Report to Congress

on the

HAZARDOUS MATERIALS EMERGENCY PREPAREDNESS (HMEP) GRANTS PROGRAM

August 1998

U.S. Department
of Transportation

CONTENTS

EXECUTIVE SUMMARY

REPORTING REQUIREMENT. Section 119(k) of the Hazardous Materials Transportation Authorization Act of 1994,[1] now codified at 49 U.S.C. 5101 et seq, subsection 5116(k), requires the Secretary of Transportation to submit a report to Congress covering the training grants program administered by the Research and Special Programs Administration (RSPA) for fiscal years 1993-1996:

> "...Such report shall identify the ultimate recipients of training grants and include a detailed accounting of all grant expenditures by grant recipients, the number of persons trained under the grant programs, and an evaluation of the efficacy of training programs carried out."

Hazardous Materials Emergency Preparedness (HMEP) grant awards were first made in FY 1993. A report covering the first year's planning and training grants was submitted to Congress in March 1994. It addressed grants awarded to 47 States, the District of Columbia, 3 Territories and 7 Indian tribes. This report covers fiscal years 1993-1996 and references grants awarded to all 50 States, the District of Columbia, 5 Territories, and 23 Indian tribes.

GRANTS PROGRAM SCOPE. The Hazardous Materials Transportation Uniform Safety Act of 1990, the first major reauthorization of the 1974 Hazardous Materials Transportation Act, established the HMEP grants program. It was intended that these grants: enhance implementation of the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA)[2]; encourage a comprehensive approach to planning and training for emergency response situations; and increase State, local, Territorial, and Indian tribal effectiveness in safely and efficiently handling hazardous materials (hazmat) incidents.

HMEP grant awards are made for both planning and training; approximately 40 percent of funds are for planning and 60 percent for training. All grants go initially to the "grantee," i.e., one of the approximately eighty States, Territories, or Indian tribes who receive the funds. As provided by law, at least 75 percent of planning grant money must be passed through to Local Emergency Planning

---

[1] The Hazardous Materials Transportation Authorization Act of 1994 (Pub. L. 103-311, August 26, 1994) which reauthorized and amended in part the Hazardous Materials Transportation Act of 1974.

[2] EPCRA is intended to ensure that communities throughout the U.S. are informed of chemical hazards facing them. (*42 U.S.C. 11001 et seq*.) EPCRA led to the formation of State Emergency Response Commissions (SERCs) and more numerous Local Emergency Planning Committees (LEPCs). HMEP grant monies for planning are channeled to the governor-appointed grantee (usually the State's emergency management agency or the SERC itself) and through to the various LEPCs.

Committees (LEPCs), and 75 percent of training funds must benefit local firefighter, police, or other public responder groups. During the four fiscal years 1993-1996, approximately $26 million in total grant funds were awarded, with approximately $10 million for planning and approximately $16 million for training.

The HMEP grant program intentionally provides grantees considerable flexibility in choosing eligible funding activities, and in reporting their planning, training, and grant use data. This flexibility helps grantees focus on planning and training activities best suited to their needs, while minimizing resources spent on reporting. Since this successful allocation environment can result in non-comparable statistics among grantees, RSPA has in some cases extrapolated from reported data to estimate comparable statistics for all grantees.

The HMEP grant funds are appropriated by Congress, but they are offset through registration fees paid to the Department of Transportation (DOT) by shippers and carriers of certain hazardous materials. In FY 1996, approximately 26,000 shippers and carriers submitted a $250 registration fee to support the program.

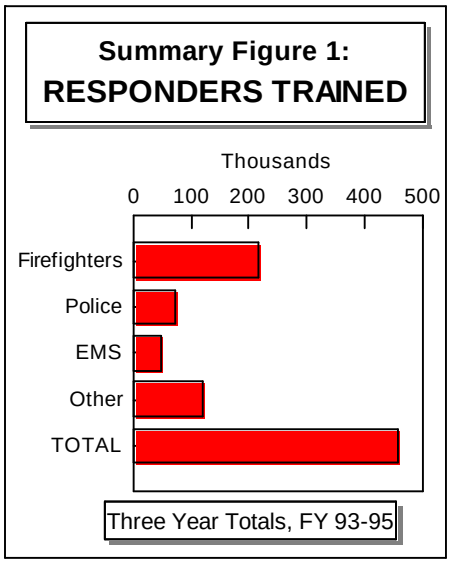
KEY PROGRAM PROVISIONS. **Government Agency Coordination--Federal Level**. A key element of the HMEP grants program is coordination with Federal partners with interests in emergency preparedness. Initially conducted through the HMEP Interagency Coordination Group (ICG), coordination is now accomplished through the National Response Team (NRT) Training/Curriculum Subcommittee. The Subcommittee, chaired by DOT, develops and updates the training curriculum used by grantees. Curriculum Guidelines and the list of assessed courses encourage grantees to draw upon nationally recognized manuals and information sources for their planning and training instruction.

DOT and its interagency partners also developed allocation formulas for awarding planning and training grants to States, Territories, and Indian tribes. The formulas contain both fixed and variable components. Three percent (3%) of all available funds are allocated to Indian tribes. To ensure minimum levels of funding even for grantees with small populations, a base amount (adjusted annually for registration fee collections) is distributed to each State and Territory. Remaining funds are allocated on the basis of risk-related factors that include population, highway miles, hazmat truck miles, and hazmat fixed facilities within a grantee's jurisdiction.

Government Agency Coordination--State and Local Level. At the State and local level, an important element of planning and training activities involves deciding the extent to which emergency response should be undertaken as a regional effort. If, for example, LEPCs choose to plan, train, and prepare emergency response on a coordinated regional basis, that decision shapes preparedness planning and training strategies. The HMEP program encourages grantees to determine the regional response strategies best suited to their purposes.

Technical Assistance. The HMEP program provides important technical assistance to grantees and final grant recipients. For example, in the planning area, emergency preparedness includes properly

assessing risks posed by the presence of hazardous materials, and the HMEP program provides guidance to grant recipients on how to conduct hazmat flow studies. In the training area, a comprehensive and updated course curriculum helps grantees design and select courses that maximize training effectiveness. Finally, various training, response, and technical manuals are made available to responders and LEPC members. DOT's Emergency Response Guidebook (ERG), in particular, is designed for responder use in actual incidents.



Target Audience. Approximately 3.2 million firefighters, police, and other responders comprise the nation's emergency response community training need. The majority of these individuals are volunteers. Each year, the HMEP grants program helps train an estimated 120,000-130,000 responders, with a total of approximately 456,000 having received training during fiscal years 1993-1995. Figures for 1996 and 1997 are also expected to show an estimated 120,000 - 130,000 responders trained in each of those years. Summary Figure 1 shows major categories of personnel trained.[3] Given turnover in the response community, plus the need to periodically retrain current members, efforts to expand responder coverage continue.

PROMISING SAFETY RESULTS. The numbers of prepared communities and trained response officials are two indications of HMEP grants program effectiveness. Another critical measure is how well local emergency response capability has actually improved. It is difficult to separate the results of Federally funded programs from those attributable to a community's overall planning, training, and financial efforts. Still, it is possible to identify situations where benefits such as reduced response time, injuries, or evacuation costs appear strongly related to the receipt and use of Federal grants. Various examples involving incidents from different parts of the country and different kinds of hazardous materials can be cited. One was a 1996 train derailment in Weyauwega, Wisconsin--a potentially disastrous incident in a community of 1,700 people who were forced to endure extended evacuation and delay costs but suffered no deaths or injuries. A bad situation was deftly managed and prevented from becoming worse. The report covers this and other examples.

CONTINUING DOT SUPPORT. Given the reach and success of the program to date and the unsatisfied hazmat emergency responder training need of over 3 million (Appendix F), the Department of Transportation has sought reauthorization to support the HMEP grants program. The Department continues to explore funding options that may narrow the gap between hazardous materials emergency preparedness needs and resources available at the Federal level.

---

[3] The 456,000 figure covers FY 93-95, including 200,000 responders trained in FY 93 due to the availability of two years' funding in that single year. Annual figures for the various training categories, by State, Territory and Indian tribe appear in Appendix C of this report.

I. OVERVIEW AND STRUCTURE OF PROGRAM

A. Program Requirements

The Hazardous Materials Transportation Uniform Safety Act of 1990 (HMTUSA)--the first major reauthorization of the 1974 Hazardous Materials Transportation Act--established the Hazardous Materials Emergency Preparedness (HMEP) grants program. The intent of the HMEP program is to provide a hazardous materials transportation perspective to communities implementing the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA)[4]; encourage a comprehensive approach to emergency planning and training for emergency response situations; and increase State, Territorial, and Indian tribal effectiveness in safely and efficiently handling hazardous materials incidents. To achieve the statutory goals, the law (49 U.S.C. §5115-16) requires the Secretary of Transportation to:

1. Develop and implement a grants program for States, Territories, and Indian tribes to conduct planning and training for emergency preparedness. This requirement includes establishment of procedures for receiving and reviewing grant applications and for allocating and administering grant funds;

2. Provide technical assistance to grantees in conjunction with monitoring emergency response planning and training;

3. Develop and periodically update a curriculum which consists of a list of courses available to train public sector emergency preparedness and response teams; and,

4. Coordinate certain program and curriculum development activities with other Federal agencies.

B. Interagency Coordination

Federal hazmat law (49 U.S.C. §5116(h)) requires the Department's Research and Special Programs Administration (RSPA) to maintain close coordination in implementing the grants program with certain other Federal agencies. These include the Federal Emergency Management Agency (FEMA) and its Emergency Management Institute (EMI); the Nuclear Regulatory Commission (NRC); the Environmental Protection Agency (EPA); the Department of Labor (DOL) and its Occupational Safety and Health Administration (OSHA); the Department of Energy (DOE); and the Department of Health and Human Services (HHS). Federal hazmat law (49 U.S.C. §5116(f)) also requires FEMA, in coordination with DOT, EPA, DOE, and the

[4] EPCRA was designed to ensure that communities throughout the U.S. were informed of chemical hazards facing them. (*42 U.S.C. 11001 et seq*.).

National Institute of Environmental Health Sciences (NIEHS) to monitor public sector emergency response planning and training for hazardous materials emergencies. The existing coordinating mechanisms of the National Response Team (NRT) and, for radioactive materials, the Federal Radiological Preparedness Coordinating Committee (FRPCC) are used in providing technical assistance.

At the beginning of the HMEP program, RSPA formed the Interagency Coordination Group (ICG) and continued close coordination with the other Federal agencies, the NRT, and the FRPCC. HMEP interagency coordination is now accomplished through the NRT Training/Curriculum Subcommittee, chaired by DOT.

Interagency coordination currently involves eight Federal agencies, and activities often include consultation with State and local organizations. This coordination has helped work products like the Curriculum Guidelines gain national recognition as a source document (Appendix A).

C. State and Local Agency Structure

EPCRA created the SERC and LEPC system to allow communities a role in preparing for and responding to hazmat emergencies. The SERC is the coordinating body for LEPCs within a State, and SERCs work with grantees in directing funds to individual LEPCs. Among other responsibilities, LEPCs prepare local emergency plans that include exercise plans, commodity flow study requirements, training requirements, and other vital hazmat response information.

D. Eligible Planning and Training Activities

1) Planning. The HMEP grants are made to States, Territories, and Indian tribes for both planning and training purposes. Eligible planning activities usually fall into one of several categories:

a) General Preparedness Planning. This includes developing, improving, and implementing transportation emergency plans under EPCRA. This activity, conducted by the LEPCs, encompasses such tasks as identifying official responsibility for incident notification, response command, and evacuation management, and updating the information on a regular basis. It also includes establishing the training requirements for local response officials.

b) Hazmat Flow Identification. Sound preparedness planning includes identifying the flow pattern of hazardous materials within and among States. This process familiarizes responders with the types and attendant risks of hazardous materials within their jurisdictions, as well as with the type, quantities, and traffic pattern of hazardous materials transported into, out of, and through a given geographic area.

c) Regional Response Strategy Selection. Determining the need for regional response teams is also an eligible planning activity. Conducting hazmat response on a regional basis can reduce equipment expenditure and improve response capability and resource utilization. Eligible preparedness planning activities, therefore, include deciding whether and how to deploy regional

response teams--groups of response personnel strategically positioned within a State to maximize response efficiency.

2) Training. Sixty percent of HMEP grant funds go to training public responders. The instruction often takes place at centralized teaching locations, which facilitate attendance by responders from multiple jurisdictions. Training sessions are generally held several times per year in each State. Eligible funds cover tuition, travel, and lodging expenses for responders who attend training classes, as well as the travel-related expenses of training instructors. The numbers and categories of responders trained during FY 93-95 are detailed later in this report. (See also Appendices C and D.)

E. Grant Formula and Pass-Through Requirements

1) Grant Formula. One of the first activities of the HMEP Interagency Coordination Group, now the NRT Training/Curriculum Subcommittee, was to develop a grant allocation formula. Designed to distribute HMEP grant funds fairly and consistently to States, territories, and Indian tribes, this allocation formula draws on the experience of previous grant programs as well as other objective measures.

To ensure a sufficient minimum level of planning funds for all grantees, 3 percent of total planning funds is designated for Indian tribes, and a base amount (nearly $2,000,000 in FY 93 and adjusted annually to reflect registration fee collections) is divided equally among all States and Territories. The remaining planning grant funds are apportioned according to various risk-related factors. One fifth (of the balance) is allocated to States and Territories on the basis of their percentage of total population, with this measure serving as surrogate for risk to the general public. Two fifths of the remaining funds are allocated on the basis of a State's or Territory's percentage of total hazmat truck miles, a surrogate for highway hazmat risk. The final two fifths is allocated on the basis of a State's or Territory's percentage of SARA 302 chemical facilities, a surrogate for fixed facility risk. The base amounts plus the risk-related apportionments comprise the total planning grant allocations to States and Territories.

To ensure a sufficient minimum level of funding in the training area, 3 percent of total training funds is designated for Indian tribes, and again a base amount (nearly $1,700,000 in FY 93 and adjusted annually for registration fee collections) is divided equally among all States and Territories. As with planning funds, the remainder is then apportioned on the basis of risk-related factors: one half on the basis of population; three tenths on the basis of total highway miles; and two tenths on the basis of the number of fixed hazmat facilities that are identified by Census Bureau data. (Appendix B shows planning and training grants for fiscal years FY 93-96.)

2) Pass -Through Requirements. Under the HMEP grants program, the governor or counterpart-appointed agency within a State, Territory or Indian tribe that initially receives money under the program is known as the "grantee." For States, the grantee is usually either the emergency management agency or the SERC; in a very few instances, it is the State Fire Marshal. In Territories the grantee is usually the emergency management or civil defense agency, and in Indian tribes the grantee is usually the Tribal Chairperson.

All grant funds are initially provided to *grantees*. As set forth in the 1990 HMTUSA, 75 percent of the planning grant money must then be passed through to local *grant recipients*, which in the States are usually the LEPCs. The number of LEPCs within each State varies considerably. New Jersey, for example, has 588 LEPCs, while the State of Oregon has only one. Nationwide there are approximately 3,000 active LEPCs and close to an additional 1,000 inactive LEPCs. (Local *grant recipients* within Indian tribes are referred to as TERCS: Tribal Emergency Response Committees.)

A State's designated grantee, including where applicable the SERC, is also the starting point for distributing training funds to the local level. The basic pass-through requirement is again 75 percent, but the standard is that 75 percent of the *benefit* of training funds be made available to local hazmat emergency responders. This flexibility often allows training classes and hazmat exercises to be conducted at centralized locations, such as State fire academies, directly benefitting local responders without requiring an explicit funds pass-through to localities.

F. Target Audience

The majority of the nation's hazmat emergency responders are firefighters, and an estimated 80 percent of the firefighters are volunteers, generally serving at the local level. Because of the pass-through/benefit requirement that 75 percent of grant funds reach local responders, the HMEP planning and training grants are an effective means of reaching volunteer firefighters.

Results from a 1996 survey of grantees conducted by RSPA, expressed strong support for the HMEP grants Program and confirmed that assistance is reaching the target audience. Some States noted a critical reliance upon the HMEP grants program, even with current funding levels and eligible uses. Many grantees also urged expansion, if possible, of available funds and eligible uses.

G. Curriculum, Training Sessions, and Other Written Materials

1) Curriculum. RSPA is required to develop and update a curriculum for training public sector employees to respond to hazmat emergencies and for planning such responses. The curriculum must include courses to enable public sector employees to comply with DOL/OSHA and EPA emergency response regulations and National Fire Protection Association (NFPA) standards. HMTUSA requires this effort to be coordinated with FEMA, NRC, EPA, DOL, DOE, and HHS, using the existing mechanisms of the NRT. When radioactive materials are involved, the FRPCC coordinating framework is used.

The Federal Interagency Coordination Group (ICG) and a DOT working group, both established in 1991 to handle interagency requirements under the HMEP grants program, initially managed the curriculum development task. These efforts are now coordinated through the NRT's Training/Curriculum Subcommittee, chaired by DOT.

2) Training Sessions. While Federal officials periodically conduct workshops that cover programmatic and technical subjects, the majority of responder training sessions are organized and taught by State and local area response instructors. Training courses may include classroom

sessions (consisting of lectures, equipment demonstrations, etc.) or training exercises involving simulated accident situations. Increasingly, States are using innovative techniques such as telecommunications and satellites to reach emergency responders in their communities. Depending on the level of training being taught, e.g., awareness, operations, or technician level, the training site, format, and content may vary.

3) Other Written Materials--Emergency Response Guidebook (ERG). The ERG is widely recognized by the hazmat response community as perhaps the most valuable single reference for initial response to hazmat emergencies. The ERG was developed in the 1970's by DOT for use by first responders, such as firefighters, police, and emergency services personnel, and for general use by transportation industry personnel. Since then it has undergone further development and refinement, and it is used primarily as a guide for initial actions that protect first responders and the general public when responders are called to handle a hazmat emergency. With the 1990's development of the HMEP grants program, the ERG has also become an important publication used in conjunction with HMEP training.

The utility of the ERG results from its breadth, accuracy, and relative ease of use. More than 3,000 hazardous materials products are included in the guide, along with cross-references by United Nations (UN) designated product number, product name, product categories, and recommended early response actions. In 1994, DOT published and distributed over 70,000 copies of the first United States-Spanish language ERG developed in consultation with the Mexican Government. In 1996, the U.S., Mexico and Canada published the first North American ERG (NAERG) and made it available in English, Spanish, and French language versions. Widespread distribution of the NAERG means that even responders who are unable to receive HMEP-funded training have an opportunity to become familiar with and have access to an invaluable emergency response tool.

Generally every three years, RSPA publishes and distributes approximately one million copies of an updated version of the ERG. The ERG was previously published with annual appropriated funds, but Congress mandated in FY 1994 that the ERG be funded by RSPA's hazmat registration fees. It is expected that the year 2000 publication of the NAERG will include some 1.4 million English, 150,000 Spanish and 40,000 French language copies (1.59 million copies total).

II. RESULTS AND ACCOMPLISHMENTS

During the first four years of the program, FY 93-96, RSPA made grants to 50 States, the District of Columbia, 5 Territories and 23 Indian tribes. State governors, or their counterparts in Territories and Indian tribes, designate HMEP grantees, who usually are either the emergency management or environmental agency. Through these two basic types of grantee agencies, planning and training grant funds have been used to significantly improve emergency preparedness. The following subsection, *Planning and Training Output Measures* further illustrate results and accomplishments of the HMEP grants program to date.

A. Planning and Training Output Measures

The environment of flexibility and limited oversight discussed earlier in the context of eligible funding activities extends to how grantees report planning/training statistics and related grant information. The wide latitude in both activity funding and information reporting, however, can result in data that cannot be readily summarized across grantees. In those situations it is difficult for RSPA to compile precise statistics on activities funded, type and number of responders trained at local jurisdiction levels, related funding uses reimbursed, and so forth. Notwithstanding these problems, RSPA has endeavored to compile summary information from estimates based on reported data from each grantee.

There has been considerable progress toward improving the nation's emergency preparedness during the first four years of the HMEP grants program. The following qualitative and statistical measures help illustrate the success of the program.

1) Improvements in SERC and LEPC Capabilities. The HMEP planning grants assist SERCs and LEPCs in their efforts to improve planning response capability. According to grantee documents, HMEP grant funds are increasingly facilitating both the growing number and the improved quality of emergency preparedness plans written by LEPCs, as well as the coordination of those plans at the State level in the SERC. Assistance in exercise development and execution, commodity flow analysis preparation and overall coordination at the SERC level are also provided through the grants program. The HMEP grants program has been instrumental in developing channels to ensure that LEPCs receive assistance from grantees. Finally, semi-annual workshops conducted by the HMEP grants program help insure distribution of programmatic and technical advice, as well as improved compliance with program requirements.

Emergency response planning has been effective. For example, in the State of Michigan, the HMEP grant has greatly accelerated development of LEPC plans. Over 3,000 plans are needed in the State and 962 have been completed, establishing a significant base upon which to build a solid emergency response framework. Because Marine City, Michigan had an emergency response plan, a potential disaster was averted. On Friday September 9, 1994, a fire was reported in the C&B Enterprises facility which treats metal. Quantities of cyanide (a toxic chemical) were inside the building, and 100 people downwind of the fire were evacuated as a precaution. The blaze was put out relatively quickly and residents were allowed to return to their homes later that evening. C& B Enterprises is one of more than 30 hazardous chemical sites in St. Claire County that have detailed emergency plans. The C&B plan listed the chemicals in the plant and the hazards they posed. It also included a diagram of the building's interior and noted the locations of key equipment and chemicals. According to that plan, most of the city of Marine City could have been affected by the fire had the worst case scenario of exploding chemicals and high shifting winds occurred. That did not happen, but the threat of it underlined the need for a well thought out county emergency response plan.

The State of Oklahoma has not experienced serious transportation incidents in several years, which the HMEP grantee believes is the result of using HMEP grant funds in the metropolitan areas of Oklahoma City and Tulsa to conduct hazmat traffic flow studies and emergency response training. These studies resulted in changes to transportation routes through those areas.

Incidents that have occurred have not become serious because first responders and firefighters were trained throughout the State. The HMEP grantee believes that continued efforts provided by HMEP grants to conduct and maintain Transportation Response training and planning will assist the State of Oklahoma in continuing its success in avoiding serious HAZMAT incidents.

In Lodi, New Jersey, local hazmat emergency response plans had recently been updated with HMEP funds to include a transportation perspective and mutual aid plans when on April 21, 1995, an explosion at a chemical plant housing over 80 hazardous substances resulted in six deaths and numerous injuries. A general alarm was sounded prompting an extensive response by fire, police and emergency medical service units. With regard to the incident, the New Jersey State Police noted that mutual aid from surrounding communities--made possible by updated plans--was critical to limiting the effects of the accident.

On October 25, 1995, a tank car containing nitrogen tetroxide ruptured in Bogalusa, Louisiana causing evacuation of a large part of the town. The emergency plans of St. Tammany and Washington parishes, written and updated, in part, with HMEP grants program funds, were implemented during this incident. Following the incident, the Louisiana State Police noted that twelve State and local agencies involved in the Bogalusa response had received training because of the HMEP grants program and were able to respond effectively to the accident in large part because of that training.

In Ohio, the influence of HMEP grant funds on planning and overall emergency preparedness has been particularly noteworthy. First, the number of hazardous materials response teams increased from 34 to 59 during the FY 1993-1996 period. Second, grant program funds have been used for studies which not only resulted in additional team formation, but in further training of team members and in writing or updating emergency plans to include mutual aid concepts and a transportation perspective in hazardous materials emergency response. Ohio's preparedness planning is regarded both by Federal and State emergency response agency officials as exemplary.

In Cape May County, New Jersey, the Office of Emergency Management (OEM), intends to utilize HMEP funding in conjunction with monies appropriated through the Cape May Harbor Mutual Assistance Corporation to conduct an analysis of the hazardous materials present in the Cape May Harbor Fishing Ports. This information will then be used to create facility response plans for the numerous corporations which line the harbor, and develop an overall regional response plan for the entire harbor area. Finally, a full scale exercise will be held with a complete oil spill/boom deployment drill. This drill will test numerous annexes of the Emergency Operations Plan.

The Menominee Indian Tribe of Wisconsin has experienced a dramatic decline in chemical accidents on their highways over the past several years. They believe this can be attributed, in part, to the assistance of the HMEP program, which provided funding for training that made the Menominee people aware of the danger of chemicals in transit and that regulatory compliance is mandatory and enforceable. The Tribe's integrated chemical management program and enforcement efforts were developed as a result of an unusual amount of reportable chemical accidents on the 41-miles of State of Wisconsin Highways that traverse the Menominee Reservation. Regional analysis and traffic flow surveys of chemical transporters using the

highways found that companies were using a route as a shortcut to the bulk fuel tank farms in Green Bay, Wisconsin. Some transporters were not routing their operators and the drivers were traveling on narrow rural road systems that could not support the traffic. The Tribe was successful in getting hazardous materials transporters to voluntarily re-route around the Reservation.

HMEP grants funds are also used by grantees to examine what went wrong during an incident so that emergency response plans and performance may be improved. On February 27, 1998, a military vehicle carrying explosives, hand grenades, and rockets, overturned on Highway 26 approximately 1 mile east of 1-25, in Platte County, Wyoming. Wheatland Fire, Ambulance and Platte County Sheriffs officers were dispatched, and the Highway Patrol and Wyoming National Guard Camp in Guernsey were notified. Highway 26 was closed using Law Enforcement and Department of Transportation vehicles. Following resolution of the incident, the Platte County LEPC used HMEP planning funds to examine the handling of the incident. The LEPC established that problems encountered during the accident included not obtaining classification of explosives for responding agencies, not naming or identifying an incident commander, and initial responders went to the scene and might have been compromised. In addition, a safe zone was not established. As a result of their analysis, the Platte County LEPC rewrote their emergency response plan and was named State "LEPC of the Year."

Federal interagency coordination also plays an important role in improving the capabilities of SERCs and LEPCs. An example of cooperation between DOT and EPA is the recent support provided by the HMEP grants program for EPA in its program of distributing Computer Aided Management of Emergency Operations (CAMEO), a planning software package, at no charge to LEPCs and SERCs. Both purchase of and training with the CAMEO software package have been eligible uses of HMEP training grant funds. Because of limited funds, however, grant recipients have shown reluctance to expend the funds necessary to purchase and then train with the software. With EPA's no-charge distribution program, HMEP grant recipients have been better able to focus their limited funds on just the training use of the software, thereby allowing LEPCs and SERCs to gain greater benefit from CAMEO.

In addition to qualitative improvements in SERC and LEPC planning and preparedness at the State and local levels, program data for the first three HMEP grant program years (FY 93-95) show that assistance to SERCs and LEPCs has resulted in:

- assisting more than 3,000 LEPCs;
- developing or updating more than 4,000 emergency response plans;
- producing more than 1,100 hazardous materials commodity flow and hazard analyses; and,
- conducting more than 1,700 training exercises.

2) Promoting Regional Response to Hazmat Incidents. Although emergency response practices have common elements throughout the country, the configuration of the response network may be unique in each State. Generally, the regional response concept refers to strategic placement of hazmat response teams within a State, and may include mutual aid across boundaries. In some areas, the regional response concept is viewed as less important due to such

factors as the number of response teams, population density, and geography. For example, in Tennessee the large number of local response teams renders the regional response concept less essential. In other States, the regional response concept is more widely adopted, particularly as State appropriations, State laws, and cost recovery strategies come into play. Selecting an appropriate regional response strategy has been a prime focus of HMEP technical assistance sessions conducted by and for grantees.

The Commonwealth of Virginia has implemented an exemplary hazmat response team organization and has shared its approach with other grantees. A key feature of Virginia's organization entails the use of cost recoveries to fund program expenses. Cost recoveries accrue when incident response and clean-up expenses are borne by the shipper and carrier parties directly involved in an incident. Cost recovery collections cover a large part of Virginia's emergency response expenses, making response team budgets almost self sufficient. Virginia's organization was implemented in part with HMEP funding. Virginia's regional response team approach was used in Lynchburg, Virginia when on 3/31/98 a 61 car freight train carrying Acetone derailed and an explosion and fire occurred. A 36 block area including a school was evacuated. Over $1 million of damage was done to a storage warehouse near the explosion site. Two regional hazmat teams trained to the technician level using HMEP grant funds responded to this accident. Without this training a proper response to the accident would have been more difficult, expensive, and time consuming according to Virginia Emergency Services. According to a Virginia Department of Emergency Services official, it would have been difficult to implement or maintain the response team organization without the planning and training grants provided by the HMEP grants program.

In another example, Nebraska has a state-wide hazardous materials response team that responds to all types of hazardous materials incidents throughout the State if local responders need additional resources and request the team's assistance. The team is made up of three different agencies, the State Patrol, the Fire Marshall's Office, and the Department of Environmental Quality. Each agency funds its portion of the team out of the general fund. State funding programs have not been established to cover the costs associated with operating this team. The team is equipped with Self Contained Breathing Apparatus, chemical protective clothing and several monitoring instruments. Training has been provided to the team quarterly through Nebraska Emergency Management Agency (NEMA) using HMEP grants. In Nebraska, most fire departments are staffed with volunteers, with a turnover rate of approximately 30 Percent. Personnel on the State Emergency Response Team (SERT) are full-time State employees with almost no turnover. By training a statewide team, the State has been able to provide service to all local responders who use the SERT team an average of once a month.

On March 4, 1996, an 81-car freight train, including rail cars carrying propane, derailed in Weyauwega, Wisconsin. Local volunteer firefighters responded to the accident and evacuated 1,700 people from the area around the accident scene. During radio interviews, firefighters praised the HMEP grants program for providing them operations-level training in hazmat emergencies. This training had previously been difficult to obtain. In addition, it may also be noted that hazardous materials regional response teams have received particular emphasis in Wisconsin's HMEP grant efforts. These teams are prepared to provide assistance in accidents similar to Weyauwega.

3) Curriculum Guidelines. One of HMEP's foremost accomplishments has been the development of high quality curriculum guidelines now used throughout the country to select course content for hazmat emergency response training.

A national set of guidelines for hazardous materials training did not exist prior to the HMEP grant program's curriculum development effort. When the curriculum effort was undertaken by HMEP and interagency officials, it was their conclusion that establishing a national curriculum, based on performance standards, would greatly assist hazmat response employees in dealing with hazardous materials emergencies. A national curriculum would ensure that the content of training courses could be judged according to national standards. Increasing coordination of grantee courses and course materials also limits duplication and enhances economies of scale by offering grantees fully developed courses so there would be no need to recreate successful programs.

A team of Federal, State, Tribal, and local public sector training, planning, and response organizations and a cross-section of professional associations was assembled to develop the national curriculum. This method of developing the guidelines enhanced acceptance by responders, since local views were represented. A key early decision by the team was to respect the integrity of each State curriculum by providing a set of guidelines to qualify courses under the national curriculum.

In March 1994, FEMA made available the first public edition of the "Guidelines for Public Sector Hazardous Materials Training." More than 20,000 copies of the Guidelines have been distributed to responders and local communities. To date, there have been three major and many minor updates. The team, in coordination with State grantees, continues to update the Guidelines.

The set of Guidelines is now an accepted national document for enabling HMEP grantees to qualify their courses on hazmat emergency planning and training. The Guidelines cover developments in response technology, as well as compliance and regulatory matters associated with NFPA standards and EPA and OSHA regulations.

In addition to publishing the Guidelines, the first national list of assessed courses was made available in 1996. A course's appearance on the list signifies that the course material has been qualified by a team of experts. Course assessment tool kits, national workshops, and ongoing technical advice are used to help grantees assess courses. Courses are placed on the list only after assessments are returned to the curriculum staff supported by DOT. All of these provisions help ensure the consistency and quality of training, while at the same time accommodating local autonomous authority over training. A total of 139 courses are now on the assessed course list. Emergency responders are increasingly concerned about how to respond to threats of terrorism, and incidents involving new uses of hazardous materials, such as alternative fuels for vehicles including propane, lead acid batteries and compressed natural gas. New courses are being developed to meet these concerns.

4) Program Innovations. Among the general purpose local governments in the United States - municipalities, counties, towns and townships, sixty-five percent are under 10,000 people. Almost half of all general purpose governments are under 1,000. We are a nation of small towns which are rural in nature and served by volunteer fire departments. In a complex

world where production and use of hazardous materials are increasing, these small communities find themselves faced with overwhelming demands to be prepared for any potential accident that may occur. While there is growing awareness among small communities of the potential for hazardous materials incidents, the vast majority are only prepared to respond in the event of common threats: home fires, vehicle accidents, and the like. And in many instances, their resource capacity is already overextended in their effort to meet current emergency response needs. Volunteer fire companies typically fund their equipment and training through bake sales, chicken dinners, bingo and the like. Given the need, funds for HMEP grants are presently quite limited. With approximately $6.5 million total allocated annually among some 70 grantees, amounts of the awards are already fairly small. When grants are further distributed among scores of LEPC recipients in most States, the eventual amount per local recipient is smaller still (amounts ranging from only $500 to $5,000 per LEPC being common).

Given these conditions, HMEP grantees have exercised excellent stewardship over grant funds, and have shown considerable innovation in efforts to provide training, particularly ways that leverage scarce training funds. Providing training is further complicated by the fact that 80 percent of firefighters are volunteers who have full-time jobs and find it difficult to leave their communities to obtain emergency response training. Grantees have developed innovative methods to provide training to volunteers in their own communities. include the use mobile training facilities in North Carolina, for example uses mobile training facilities to provide technician level training to a large number of firefighters in their own localities. HMEP and State funds are efficiently leveraged through this program.

In Arkansas, State education satellite networks are used to train responders. Practical sessions are held at local fire departments during hours when volunteers can attend. This concept solves the problems of lack of time and money by enabling volunteer firefighters to remain in their communities during training. The State of Maryland has established six sectors within the State for satellite Train the Trainer training in use of the ERG. Over 260 trainers have been trained. Maryland's instructor and student manuals and slides have been sent to other States and the program has been publicized in Firehouse Magazine, an international publication for the response community.

In Idaho, a surplus airport was donated and converted to a hazmat training academy. With assistance from the HMEP grants program, an extensive range and number of courses can now be conducted at the facility simultaneously, thereby achieving significant economies of scale in training. Prior to this innovative use of the airport, hazmat conferences provided fewer and less extensive training courses.

A Texas grantee at an HMEP Workshop described its innovative approach to getting the "biggest bang for the buck" with HMEP grant funds. There are 114 chemical facilities and 10 LEPCs in Pasadena and the surrounding area. One of their concerns is education and outreach to teach people in the community how to protect themselves in the event of a hazmat incident or chemical release. Four LEPCs pooled their grant funds and invented Wally the Wise Guy, a person in the costume of a turtle (turtles go into their shell when threatened) who, accompanied by a spokesperson, goes into schools and attends local events to teach when and how to shelter in place, as a means of survival or an intermediate step leading to an evacuation. Fire personnel,

who volunteer to be Walley the Wise Guy, believe this is an effective way to reach children, and through children, adults. Wally the Wise Guy has his own song, decals, paperweights and even watches.

Grantees have also responded innovatively to funding constraints by distributing grants on a rotating basis. Rather than distribute smaller grant amounts to all LEPCs each year, some grantees have chosen to fund LEPCs on an every second or third year schedule. This rotating basis for funding means that larger and often more useful amounts are available to LEPCs in the years that they do receive funding.

These types of program innovations are helpful in maximizing the effectiveness of a limited pool of HMEP and other federal training grant funds.

5) Hazardous Materials Emergency Responders Trained. There are an estimated 3.2 million responders in the U.S. emergency response community who need various levels of training, some for the first time and others to refresh or improve previously acquired skills. HMEP training reaches only a portion of the total pool, but with 120,000-130,000 responders receiving training per year, the program makes important contributions to reducing the nation's responder training deficit.

During the three budget years FY 93-95, an estimated 456,000 hazmat emergency responders received HMEP funded training. Although final estimates for FY 96 and FY 97 are not yet available, figures are expected to show an additional 120,000-130,000 personnel as receiving training in each of those years. Training at the more specialized *operations* and *technician* levels is usually more costly on a per-responder basis than *awareness* level training. Accordingly, year-to-year fluctuations in the total number of responders trained may reflect different training priorities and expenditures within States for a given program year.

The FY 93 budget year combined FY 92 and 93 funds, thereby allowing some 200,000 personnel to receive training in the first year. The 134,000 figure for FY 94 and the 122,000 figure for FY 95 are presumed to reflect more typical year levels. During those two years, the numbers trained in any one State ranged from as few as 30 in New Mexico (1994) to more than 19,000 in California (1994 and 95). Numbers of responders trained in the Territories and Tribes were generally in the range of 30-300 per grantee per year (Appendix C).

Although there are similarities among State training programs, States generally adopt different strategies to meet their distinct training needs. The California and New York programs illustrate these differences. Each State uses a training distribution system based on the SERC. California, however, has only 6 LEPCs while New York has 58 LEPCs. And in terms of numbers trained, California's emphasis on *awareness* training contrasts with New York's recent emphasis on *operations, technician*, and other more advanced skills level training. California trained close to 20,000 responders in each of the three years 1993-1995, while New York trained almost 29,000 responders in 1993, but only 827 in 1994 and then 3,444 in 1995.

As additional examples of State stewardship of grant funds, appendix E contains copies of final grant reports from Ohio and North Carolina for FY 93, 94, and 95. Each grantee report uses a distinctive format and provides much information beyond the budget category level required by law. While it is not possible to judge the efficacy of training delivered or specific expenditures for recipients of training from these documents, they are representative reports of work accomplished against statements of work contained in grant applications.

The efficacy of training delivered is ensured by the quality assurance mechanisms of the curriculum development program. Although on site training audits are not used because of resource constraints, we believe that hazmat emergency responder training standardization, encouraged by the curriculum development program, has resulted in an improvement in the efficacy of training delivered. Further, technical assistance workshops held twice each year focus on curriculum development and training improvements.

In addition to helping train local responders, a grant was awarded in FY 96 to the International Association of Fire Fighters (IAFF) for purposes of training approximately 190 fire service personnel, who in turn train other responders. This activity was funded in accordance with 49 U.S.C.§5116(j), which calls for awarding funds, if available, to personnel who train other firefighters. Also, in FY 94 an interagency agreement was made to the National Institute of Environmental Health Sciences (NIEHS), pursuant to 49 U.S.C.§5107(e), and approximately 20,000 hazmat workers were trained, in part, with these funds.

The majority of responders who have received training through HMEP grant funds are firefighters, with that category accounting for about 55 percent of total responders trained. Police account for about 20 percent, and emergency medical services (EMS) and "other" account for the balance. The "other" category includes public works, transportation, and environmental control employees.

As the California and New York training figures indicate, grantees continually make tradeoffs between the number of responders trained and the level of training acquired. Notwithstanding tradeoff effects, however, there remain underlying assumptions in preparedness planning and training that the more hazmat responders trained, the more commodity flow studies accomplished, the more emergency plans developed or updated, the more LEPCs assisted and the more exercises held, the better the response to hazmat emergencies is likely to be. These assumptions will continue to be guiding principles of the program.

The fact that more communities are better prepared and more hazmat emergency responders are now trained are two indications of HMEP grants program effectiveness (see Appendices G,H). Another critical measure of effectiveness is how well local emergency response has improved because of the planning and training grants. While it is difficult to separate results of Federally funded programs from the results attributable to a community's other planning, training, and financial efforts, there are indications in many communities that the HMEP grants program has played an important role in safety improvement.

III. CONCLUSIONS

HMEP grants play an important role in helping meet the nation's hazmat emergency preparedness needs. During the first four years of the program, FY 93-96, $26 million in grants were awarded to 50 States, the District of Columbia, 5 Territories and 23 Indian tribes.

General preparedness assistance, both programmatic and technical in nature, has been made available to the nation's 3,000 active LEPCs. More than 4,000 emergency plans have been prepared or updated; more than 1,100 hazard analyses and flow studies have been conducted; and more than 1,700 hazmat emergency response training exercises have been held. A nationally recognized training curriculum has been developed, with Guidelines published and a total of 139 courses assessed and included in the curriculum. An estimated 456,000 responders were trained in the first three years, with an additional 120,000-130,000 expected annually in subsequent years. Program innovations and training efficiencies have been undertaken to maximize the effectiveness of the limited planning and training funds.

Practical results of the extensive training are evident. Besides the widespread perception that hazmat emergency preparedness planning and training make communities better prepared, actual incidents have confirmed the effective contribution of the HMEP program in making communities and responders better prepared to handle hazardous materials emergencies.

Given the reach and success of the program to date and the unsatisfied hazmat emergency responder training need of over 3 million, the DOT has sought reauthorization to support the HMEP grants program. The Department of Transportation continues to explore funding options that may narrow the gap between hazmat emergency preparedness needs and resources available at the Federal level.