency response plan, which included identification of the transportation-related hazards in the county. He spent over 800 hours working on the plan and aiding other counties in developing their plans. He recommends the use not only of inmates, but also senior citizens, who possess the necessary time and knowledge of the region to assist in CFS efforts. Industry is another (perhaps more traditional) potential resource - local industry might be persuaded to contribute personnel and equipment to the study. ●

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Gathering the Data

What 's the big picture ?

Begin by identifying the major hazardous materials transportation patterns: determine the general types of hazardous materials moving throughout the community, how they are moved, and when they are moved. **A CFS doesn't have to provide a lot of detail to be useful - given budget constraints, collecting exhaustive data on every chemical and every mode of transportation will be nearly impossible to accomplish.**

Complicated risk analyses using intricate mathematical formulas are probably not necessary. Rough estimates of hazardous materials traffic can provide valuable information in determining where risk lies.

Priority risk areas can be found at the points of origin or destination of hazardous materials, as well as at intermediate locations. For most areas, data for one month, or even one week, may prove sufficient to project the year-round flow of hazardous materials. You can focus on general classes of chemicals (e.g., flammables, corrosives), unless you know that large quantities of specific chemicals are manufactured or stored in the area.

Some areas will experience seasonal changes (e.g., a rural community may experience an increased flow of fertilizers and pesticides during a portion of the year) that should be evaluated separately from typical flows. Seasonal patterns may be easy to determine for local industry, but keep in mind that such patterns will be extremely difficult to track for interstate traffic. You should weigh the costs and benefits of studying seasonal transportation patterns in your area.

Your next step.

Reviewing all of your facilities' **Tier II reports** and the amount of hazardous chemicals they store, handle, or use annually will give you an idea of the quantity and type of materials transported through your jurisdiction. A fixed facility representative may be able to provide you with a rough estimate of the types and quantities of materials transported through these facilities, or you may decide to prepare a facility questionnaire.

NICS prepared a comprehensive fixed facility survey as a starting point for its hazardous materials transportation survey. NICS asked fixed facilities about specific trends in the amount of hazardous chemicals shipped over the past few years, the exact mode of transport, and the usual hours and days of the week for shipping and receiving. Facilities were asked to list the major carriers for each chemical and the most frequent origins and destinations of loads. This information provided data on the actual amounts and types of

hazardous materials shipped from or received by facilities in the region. It provided valuable information on the general routes utilized by these facilities and yielded transportation data which could be compared to data obtained by the field surveys. **See page 6 for the specific steps taken by the Taylor County, Wisconsin LEPC.**

There are **transportation depots** that are not necessarily captured under the fixed facility definition in EPCRA, yet hazardous materials are channeled through them every day. Make sure that your CFS includes truck terminals, seaports, airports and rail yards. Such depots may also warrant study in the CFS because of the potentially diverse types and amounts of substances that are distributed from them. Many of these facilities voluntarily participate in the planning efforts of the communities in which they are located. If you feel more formal mechanisms are needed, however, there are provisions of EPCRA that can help.

Section 302(b)(2) of EPCRA authorizes the Governor and/or the SERC to designate "additional facilities which shall be subject to the requirements of [section 302]...."

Railyards, sea ports, and airports are examples of transportation depots that can be included under section 302. You should review your state and local ordinances for provisions (similar to EPCRA section 303(d)(3)) that provide access to the information you need to adequately address the transportation-related risks facing your community.

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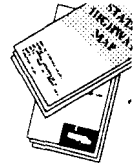
HAZARDS ANALYSIS ON THE MOVE

On a Shoestring Budget — Collecting the Data

Taylor County, Wisconsin, is a primarily rural community, with a small city and several villages. There are three state highways, one railway, one small airport, and two pipelines within the county. The Taylor County, Wisconsin LEPC conducted a CFS and transportation hazards analysis using the steps outlined below. You might find them useful when setting out to collect data for your community. As Taylor County learned, conducting a CFS is a time-consuming process, but certainly manageable once priorities have been set. By working on the project as time allowed, Taylor County was able to keep the total costs down. Over the course of twelve months, two people worked a total of approximately 450 - 500 man hours. For more information on the Taylor county study, contact Mr. Donald Albers, Community Emergency Coordinator, at (715) 748-3503.

1 Identify HAZMAT Routes

Taylor County started by pulling out local maps to determine which routes warranted study. You can use state highway maps, county aeronautical charts, and municipal street maps to name a few. Remember that pipelines might not appear on a map, but need to be included in your CFS. Taylor County contacted pipeline companies directly, after obtaining contact information from the County Emergency Government Office and the State Office for Emergency Preparedness.



2 Determine What HAZMATs Are Carried on Each of These Routes

Taylor County used the following methods to determine hazmat traffic volume and flow.

Route:

HIGHWAYS



Method of Determining HAZMATs:

- ◇ Sent questionnaires/surveys to trucking companies, weigh stations, and known hazmat suppliers/users;
- ◇ Determined data collection points (priority/high-risk points); and
- ◇ Performed traffic counts (placard survey).

RAILROADS



- ◇ Contacted the local representative from railway companies;
- ◇ Researched waybills and manifests; and
- ◇ Contacted the District Office of the Federal Railroad Administration in your area.

PIPELINES



- ◇ Contacted local pipeline companies; and
- ◇ Contacted local utility commission for permitting records and "digsafe" programs.

AIRPORTS



- ◇ Contacted airport managers to determine which airlines carry hazmats; and
- ◇ Contacted local representatives for each airline identified.

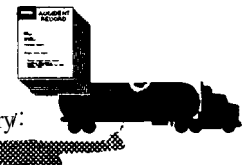
There are no navigable waters within Taylor County. The LEPC suggests, however, that you contact shipping companies and the district offices of the U.S. Coast Guard and the Army Corps of Engineers to obtain information on the hazardous materials transported through your jurisdiction via waterways. (Check your phone book for local listings.)

3 Compile Accident Records

Finally, Taylor County examined accident histories to identify any recurring problems or severe risks in the area. The following agencies can assist you in collecting information on your area's accident history:

State Department of Transportation
 Police Department
 Local hospitals and physicians
 News media

State Emergency Management Agency
 Public Health Department
 Local industry



HMIS reports can be obtained by contacting DOT's Research and Special Programs Administration (see page 11 for contact information).

Want More Information?

The following materials can give you technical information on conducting commodity flow studies and hazards analysis, as well as some background on transportation issues.



Community Teamwork: Working Together to Promote Hazardous Materials Transportation Safety provides ideas on how to develop a hazardous materials transportation safety program in the most economical manner. Examples are presented of how various state and local agencies are sharing the cost of providing personnel, equipment, and materials. In addition ways in which private industry have supported state/local safety programs are illustrated. Publications and other sources of information are also identified. Published by the U.S. Department of Transportation (DOT), free copies of *Community Teamwork* may be obtained by calling the EPCRA Hotline at (800) 535-0202 / FAX: 703-412-3333. The Hotline is staffed Monday through Friday, 8:30 a.m. to 7:30 p.m. EST.



The *1990 Emergency Response Guidebook* was developed by DOT for use by first responders such as firefighters and police officers. It is a guide for initial action when called to handle incidents involving hazardous materials. Hundreds of chemicals are cross-referenced with the specific hazards they pose to human health, and the steps to take in case of spills, leaks, fires, or explosions. You can obtain a free copy of the Guidebook by calling (800) PLAN-FOR. In Illinois, call (800) 367-9592.



The *Successful Practices in Title III Implementation* series, published by EPA's Chemical Emergency Preparedness and Prevention Office, describes innovative projects undertaken by SERCs and LEPCs across the country. Issue #8, October 1991, included the first subject index of the series, to which local planners can refer in order to find projects undertaken on hazards analysis, transportation-related risk, and other important issues. Each profile contains the names of individuals who may be contacted for more information on the efforts described. Contact the EPCRA Hotline at (800) 535-0202 / FAX: 703-412-3333 to obtain free copies of *Successful Practices* bulletins.



Transportation Community Awareness & Emergency Response (TRANSCAER® Guidance Manual is part of an inter-industry program to assist with the planning efforts for transportation emergencies involving hazardous materials. Integrating industry and LEPC efforts, the manual outlines the processes to evaluate the current status of emergency planning within a community. Suggestions are provided to further improve the planning process. For more information on the TRANSCAER Program contact the Chemical Manufacturers Association at 2501 M Street, NW, Washington, DC 20037, or at (202) 887-1100.



Technical Guidance for Hazards Analysis ("Green Book"), published by EPA, DOT, and FEMA, describes a methodology and provides equations and tables for screening possible airborne releases of extremely hazardous substances based on accident scenarios developed by local planners. The Green Book is a tool for emergency preparedness and is not designed for direct use in a "real time" response situation. Contact the EPCRA Hotline at (800) 535-0202 / FAX: 703-412-3333 to obtain a free copy.



CAMEO™ - Computer Aided Management of Emergency Operations is a computer program that has the capability to manage transportation data, estimate vulnerable zones, and compile risk analysis results. For more information on CAMEO, contact the EPCRA Hotline at (800) 535-0202 / FAX: 703-412-3333 or your regional EPA office (see page 11).



The *Handbook of Chemical Hazards Analysis Procedures* ("Brown Book"), published by FEMA, EPA, and DOT, addresses hazards analysis and introduces the Automated Resource for Chemical Hazard Incident Evaluation (ARCHIE) computer software package. More specifically, chapters 10 and 11 offer extensive information to aid you in assessing rail, highway, water, and pipeline transportation. The Brown Book tells you who to contact and what to look for. You can obtain a free copy of the Brown Book by writing the FEMA Publications Office, 500 C Street, SW, Washington, DC 20472, or by contacting the EPCRA Hotline at (800) 535-0202 / FAX: 703-412-3333.



The Institute of Transportation Engineers' (ITE) *Transportation Planning Handbook* is a handy reference for planners involved in the broader issues of transportation planning and traffic engineering. The Handbook includes guidance concerning: transportation planning studies, environmental and energy considerations, regulatory and legal considerations, transportation systems management, and several other transportation topics. ITE is located at Suite 410, 525 School Street, SW, Washington, DC 20024-2797. Call ITE at (202) 554-8050 for more information on ordering the Handbook.

HAZARDS ANALYSTS ON THE MOVE

Gathering the Data

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Other facilities that can generate substantial highway hazardous materials traffic include oil-fired, coal, and nuclear power plants; large manufacturing facilities; agricultural warehouses; waste management companies; and public facilities. Keep in mind that the lack of standardized shipping manifests, not to mention receiving them in different languages+ will complicate your analysis.

Your area's **accident history** is another key starting point for information. Federal and state agencies compile accident data that can be used to get a sense of what and where the priority points are and what kind of accidents your community typically faces. You can use this information, along with your knowledge of local conditions, to help identify high-risk areas.

The U.S. Department of Transportation Hazardous Materials Information System (HMIS) contains a variety of data regarding the transportation of hazardous materials by air, highway, rail, and water. HMIS also contains a data base on shipping routes for high level radioactive materials that may be of interest in assessing your transportation-related hazards. The HMIS Incident Report Data Base is composed of carrier-reported accidental release data from 1971 to the present, as required by the Code of Federal Regulations (49 CFR Part 171). The incident data include the date of incident, chemical(s) involved, quantity, location and land-use, cause

of release, mode of transportation, and other information. The information box on page 11 lists the DOT address and telephone number for receiving information on HMIS reports.

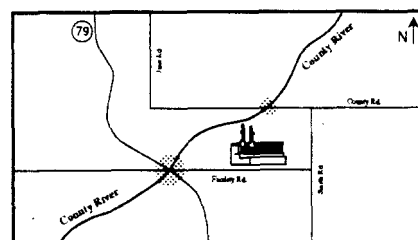
Addressing Your Additional Data Needs

Once you have tracked down existing information, how do you obtain the data that are missing? Again, assembling the proper team is crucial. A data collection team may be composed of members of the advisory committee; or, if resources allow, it might be wise to develop an "outside" team. Whether it is made up of private organizations, volunteers from environmental groups and local universities, or contractors, the data collection team should receive a clear mission, adequate training, a timetable, and responsibilities from the advisory committee.

Commodity flow studies commonly involve a road-side placard survey. These surveys identify *what* materials are being transported and also give you an idea of the *quantity* involved. Usually, these surveys last for a few days or weeks - observers note the number of trucks that pass by, their placards, the time, and the type of container used. Although a great deal of effort may be needed to make such a survey statistically accurate, even a modest program of field observation can form a solid foundation for conducting a transportation hazards analysis.

The table on page 9 describes this and other collection methods that have

been used in the past by communities identifying transportation-related risk. These methods can be adapted to local conditions and specific modes of transportation. The resources identified on page 7 can help you determine which methods are appropriate for your study. Whatever method you choose, the advisory committee should organize the raw data that have been collected into a form that is conducive to continuing analysis. ●



What to Do With the Results

Improving response; preventing accidents

Many communities have conducted hazards analyses to develop and revise emergency response plans based on the specific hazards found at fixed facilities within their jurisdiction. The hazards analysis process can also be applied to transportation-related risk. *The Technical Guidance for Hazards Analysis* ("Green Book") describes the hazards analysis process in detail. It can be summarized in three basic steps:

- **Hazards identification** pinpoints the location, quantity, storage conditions, and the specific

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What to Do With the Results (continued from previous page)

hazards posed by the hazardous chemicals transported, manufactured, stored, processed, and used in the community.

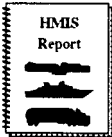

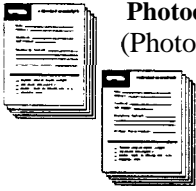
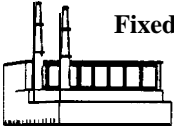
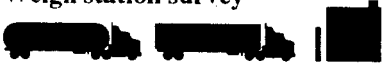
- **Vulnerability analysis** locates geographical areas and the people, property, services, and natural areas that may be affected by a release.

- **Risk analysis** provides a basis for LEPCs to rank specific release scenarios or locations based on the likelihood and severity of the release. The hazards analysis method described in the *Handbook of Chemical Hazard Analysis Procedures* ("Brown Book") separates this step into two steps, consequence analysis and risk analysis. The additional step is simply an elaboration of the process explained in the Green Book.

A commodity flow study is, in effect, the hazards identification step of the hazards analysis process conducted for transportation-related hazards. Once the CFS has been completed, you will have a good sense of what major categories of hazardous materials are transported through your region and what the priority areas are - you will have identified the transportation hazards facing your community. Plotting the information on a map can

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Survey Methods

METHOD	ADVANTAGES	DISADVANTAGES
 Review and analyze existing data	Inexpensive, shows major highway, rail, air, and water routes. Good starting point.	There is no single source for all existing data. Allow time for integrating various electronic formats.
 Placard survey	Provides approximate counts for trucks on major highways and rail lines at reasonable cost. Can be combined with existing data to estimate proportion of trucks with hazardous materials on major highways.	Limited number of roads/rail lines can be covered.
 Photocopy survey (Photocopying shipping manifests of carriers passing through toll booths, etc.)	Can provide detailed data on volume and nature of hazardous materials shipped by truck.	Shipping papers are not standardized; requires a lengthy review process. Cost may be prohibitive.
 Fixed facility survey	Good data on routing, volume, and nature of hazardous materials.	Only covers shipments originating or terminating locally. Allow for lengthy data review sessions.
 Weigh station survey	Good data on routing, volume, and nature of hazardous materials.	Only covers a portion of shipments on selected highways; must be supplemented to obtain local shipments.

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What to Do With the Results

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provide a picture of where the hazardous materials are and which are the major routes of concern for planning purposes.

You can use the vulnerability and risk analysis steps described in the Green Book to translate the results of the CFS into recommendations for revising your emergency response plan and determining your community's specific preparedness, prevention, and response needs. This evaluation will help answer important planning questions such as:

- ◇ *Just how vulnerable is your community to these risks?*
- ◇ *How can risks be reduced?*
- ◇ *How can accidents be prevented?*
- ◇ *What special populations (e.g., schools, hospitals) are located near these priority routes?*
- ◇ *Are any of these routes marked by significant congestion at certain times of the day?*
- ◇ *What is the response time of the closest hazardous materials team?*
- ◇ *How accessible is the area to emergency vehicles?*
- ◇ *What is a realistic scenario, given the risks and probabilities?*

Once the remaining steps in the hazards analysis process have been

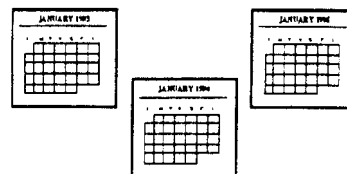
completed, you can then turn to assessing your level of preparedness and revising your emergency response plan to reflect the highest transportation-related risks. Depending on your circumstances, you may not be able to tailor your emergency response plan to focus on specific chemicals or routes.

Just as with fixed facility planning, budget constraints come into play as the number of chemicals and hazards increase. It is important, however, that your plan addresses the risks that you have identified to the best of your ability. For example, if you discovered that the local railroad terminal stores hazardous materials cars in special holding areas, obtain a map of the facility, mark the holding areas, and attach it to your emergency response plan: then work with the railyard to reduce the risks. Another example is segregating incompatible cargoes and establishing buffer zones between holding areas and nearby communities.

After developing a realistic picture of the hazards that your community faces, you can begin to **re-evaluate your community's prevention strategies**. Are current measures appropriate? Would traffic control on priority routes make a difference? Do accident records suggest a need for driver safety training? Would commodity flow restrictions during severe weather alerts make sense? Be sure to identify all of your community's prevention concerns so you can ask the "right" questions.

The CFS may also point to a need for additional resources to increase the

community's level of preparedness (e.g., training, equipment, and on-going planning). Again, it is most important to have general response capabilities, rather than trying to address every specific chemical and/or transport route. ●



Looking Ahead

Transportation-related risks are continually changing, and to meet the challenges that these hazards present, it is important to look forward. With construction of new highways, changes in the composition of local industry, and the enactment of new federal, state, and local laws, there may be a change in the flow of hazardous shipments through your community. The commodity flow study should not "sit on a shelf;" it should be updated periodically and the community emergency response plan revised accordingly.

It is important to keep abreast of new tools (both technological and legislative) that are being developed and refined to address many of the problems you may be facing. Keeping these and other factors in mind will help you with long-term planning and future updates of the CFS and the overall emergency response plan. Let's look at a couple of these innovations and see how they might be applied to your needs.

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SARA TITLE III (EPCRA) AND CONDUCTING A COMMODITY FLOW STUDY

Looking Ahead

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Metropolitan Planning Organizations (MPOs)

Section 134 of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) calls for the designation of an MPO for each urbanized area of greater than 50,000 people. The primary responsibility of these MPOs is to conduct the transportation planning process for the area that it covers. This process will include developing transportation plans and programs to promote comprehensive solutions to regional problems.

MPOs represent a potentially invaluable resource for your LEPC when preparing a CFS. They will have data and expertise that will make your task easier, and they may even be able to provide access to equipment and techniques, such as transportation-specific Geographic Information Systems (GIS), that will simplify the work and enhance the form of your final product. Keep in mind that the MPOs will be working closely with state and local transportation authorities, so that they will likely have information for your area.

Intelligent Vehicle/Highway Systems (IVHS)

IVHS are a family of technologies that are presently being developed to improve transportation safety and efficiency. By bringing high-tech solutions in the form of advanced computers, sensors, and communication systems to some of the complex transportation problems that confront us, IVHS holds the promise of mitigating congestion, enhancing safety, promoting economic productivity, and minimizing environmental hazards.

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Contacts at the Federal Level

U.S. DEPARTMENT OF TRANSPORTATION

General Information
Research and Special Programs Administration (RSPA)
400 7th Street, SW
Washington, DC 20590
(202) 366-4474

HMIS Reports
Information Systems Manager
RSPA
400 7th Street, SW
Washington, DC 20590
(202) 366-4555

U.S. ENVIRONMENTAL PROTECTION AGENCY

General Information
Chemical Emergency Preparedness and Prevention Office (CEPPO) (OS-120)
401 M Street, SW
Washington, DC 20460
(202) 260-5338

To Order Documents
EPCRA Hotline
(800) 535-0202/ FAX: (703) 412-3333
Monday-Friday 8:30 a.m. - 730 p.m. EST

EPA Regions

EPA - Region 1
New England Regional Lab
60 Westview Street
Lexington, MA 02173
617-860-4301

EPA - Region 2
2890 Woodbridge Avenue
Edison, NJ 08837-3679
908-321-6620

EPA - Region 3
Oil & Title III Section
841 Chestnut Street
Philadelphia, PA 19107
215-597-5998

EPA - Region 4
345 Courtland Street, NE
Atlanta, GA 30365
404-347-1033

EPA - Region 5
77 West Jackson HSC-9J
Chicago, IL 60604-3590
312-353-1964

EPA - Region 6
Allied Bank Tower
1445 Ross Avenue
Dallas, TX 75202-2733
214-655-2270

EPA - Region 7
ARTX/TOPE/TSCS
726 Minnesota Avenue
Kansas City, KS 66101
913-551-7308

EPA - Region 8
One Denver Place
999 18th Street, Suite 500
Denver, CO 80202-2466
303-293- 1723

EPA - Region 9
75 Hawthorne Street (H-1-2)
San Francisco, CA 94105
415-744-2100

EPA - Region 10
1200 6th Avenue (HW-114)
Seattle, WA 98101
206-553-4349

HAZARDS ANALYSIS ON THE MOVE

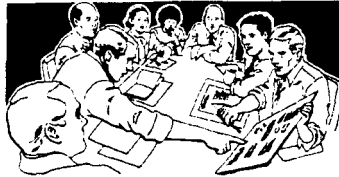
Looking Ahead

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"Great," you might say, "but how will this sci-fi stuff help me?" In the near future, trucks and trains traveling through your community could be carrying electronic equipment that identifies the cargo, keeps track of the vehicle's location, and even projects the intended route through your district. Shipments of hazardous materials could be tracked in "real-time" by a traffic control center, and sensors on the vehicle itself will be constantly monitoring the condition of the cargo.

Currently, there are over 20 operational programs in the U.S. testing various elements of IVHS, including those directly applicable to hazardous

materials transport. Remember that transportation planning is an evolving discipline, and that new tools are constantly being developed to help you safeguard your community. ●



In Summary...

Even though the transportation of hazardous materials presents substantial risks, these risks may seem difficult to quantify. The commodity flow study process should be tailored to meet your needs and available resources as you identify and address the particular hazards facing your community.

In this document, we have:

- ◇ Outlined the steps necessary to conduct a comprehensive commodity flow study:
- ◇ Explained how each of these steps relate to the emergency planning process:
- ◇ Pointed out some resources you may want to tap once you have decided to go ahead with a CFS; and
- ◇ Examined the technologies and issues that will play a role in identifying transportation hazards in the future.

Use this information as a guideline, but remember that there is no one right way of doing this job. The particulars of your community will ultimately determine your best course of action. ●



United States
Environmental Protection Agency
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(OS-120)
Washington, DC 20460

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