CHARACTERISTICS AND COMMON VULNERABILITIES INFRASTRUCTURE CATEGORY: RAILROAD YARDS

Protective Security Division
Department of Homeland Security

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Preventing terrorism and reducing the nation's vulnerability to terrorist acts require understanding the common vulnerabilities of critical infrastructures, identifying site-specific vulnerabilities, understanding the types of terrorist activities that likely would be successful in exploiting those vulnerabilities, and taking preemptive and protective actions to mitigate vulnerabilities so that terrorists are no longer able to exploit them. This report characterizes and discusses the common vulnerabilities of railroad classification and sorting yards.

RAILROAD YARD CHARACTERISTICS

The following sections provide a summary description of railroad classification and sorting yards and their potential susceptibilities to terrorist threats.

Characterization of the Industry

Since virtually the first appearance of railroads in the United States (U.S.), rail carriers have used classification and sorting yards to enable efficient movement of freight for customers, shippers, and recipients. Railroad yards serve as hubs where loaded inbound rail cars on one line can be sorted and sent outbound on lines to their intended destinations. All types of traffic are handled in railroad yards. In recent years, however, traditional "loose car" processing has been increasingly superseded by unit trains of bulk commodities, such as coal or long-haul container trains that interchange motive power only between carriers and do not require yard service once dispatched from their origin. (Loose car processing refers to trains that consist of multiple "cuts" of both general- and special-purpose shipper-origin cars that are split in the yards and reorganized into recipient-destination trains.)

Currently, only seven major (i.e., revenue Class I) railroad carriers remain in the U.S. and Canada. The consolidation that resulted in this significant decrease in the number of large players in the industry has presented numerous opportunities for greater efficiency and service improvements, of which most carriers have taken full advantage. For example, because demand for re-sorting and classification operations is not growing significantly, rail carriers are increasingly finding it cost-effective to consolidate such operations at a limited number of facilities that may or may not be on their own property. Thus, two recent developments are of concern to vulnerability assessment:

- While more than 12 large new intermodal classification yards have gone into service in the U.S. and Canada in the last 10 years, the number of operating hump yards in North America has declined from 152 in 1975 to 58 today; several are used by carriers that neither own the property nor run the operation. Table 1 shows the distribution of classification yards by state.

- The largest carriers are seeking to concentrate the yard operations they keep under their control, operations increasingly oriented to intermodal/container movements, at sites away from the traditional urban railroad hubs where land and operating costs can be high and security from theft and pilferage has been a chronic problem.

Table 1 Number of Active Hump Classification Yards by State

State	No.	State	No.	State	No.
Alabama	3	Maryland	1	Oklahoma	1
Arkansas	2	Minnesota	2	Oregon	1
California	4	Missouri	1	Pennsylvania	2
Georgia	3	Nebraska	1	Tennessee	3
Illinois	7	New Jersey	2	Texas	2
Indiana	3	New York	2	Virginia	2
Kansas	1	North Carolina	2	Washington	1
Kentucky	1	Ohio	5		

Source: http://www.trains.com.

Passive security in modern rail yards generally consists of high illumination by day and night, which enables good control of access to the property and minimizes the incidence of trespassing (Figures 1 and 2). Active security is accomplished by armed patrols and strategically placed video cameras. Perhaps counter-intuitively, it is likely that remote locations offer better potential security from human incursion because low surrounding population densities render the presence of unidentified persons or groups in the yard or its immediate vicinity more suspect.

Figure 1 Rail Yard Illumination by Night

Figure 2 Rail Yard Illumination by Day

Common Facility Characteristics and Vulnerabilities

Railroad yards can be located in any type of environment having a flat area sufficiently extensive and elongated to permit emplacement of intermodal loading tracks, sorting "humps," classification "bowls," or any combination thereof. Thus, yard properties may be sited in open plains or adjacent to hills or other high ground (Figure 3). In the latter case, there may be vulnerabilities to adversaries using longer range, stand-off weapons.

Figure 3 Rail Yard Sites Near Hills

Trains are put together in the classification yard, which is comprised of multiple parallel tracks branching out from a central track and connected by switches. Each of the parallel tracks is designated to receive cars with particular destinations along the route. A special locomotive, or switch engine, transports each car or group of cars to its assigned track. Depending on the sensitivity of the shipment and the type of classification yard, cars may be either "shoved to rest" or "humped." If shoved to rest, the car remains attached to the engine until it couples with the adjacent car. If humped, the car is uncoupled at the top of a very gentle incline and allowed to travel freely downhill.

Sorting humps are a central feature of large railroad yards that perform high-volume operations servicing many inbound and outbound trains daily. The hump exploits gravity to separate the components of an inbound train, one car at a time, into blocks that will be made into outbound trains with specific destinations. Each car is pushed by a locomotive to the top of the hump (Figure 4). After the proper switches are thrown, the car is allowed to roll down to its assigned track in a multi-track classification area (often called a "bowl" because it has up-slopes at both ends to prevent runaways). In this area, thanks to wheel retarders on the hump down-slope, the car couples gently with the other cars in its outbound block. The optimal speed for coupling is 4 miles per hour. This speed can be achieved by either shoving or humping, although shoving to rest is more accurate. When all of the railcars have been classified, the switch engine retrieves and connects them in the order given by the switch list.

Some very large yards have separate humps for eastbound (northbound) and westbound (southbound) operations. Yard operations, including hump classification, are controlled from a tower by the yardmaster, who has a 360-degree view of the operation (Figure 5).

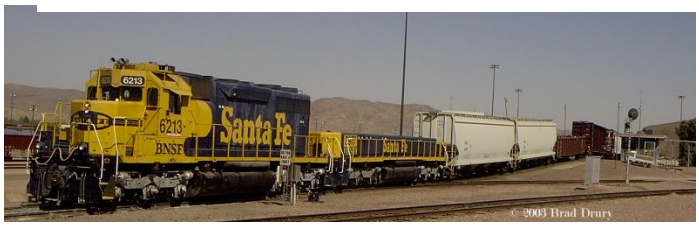

Figure 4 Sorting Hump

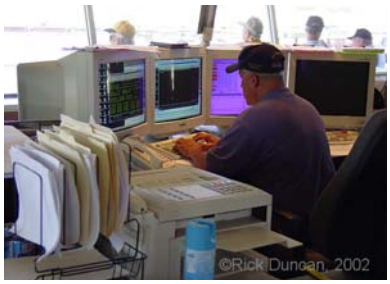

Figure 5 Control Tower

Most large yards also have a separate area for loading and unloading containers or truck trailers (TOFC) from flat cars. In recent years, new yards have opened in most major port cities and inland locations (e.g., Alliance Terminal near Ft. Worth, Texas; Willow Springs Yard, Illinois) expressly to handle intermodal traffic. Intermodal transshipment tasks are accomplished by overhead cranes or specially designed wheeled loaders (Figure 6). Generally, containers will be transshipped to or from highway trailers (flats) hauled to and from the yard by truck tractors. The latter units are operated by cartage company drivers or independent owner/operators (i.e., not railroad employees), who pick up or deliver the containers or trailers from or to points up to 100 miles or so distant that are not served by a rail spur.

Figure 6 Intermodal Section of a Rail Yard with Crane and Loader

Many shipments processed through yards include military munitions and material. These shipments do not necessarily move in guarded trains (Figure 7). With respect to cyber security, cars being processed or laying over in yards are identified by their entry in computerized manifests and, occasionally, by on-board transponders. The actual contents of the cars could be concealed by cyber tampering, such as their deletion from car rosters.

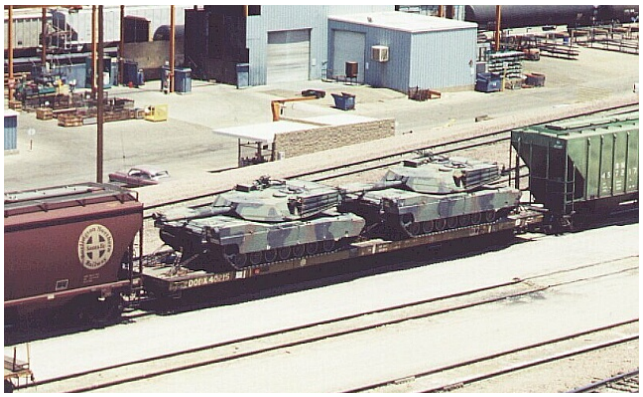

Figure 7 Military Shipment

Current yard surveillance systems are intended to prevent vandalism and theft of goods from railcars during layovers, which can last 24 hours or more. Access to yards by authorized personnel or individuals who may accompany them or be admitted by their permission is not monitored at all times in all yards.[1]

Figure 8 shows a longitudinal view of a large railroad yard with a basic configuration that is still common today. It is possible to identify most of the features mentioned in this section.

Figure 8 Longitudinal View of Railroad Yard with Basic Configuration

[1] Yard crews can occasionally include "utility employees" defined by 49 CFR 218.5 (Subpart A, Railroad Operating Practices) as "railroad employee(s) assigned to and functioning as a temporary member of a train or yard crew whose primary function is to assist the train or yard crew in the assembly, disassembly or *classification* of rail cars, or operation of trains." FRA regulations (49 CFR 218.22) require only that such employees (a) be "subject to the Hours of Service Act, and (required) training and testing, control of alcohol and drug use, and hours of service record keeping, and (b) shall perform service as a member of only one train or yard crew at any given time. Service with more than one crew may be sequential, but not concurrent."

Standards for Classification Yards

The Federal Railroad Administration does not set specific standards for maintenance of security in railroad yards. All yard operations, however, are subject to the personnel and equipment safety procedures outlined primarily in Subpart A to 49 CFR 218. States do not regulate common carrier railroad operations because it would infringe on interstate commerce, a federal purview. Rules governing the transport of hazardous materials (hazmat) and prohibiting extra-territorial dispatch of shipments bear upon but do not directly affect yard operations. The only provision specifically covering safe operations in hump yards pertains to workers operating between cars on a hump track while setting restraint devices. It is found in 49 CFR 218.39.

CONSEQUENCE OF EVENT

A number of different consequences could result from an attack on a rail yard, including:

1. Significant contamination or destruction of commodities in freight cars and containers in an attacked railroad yard could impose great costs in both property loss and shipment delays to North American businesses. Detonation of a weapon in a sabotaged car or firing of an airborne weapon from elevated wooded terrain adjacent to the railroad yard could accomplish such destruction. Although loose car rail freight primarily consists of low- to medium-value commodities (in relation to mass) with average and lower delivery time sensitivity, high-value goods often move in containers on flatcars, and refrigerated perishable foods are regularly carried in trains. Thus, significant property loss and consumables contamination are both possible.
2. Rail carriers affected by such an attack could experience medium- to long-term service disruptions and lost revenue. A biochemical attack of significant magnitude could render an entire yard unusable prior to decontamination. Because of the operational consolidation cited above, such a delay could severely restrict carrier revenue streams and freight movements between origins and destinations due to reduced total sorting capacity, even if the carrier attacked can make arrangements with other yards in the region to handle its traffic.
3. Because certain rail yard properties might not return to normal service for a protracted period, important negative effects could be imposed on American commodity flow, which increasingly depends on “just-in-time” shipment arrivals. In some cases, arrival delays of less than a day would cause assembly line shutdowns and idling of valuable labor and capital capacity of manufacturing. Large produce terminals could be similarly affected by such shutdowns.
4. Military shipments passing through rail yards could be destroyed or put out of service. Because railroad transport of such equipment is generally very time-sensitive, occurring during periods of mobilization, such disruption could impair the U.S. military’s ability to deploy adequate material to the targeted theater (CONUS or non-CONUS), and thus, both compromise the operation and jeopardize military personnel.
5. Many railroad yards are adjacent to moderate to densely populated areas that could be impacted by a chemical or biological weapon plume originating at the yard. This could necessitate long-term evacuation (until the specific hazards are identified and

neutralized), resulting in both economic and psychological hardship for the citizenry affected.

6. Surface water supplies (rivers and lakes) adjacent to many railroad yards could be compromised by biological or chemical attack, and contaminated runoff from yards could jeopardize groundwater (wells) used by nearby populations. In both cases, isolation and mitigation of the problem could take days or weeks to accomplish, resulting in high monetary costs and residual public concern about potable water safety.

7. At a given time, any railroad yard could have a substantial quantity of hazardous materials on the property. This risk is augmented in certain geographic regions, especially the "chemical corridor" along the Gulf of Mexico coast from near New Orleans and Baton Rouge, Louisiana, to Houston and Galveston, Texas, and beyond. This area has already experienced several serious to severe hazardous materials events involving industrial chemicals in and near railroad yards. However, such programs as "TransCAER," a safety and security partnership between chemical manufacturers and rail carriers (see Appendix 2), have significantly reduced the risk of explosion and toxic release situations on railroad property. Nevertheless, while security efforts have been increased and safe handling procedures more formalized since the September 11, 2001, terrorist attacks, involvement of such substances could still contribute to the magnitude of the effects of an attack on a railroad yard.

COMMON VULNERABILITIES

Critical infrastructures and key assets vary in many characteristics and practices relevant to specifying vulnerabilities. There is no universal list of vulnerabilities that applies to all assets of a particular type within an infrastructure category. Instead, a list of common vulnerabilities has been prepared, based on experience and observation. These vulnerabilities should be interpreted as possible vulnerabilities and not as applying to each and every individual facility or asset. Many facilities have instituted security vulnerability assessment protocols, site prioritization processes, and risk-based approaches to improving security performance, including provisions to increase security measures during heightened threat conditions. The security improvements implemented by facility owners under such protocols may mitigate certain vulnerabilities listed below. The vulnerabilities listed consider the issues within the physical perimeter boundaries of the facilities.

Exhibit 1 Economic and Institutional Vulnerabilities	
Economic and institutional vulnerabilities are those that would have extensive national, regional, industry-wide consequences if exploited by a terrorist attack.	
1	Significant contamination or destruction of commodities in freight cars and containers in an attacked railroad yard could impose great costs in both property loss and shipment delays to North American businesses.
2	Rail carriers affected by such an attack could experience medium- to long-term service disruptions and lost revenue.
	(Continued on next page.)

3	Certain rail yard properties might not return to normal service for a protracted period, which could impose important negative effects on American commodity flow that is increasingly dependent on "just-in-time" shipment arrivals.

Exhibit 2 Site-Related Vulnerabilities

Site-related vulnerabilities are conditions or situations existing at a particular site or facility that could be exploited by a terrorist or terrorist group to do economic, physical, or bodily harm or to disable or disrupt facility operations or other critical infrastructures.

Access and Access Control:	
1	Although incursions by groups of terrorists or even a single individual are low-probability events, the presence in a railroad yard of destructive agents concealed in railroad cars loaded elsewhere is feasible.
2	Properties located in river bottoms or other low-lying areas to which high (especially wooded) terrain is adjacent present above-average opportunities for elevated surveillance and sequestering of attack weaponry.
Operational Security:	
4	Most railroad employees have undergone criminal background checks prior to hire or following the 9/11/01 terrorist attacks. If these checks do not discover susceptibilities (not related to crime or terrorism), employees who have access to rail yard property might become targets of blackmail or other schemes. This could enable unauthorized persons to gain access to yard equipment for theft or tampering.
5	Trailers and containers arriving at classification yards for transshipment are identified by computerized manifest codes that could be "cracked." Thus, explosive or biochemical weaponry could be transported by truck onto the site masked as another type of shipment. Also, a previously classified shipment with a "Trojan horse" of concealed weapons could be deleted from computerized car rosters.
Process Control:	
6	Hump sorting operations could be jeopardized by "insider" sabotage of key safety equipment (e.g., retarders).
7	Waybill and manifest data could be tampered with or corrupted to disguise a "rogue" shipment.
Emergency Planning and Preparedness:	
8	Incident response plans jointly developed by rail carriers and civilian first responders designed to formalize responder command structures and maximize mitigation effectiveness have been in place around most railroad yards for several years. Numerous emergency response exercises have been conducted, some incorporating simulated terrorist attacks.
9	In more rural areas, where large classification yards have been relocating, the preparedness and equipped capabilities of first responders may be limited, increasing the potential hazard of fast-breaking situations.
Hazardous and Toxic Chemicals:	
	(Continued on next page.)

10	Hazardous and toxic chemicals may be present in a railroad yard at any time and could become involved in a terrorist attack, with potentially far-reaching consequences.
Other System Operation Considerations:	
11	The increasing practice of contracting second and third parties to process forwarded shipments in rail yards not owned by originating or terminating carriers may prove more susceptible to cyber incursions.

Exhibit 3 Interdependent Vulnerabilities

Interdependency is the relationship between two or more infrastructures by which the condition or functionality of each infrastructure is affected by the condition or functionality of the other(s). Interdependencies can be physical, geographic, logical, or information-based.

General:	
1	Many railroad yards are adjacent to moderate- to densely-populated areas that could be impacted by a chemical or biological weapon plume originating in the yard.
Natural Gas:	
2	Gas lines traverse the ground underneath several rail yards. Propane, petroleum products, petrochemicals, and other explosives are routinely transported through railroad yards and could be ignited by explosions in adjacent cars.
Water:	
3	Surface water supplies (e.g., rivers and lakes) adjacent to many railroad yards could be compromised by biochemical attack.
4	Contaminated runoff from yards could jeopardize groundwater (wells) used by nearby populated areas.
5	The release plumes of certain chemical agents could produce toxic or highly acidic rainwater if concentration is sufficient and condensation nuclei available.
Telecommunication:	
6	Modern internal railroad communications no longer rely exclusively on land lines but use predominantly radio and other wireless technologies. This is also true of the means of notification to offsite emergency responders by rail yard personnel. Although secure code words are used for transmitting emergency notifications and aid requests, response exercises may not have sufficiently stressed such methods to validate that they are “fail-safe,” or hacker-proof.

APPENDIX 1

Statement of Edward Hamberger, Executive Director, Association of American Railroads (AAR), on Rail Security and AAR Railroad Security Plan (2002)

With the commencement of U.S. military action in Iraq and in consultation with the Department of Homeland Security and other national security officials, North America's major freight railroads are taking additional security steps. These steps will ensure that commerce continues to move safely along our nation's freight rail system, which carries more than 40% of America's goods and products. Since Sept. 11, 2001, freight railroads have been on heightened alert. Under a comprehensive security plan developed by the industry with the assistance of counter-terrorism experts, the freight railroads established a progressive series of counter-terrorism measures based on the level of threat against the industry.

The railroad industry is one of the few private sector industries to receive an "A" for its security efforts in a recent independent analysis by *The Washington Post.*

Some of the actions taken since Sept. 11 include increased cyber security, restricted access to railcar location data, spot employee identification checks, increased tracking and inspection of certain shipments, new encryption technology for selected data communications, increased security at physical assets, and increased employee training to ensure that the industry's more than 200,000 employees serve as the "eyes and ears" of the security effort. The industry also created a Department of Defense (DOD)-certified, 24/7 operations center that links the railroads with the appropriate national security intelligence officials. This allows the railroad industry and the intelligence community to immediately share information and respond to threats.

With military action against Iraq, the industry has taken additional security steps, including real-time monitoring and additional surveillance of designated trains; increased security at certain rail yards; increased inspection of priority track, tunnels, and bridges; and working with customers to tighten control of supply chain logistics.

Just as we have in the past, North America's freight railroads will meet the nation's transportation needs in times of both peace and war.

Freight Railroad Security Plan

When America came under attack on September 11, 2001, the railroad industry responded swiftly. Working closely with local, state, and federal authorities and utilizing their own police forces, railroads increased inspections and patrols, restricted access to key facilities, briefly suspended the movement of freight in the New York area, and changed certain operational practices as anti-terrorist measures.

But railroads are vital to the economy, national defense, and public health. Some 40% of all intercity freight goes by rail, including 67% of the coal used by electric utilities to produce power. The chemicals used to purify the nation's water supplies also move by rail. And railroads provide critical support to the DOD Strategic Rail Corridor Network (STRACNET), which includes more than 30,000 miles of rail line and provides the backbone for the movement of DOD shipments. It was essential that the rail network resume full operations quickly. And it did.

Because enhanced security has become a long-term necessity, the Board of Directors of the Association of American Railroads (AAR) — made up of the CEOs of North America's major freight railroads and Amtrak — has established the mandate to ensure that the railroads would be more secure each day. Using U.S. Central Intelligence Agency (CIA**)** and national intelligence community best practices, five critical action teams — with the active involvement of some 150 railroad industry, security and intelligence personnel — were established to scrutinize different aspects of the railroad system:

- Hazardous materials,
- Operations,
- Infrastructure,
- Information technology and communications, and
- Military movements.

Their analysis examined and prioritized all railroad assets, vulnerabilities and threats, and then identified countermeasures. Helping the industry was a team of former U.S. military and government security experts from EWA Information and Infrastructure Technologies. Throughout this process, the AAR continued to work with the federal government and solidify links to law enforcement and security agencies.

Using national intelligence community "best practices," the Railroad Security Task Force developed a comprehensive risk analysis and security plan that includes:

- A database of railroad critical assets,
- Assessments of railroad vulnerabilities,
- Analysis of the terrorism threat,
- Calculations of risk,
- Identifications of countermeasures to reduce risk,
- Definition of alert levels,
- Delineation of actions to be taken at each alert level, and
- Functions of the AAR operations center and railroad alert network.

The plan establishes four alert levels and describes progressive series of actions to thwart terrorist threats to railroad personnel and facilities. It also includes additional countermeasures that will be applied in the areas of operations, information technology and communications, and police.

- Level 1 New normal day-to-day operations
- Level 2 Heightened security awareness
- Level 3 A credible threat of an attack on the U.S. or railroad industry

- Level 4 A confirmed threat of attack against the railroad industry or actual attack in the U.S. (implemented up to 72 hours and reevaluated).

Actions taken by the railroads since September 11 include:

- After consulting with federal security agencies, declared “Red Alert” status for 72 ours beginning with the start of U.S. military action in Afghanistan;
- Increased employee security awareness and training to ensure that over 200,000 railroad employees became the eyes and ears of the railroad industry’s security;
- Compared employee records to FBI terrorist lists;
- Created new position of Executive Director of Security at the AAR;
- Established a 24/7 AAR operations center to coordinate industry-wide rail freight security;
- Increased tracking and inspection of certain hazmat and munitions movements;
- Increased security of railroad physical assets;
- Increased random inspections;
- Conducted spot identification checks;
- Increased coordination with Military Transportation Management Command;
- Increased cyber security procedures;
- Implemented encryption technology for selected data communications.

Through the AAR, freight railroads remain in constant communication with the U.S. Department of Transportation security personnel, the Federal Bureau of Investigation, the National Security Council, and state and local law enforcement officers. The industry also has in place plans to respond immediately to any threats to our transportation network.

The railroad security plan is a living document, because the risk assessment process is a continuous one. As conditions warrant, that plan will be updated, revised and strengthened. The railroad industry is committed to moving forward aggressively to ensure the security of the railroads and their continued service to the nation.

APPENDIX 2

The TRANSCAER® Strategic Plan: Mission and Organization

From TRANSCAER Website [*http://www.transcaer.org/public/about.cfm?about=plan*]

Background

TRANSCAER® is an inter-industry outreach program that focuses on assisting communities that do not host a major chemical facility but do include major transportation routes, prepare for a possible transportation incident. The National TRANSCAER® Task Group (NTTG) manages the program, while regional and state TRANSCAER® coordinators implement TRANSCAER® in their area.

TRANSCAER® Mission

To improve community awareness of and emergency preparedness for hazardous materials in transportation.

At the regional and state level, TRANSCAER® representatives work to implement the following TRANSCAER® steps:

- Establish contact with the Local Emergency Planning Committees (LEPC)/Communities;
- Review existing emergency response plans with LEPC/Community;
- Assist the LEPC/Community to establish a transportation advisory group;
- Assist the LEPC/Community to implement a transportation flow study;
- Assist in revising the emergency response plan to incorporate flow study results;
- Assist in revising the emergency response resource and training needs;
- Participate in exercises to test the plan;
- Establish an ongoing dialogue with local officials, response agencies, and the public;
- Assess the effectiveness of the overall program.

TRANSCAER® Strengths and Opportunities

Strengths

- The successful amalgamation of all those involved in the manufacture, transportation, and response of hazardous materials.
- The successful launching of Phase 1 of the regional approach. Implemented in 1994, this effort seeks to place a TRANSCAER® program in every state. Currently, 31 states have active and/or progressing programs. The level of chemical manufacturing presence in a state usually dictates the level of TRANSCAER® activity. In areas where there is a large chemical manufacturing presence, a high level of TRANSCAER® activity is realized.
- An ever-growing recognition of the TRANSCAER® initiative by our target audience. This has been accomplished through large events such as the 1993, 1994, and 1999 Whistle Stop Tours; press releases; trade publication articles; a high volume of public

speaking engagements; and the implementation of the nine-step TRANSCAER® process.

- The ability to foster and encourage large, big-top events. Examples of this are the Whistle-Stop Tours and TRANSCAER® workshops.

Opportunities

1. Mergers and acquisitions within the chemical and transportation industries have led to a decrease of sweat equity resources, both at the national and regional levels. The challenge is to maintain the same level of activity, and perhaps even increase activity, with a dwindling number of people actively participating in the program.
2. Implementing TRANSCAER® at the regional level is most important to the success of the initiative. To date, the success of the regional approach has been reliant on two factors: the chemical industry volume in the state and the state coordinator's leadership ability. To expand the TRANSCAER® effort, it will be necessary to effectively manage resources against a defined goal.
3. Communication between the state, regional and national levels has been meager. Utilizing available technology and the TRANSCAER® organization structure to their full capacity is needed to increase information flow between the three bodies.
4. Increased communication and outreach to community representatives could also be strengthened.
5. Better coordination between groups performing TRANSCAER®-type activities to reduce duplicative effort. This includes both current TRANSCAER® sponsors and non-sponsors.

National TRANSCAER® Task Group Strategic Plan

Task Group Mission

To provide leadership at the national level and resources and assistance to regional coordinators and state teams.

To address the opportunities mentioned above, the National TRANSCAER® Task Group will manage available resources effectively. Currently, the national TRANSCAER® effort is one of the largest nationwide mutual assistance efforts. By utilizing a shared implementation approach, TRANSCAER® allows companies to participate where they have a resource density. Operating in this manner has generated very active TRANSCAER® programs in states where there is a chemical manufacturing industry presence, and less active programs in areas where there is not a chemical industry presence. To better manage available resources, TRANSCAER® will:

- Create and maintain a website and database which include information about TRANSCAER® resources, activities and contacts;
- Prioritize U.S. counties based on hazmat emergency preparedness necessity and activities and allocate resources against this prioritization.

- Communicate TRANSCAER® resources, activities, and direction to key stakeholders. In addition to TRANSCAER®, other groups and organizations provide similar services and work with communities in the same manner. To leverage these activities, TRANSCAER® will:
    - Work with the other groups and organizations that share a similar goal;
    - Ensure that all TRANSCAER® participants and stakeholders are aware of TRANSCAER® activities, resources, and necessity.
- Utilize the resources of TRANSCAER® sponsors. Take full advantage of the expertise and resources that TRANSCAER® sponsor companies employ.
    - Working with current sponsors, redefine the expectations of TRANSCAER® sponsors;
    - Secure new sponsorships where appropriate.
- Support the regional approach. TRANSCAER®'s success relies significantly on the ability of state TRANSCAER® representatives to provide emergency preparedness assistance to communities along hazmat routes. To provide state coordinators with the tools they need, TRANSCAER® will:
    - Hold a TRANSCAER® workshop to allow for information sharing between TRANSCAER® representatives and provide an avenue for the NTTG to communicate TRANSCAER®'s strategic direction and available resources;
    - Maintain and update TRANSCAER® publications.
- Measure the effectiveness of TRANSCAER®. Measuring progress is a key step in obtaining success. To do this, TRANSCAER® will:
    - Develop performance measures to assess the impact TRANSCAER® has on communities and help communicate the value of TRANSCAER® to key stakeholders.

Regional Approach

TRANSCAER® divides the country into six regions, and then again into states. Each region has a regional coordinator, and each state has a state coordinator. TRANSCAER® relies on these people to implement TRANSCAER® and the nine steps in their respective areas.
Each state coordinator works with communities within his or her state to help prepare them for a possible transportation hazardous materials incident. In many cases, there is a state TRANSCAER® team. The makeup of the team varies with each state. The team then creates a TRANSCAER® plan that best fits the needs of the state.

TRANSCAER® Process

Following are nine steps that are the nuts and bolts of TRANSCAER®. These steps explain how TRANSCAER® representatives can work with communities to help them prepare for hazmat emergencies. Please note that the steps do not need to be followed in order. They are a listing of possible activities that TRANSCAER® members may implement.

1. **Establish Contact with the LEPC**
   Most communities have official Local Emergency Planning Committees (LEPCs) as mandated by federal law as part of Title III of Superfund Amendments and Reauthorization Act (SARA) of 1986. In some states, one committee covers a large planning area, while in other states, each municipality has its own LEPC. In some areas where an LEPC is not active, a different community contact (e.g., fire chief, police chief, etc.) provides the services of an LEPC (emergency planning, etc.). Contact the LEPC or community member in your subject area and identify yourself and your willingness to become involved in their committee (if LEPC) or emergency planning process (if other). This communication is the beginning of open and ongoing dialogue between you, the organization you represent, and the LEPC.
2. **Review Existing Emergency Response Plans**
   SARA required the LEPCs to develop emergency response plans to handle hazardous materials emergencies. These plans were to be developed and in place by October 17, 1988. The plan, if one exists, should be reviewed to ensure it includes procedures for handling transportation emergencies. If it does, the community still may need help in training emergency responders and conducting an exercise to determine if the plan really meets their needs.
3. **Assist the LEPC to Establish a Transportation Advisory Group**
   The LEPC may have a broad enough membership to provide the necessary expertise to form a transportation advisory group to review and update the plan to include transportation emergencies. If not, representatives from the following organizations should be considered when forming the group:

   - Trucking Industry
   - Rail Industry
   - Chemical Industry
   - Petroleum Industry
   - Local Utility Companies
   - U.S. Coast Guard
   - State Motor Carrier Enforcement Organizations
   - Local Public Works Department
   - Regional Planning Councils
   - Distributor Industry
   - Barge Industry
   - Others

4. **Assist the LEPC to Implement a Transportation Flow Study**
   The LEPC should be advised of the potential benefits of conducting flow studies and in obtaining past accident history data. Information on how to conduct a flow study is included in the TRANSCAER® Manual. Some communities may decide this step is beyond their means or unnecessary (i.e., in areas within a heavy chemical corridor that needs to be prepared to handle a very wide range of materials, or a rural community that has very limited hazardous materials movement). The value of flow studies should be pointed out and assistance offered. However, if the community decides not to conduct a flow study, this step need not be included in your TRANSCAER® project.

5. **Assist in Revising the Response Plan**
   After the flow study data and accident history information has been gathered, the next step is to revise the emergency response plan to incorporate transportation emergencies. Plans must be tailored to the community. Some communities may decide to use a for-hire contractor, or a hazardous materials team in another community to handle hazardous materials incidents in their jurisdiction. The plan must be specific about whom is going to do what, when, where, and how.
6. **Review Emergency Response Resource and Training Needs**
   A community will have emergency response needs in areas beyond transportation emergencies. Equipment acquired and hazardous materials training programs in place for fire fighters and EMS technicians for fires, traffic accidents, and natural disasters may also be useful in transportation emergencies. The reverse is true as well. The transportation advisory group should look for opportunities to share specialized or scarce equipment with neighboring communities through mutual aid agreements. The advisory group must make a list of what the community has and needs. The TRANSCAER® Guidance Manual contains guidelines for developing an equipment list. If the community plan requires handling hazardous materials incidents with local emergency responders, it is essential that the responders are properly equipped and trained. The TRANSCAER® sponsor is responsible for helping to identify training needs and resources for remedial training.
7. **Participation in Annual Exercises**
   Testing is a critical part of all planning programs. Exercises should be designed to fully test the plan. The TRANSCAER® sponsor is expected to assist in securing equipment and providing specialized response personnel to participate in simulated emergencies as well as the review of the exercise.
8. **Establish an Ongoing Dialogue with Local Officials, Response Agencies and the Public**
   A community dialogue is often hard to establish, but a factual discussion with the critics and the public is necessary. Participate in community activities civic events and education programs. Frankly discuss the risks of chemical transportation.
9. **Assess the Effectiveness of the Overall Program**
   A periodic review of local transportation incidents and exercises will reveal shortcomings in the plan or the community's resources. This review will confirm those areas that are working, as well as those that need more attention.

USEFUL REFERENCE MATERIAL

1. Trains Website [*http://www.trains.com/Content/Dynamic/Articles/000/000/002/466szbkm.asp*], accessed Feb. 2004.
2. Association of American Railroads Website, Freight Railroad Security Plan [*http://www.aar.org/Rail_Safety/Rail_Security_plan.asp*], accessed Feb. 2004.
3. TRANSCAER® Website, Strategic Plan [*http://www.transcaer.org/public/about.cfm?about=plan*], accessed Feb. 2004.