UCH HAS BEEN WRITTEN REGARDING TERRORISM response and preparedness over the past years. When fire departments prepare for terrorist events, the focus is usually on public buildings or functions at which large numbers of people congregate. Prior to September 11, 2001, threats from a terrorist attack on a chemical installation were considered so unlikely that they were not generally included in security plans or in safety and security analyses, except in special circumstances. In a bill introduced to the United States House of Representatives on May 10, 2005, Congress found that, because the chemical industry supplies resources essential to the functioning of other critical infrastructures, the possibility of terrorist and criminal acts on chemical sources (such as industrial facilities) poses a serious threat to public health, safety and welfare, critical infrastructure, national security, and the environment. \(^1\) Industrial facilities may be targeted for a variety of reasons, which include creating fear and panic among residents of a city or town and impacting the environment through the physical and chemical properties of their agents. A large incident at an industrial facility may also disrupt supplies, which could affect the local or national economy. We have seen how an accident at a gasoline refinery or a natural disaster such as Hurricane Katrina affects the price of gasoline at the pump. Industrial facilities may be attacked because they are the critical link between the raw material and usable products.

**METHODS OF TERRORISM**

Terrorists may use various methods, which may include suicide bombings and flying hijacked planes into buildings, other crowded venues such as sports stadiums, nuclear power plants, and industrial complexes. Other methods may include derailing trains carrying hazardous chemicals, using snipers to cause panic and death, and attacking industrial facilities on the ground.

A major weapon of terrorists is fear. In many cases, especially in the oil and gas industry, explosions will be the weapon of choice. \(^2\) The size of the explosive charges most likely would be very large, to cause maximum damage to equipment, although smaller explosive charges could cause equal damage considering the secondary fires and explosions that would result from the uncontrolled release and ignition of product from vessels and equipment. The above information has relevance for most industrial facilities.

**INDUSTRIAL FACILITIES AS TARGETS**

By attacking an industrial facility, in addition to the structural and psychological damage done, the chemicals used in the process become an additional weapon. A ready-made chemical weapon is waiting for the trigger mechanism. Attacking these facilities with explosives can have the same impact on a community as a weapon of mass destruction (WMD) incident. If we look at the chemicals used and stored at industrial facilities, we realize that they have been transported to and from the facility by road, rail, pipeline, or water—all possible additional targets for terrorists. Many port cities and surrounding communities are concerned about ships, especially liquefied natural gas (LNG) and liquefied petroleum gas (LPG) carriers, being attacked in their harbors or rivers, creating mass destruction within a large area. There has been much debate on this subject with many supporting and opposing viewpoints. Individual communities and governing bodies must weigh the pros and cons and make informed decisions based on facts, not fear. There must be no knee-jerk reactions to preparedness and response.

When responders think about industrial facilities, they usually envision only those facilities they normally see in their communities—warehouses, chemical plants, and refineries, for example. However, in the oil and gas industry, many supporting facilities and infrastructures, such as pipelines, bulk liquid storage, and pump stations, are also vul-

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Terrorism and Security Issues When Responding to Industrial Facilities

The oil and gas industry has onshore oil and gas wells that may be considered the industry's areas most vulnerable to terrorist events. These wells are usually located in remote areas, and it may be financially and physically impossible to provide security for each. These supporting facilities might be targets of opportunity because of this lack of security and the remote locations. It is possible that an explosion at one of these remote locations might be a practice run for a much larger explosion and attack at a more populated area or facility. Offshore drilling and production facilities might be less of a target because they are difficult to access and are in remote locations. However, well sites in close proximity to suburban residential areas could be very appealing to terrorists because of the level of fear and chaos an incident at such sites would incite.

Heavy objects, such as sandbags, may be used to hold explosives in place at a wellhead or pipeline. Fire departments responding to fires at these locations should be aware of this fact and be alert to the presence of such objects, which could indicate that unexploded initial or secondary devices are in the area.

PREPARING FOR RESPONSE

As you prepare for a terrorist incident response, do not overlook the "bread-and-butter" or "routine" responses. Prepare for and respond to major responses, including terrorist attacks, the same way as for the bread-and-butter responses. Fire departments must be disciplined and structured, adhere to standard operating procedures (SOPs), use clear and concise communications, use preincident planning, and have mutual/automatic-aid packages in place. The effectiveness of your response will depend on how well you have planned and trained for the incident and how well you have responded to the routine incidents.

GATHERING INTELLIGENCE

The first step in preparing for a terrorist event at an industrial facility is to identify potential risk sites. How familiar are you with the industrial sites and their processes within your response district? A good source of intelligence in this regard is the Local Emergency Planning Commission (LEPC). Among the LEPC's primary responsibilities are to conduct a hazards analysis of hazardous materials facilities and transportation corridors within the community and to receive and manage hazardous materials facilities' reporting information. Another way to gather intelligence is to visit the facility and speak with plant management. Some of the questions you should ask are the following:

- What types of processing take place in the facility? Is there also storage? If so, in what quantities?
- What types of chemicals are used, stored, or manufactured at the facility? Obtain the material safety data sheets (MSDSs) for the chemicals involved. These sheets include the chemical's known health hazards; the physical and chemical properties of the material; first aid, firefighting, and spill control recommendations; protective clothing and equipment requirements; and emergency telephone contact numbers.
- What would be the environmental impact if a leak, fire, or spill were to occur? Remember that release and consequence scenarios for accidental releases may not be as severe as those for a terrorist-related release. Obtain Process Safety Management (PSM) scenario information from the on-site coordinator or safety manager.

THE RUSH IS ON!

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• What would be the effect on the local community?
• What evacuations would possibly be needed?
• What would the economical impact be if a leak, fire, or spill were to occur?

After identifying potential risk sites, look at the worst-case scenarios—the collateral damage that might occur and the consequences of that collateral damage. Use the worst-case scenario information to assess your resources, including mutual/automatic aid, and then develop SOPs and emergency response plans. In addition, categorize the facilities according to potential risks: high (the facility has great value or could cause a severe impact, may harm a large population, or may have grave economic consequences for the community or nation), medium (has lesser consequences than a high-risk facility), or low (the consequences are negligible).

TRAINING

Once you have evaluated the industrial facilities and developed SOPs and preplans, use the SOPs and preplans to devise exercises and drills. Many times, SOPs and preplans are not practiced, and mass confusion is the result when an incident occurs. Various sources are available for funding large-scale exercises and drills in your community. Initially, you can use tabletop drills to test the SOP and preplan documents, but full-scale exercises are needed to test the effectiveness of all of the document/plan components. Cooperation among all parties involved is essential. Local plant personnel (safety and process engineers) are an excellent source of information; many times, they also have the financial means to support the local fire department with equipment and training.

RESPONSE

When responding to an industrial incident, be alert to the possibility that the response may be the result of a terrorist act. Remember also that a terrorist incident is initially a local event and should be thought of as such. Recognition must start with the dispatchers or emergency call takers. They must gather information that may give clues that an incident could be a terrorist act. In addition to the standard information usually obtained, the following information can provide clues:
• Is the incident at a target occupancy or a target hazard event?
• Is there a record of previous threats at this location?
• Are multiple casualties involved? Are the reasons known or unknown? For example, is the initial report regarding the casualties for unknown types of injuries? We would have to ask why there are multiple casualties. Could they be the result of a terrorist act?
• Are there reports of any unusual odors? Explosions? Hazardous materials?
• Are initial responders down?
• Have any secondary events occurred?

Other clues that indicate that the incident may be related to terrorism are the following:
• Does the facility or incident have the potential to cause a large-scale disruption to the national economy?
• Does the incident have the potential to create large-scale environmental damage?
• Will the incident cause a large-scale financial loss to the private sector?

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• Can the incident disrupt the regional or local infrastructure?
• Is the facility a symbolic target?
• Will the incident be of great media interest?

It may be difficult to recognize that terrorism may have been involved in incidents at industrial occupancies because the chemicals and processes on-site could cause an explosion if handled improperly.

The response must be effective and organized. First responder operations will set the tone for the operations that follow. As we know, some of the goals of terrorism are to send a message, demoralize the public, and create havoc and insecurity. This may lead to the population’s questioning the government’s ability to protect the public. If the fire department response is haphazard, chaotic, or ineffective—or if the response gives such an appearance—it can have a devastating effect on the public’s morale. A chaotic response will give the terrorists an added victory.

The London subway bombings of July 7, 2005, showed that the response of the London Emergency Services was well organized, which helped to calm the citizens and reduce panic. As demonstrated by the London Emergency Services, if the response is massive, rapid, and orderly, resulting in a timely control of the incident, the terrorists’ victory has been somewhat lessened.

When responding even to a benign or routine fire/rescue situation, the fire service must be vigilant. Even these responses hold the potential for primary or secondary devices, the release of hazardous chemicals, or an attack on the first responders. Could the response be a diversion so that terrorists can enter the facility during the confusion?

One of the tactics terrorists use is to create a situation that draws onlookers to the scene and then an explosive device is detonated to ensure maximum casualties.

When arriving at the scene, as already noted, always consider that the incident could have been instigated by terrorists. As with any industrial incident, approach from upwind and uphill. Do not commit all resources into the facility proper. Those responding into the facility proper should be positioned facing away from the scene so that a quick and orderly retreat can be made if needed. Whenever possible, use staging areas for responding apparatus and staffing. Even if staging areas are identified in preincident plans, it might be wise not to use those previously identified areas if terrorism is suspected or known. If operational security breaches have allowed terrorists to know the locations of the designated staging areas, it would be easy for them to plan a secondary device at these locations and harm responders. For security reasons, do not use signs to identify staging areas. During suspected terrorist events, have explosive sniffing dogs search the staging areas and law enforcement personnel ensure that the site is secure. In addition, if a terrorist event is suspected or known, vary your response protocols, including your route of approach, to minimize the chance that responding department personnel will be targets of secondary devices or attacks. Scene security and force protection during terrorist events are essential components of the incident command system (ICS).

The incident command post must be established in a safe area and must also be searched for the presence of explosives or other dangers. Monitoring the scene for the presence of hazardous materials or other agents is essential to responders’ safety. If hazardous materials or other agents are present, isolate the contaminated individuals, and begin emergency decontamination immediately. You must recognize symptoms of exposure to a chemical agent. Basic terrorism response training helps to ensure that all responders recognize the signs and symptoms of chemical exposure. Fire departments and fire brigades should work closely to ensure that the brigade also receives the basic terrorism incident response training. Encourage the sharing of training resources.

Follow SOPs for the industrial response—for example, use on-site plant personnel for intelligence and technical assistance to help with fire department operations. On-site personnel may be able to help you establish that the incident was not caused by a terrorist act. Perform a thorough size-up and risk/benefit analysis before committing firefighters into the hot zone. There must be no freelancing. Establish isolation zones in accordance with the North American Emergency Response Guidebook and other technical guidelines, where applicable. You may have to establish a special operations branch or group to handle technical haz-mat or rescue functions. Consider that fire protection systems may be unusable. Preincident plans should designate alternate water sources outside the plant’s water mains—water tanker shuttle or in-plant auxiliary sources such as water tanks or cooling water canals, for example.

**OPERATIONAL SECURITY**

Fire departments should use Operational Security (OPSEC) to protect information terrorists or other criminals can use against a fire department or the citizens they serve. This would include such things as SOPs, preincident plans, special event operations planning, training manuals, rules and regulations, and department policies.

Does your fire department have a secured box or other key system within your community? Where are the department’s keys to the system kept? Are they secured on the apparatus or available to anyone who enters the apparatus cab? Operational security extends beyond the fire apparatus, into the fire station. Where are the important documents mentioned above kept? Are they available to anyone (authorized or unauthorized) who enters the station? Do you secure the fire station when you go out on an alarm? Do you throw away draft documents without shredding them? What is in your trash? Fire departments must now ensure that their premises are secured at all times and that access is limited to authorized persons or visitors.

One final thought: We all are proud to be firefighters and love to share our experiences, adventures, and stories with others. Be careful about what information you might inadvertently divulge during an innocent conversation.

**SECURITY ISSUES**

Recently, an industrial fire department responded to a drill at a large complex. Normally, this department would respond from the upwind side of the incident. This drill was no exception. However, the upwind gate was secured and blocked with concrete barriers when the firefighters arrived. Without notifying the fire department, the plant had secured this gate for security reasons. Had this been a true emergency and not just a drill, severe consequences could have resulted. This action was taken to increase security against terrorism.

Terrorism concerns have caused industrial facilities to implement additional security measures. For large industrial facilities, at the very least, area and access points previously accessible may now be locked or closed permanently. Concrete barriers, in addition to perimeter protection such as fencing, walls, and landscaping, may have been installed. These alterations may affect apparatus placement, response routes, and emergency evacuation.

In the past, fire department access to industrial facilities was fairly easy during nonemergency visits. With increased security, familiarization or inspection visits may be much more difficult to accomplish. Advance notice may be required, and additional measures such as
Terrorism and Security Issues

background checks or identification cards may be requested. It is important to maintain a working relationship with industry and respect any requests made related to security.

ADDITIONAL SECURITY MEASURES

How can fire departments prepare to effectively deal with an industrial incident when heightened security measures are in place? The following are some of the areas that should be addressed:

- Meet with industry representatives, including facility managers, port facility officers, and industrial fire brigade chiefs, to discuss the additional security measures taken. In many instances, only limited information will be divulged because of operational security issues; ask specifically about fire department access.
- Maintain a working relationship with industrial and port facility security officials, and include the officials’ contact information in the department’s preincident plans. During an incident, include these individuals as planning resources. Information in security plans may be useful for developing strategies and tactics.
- Update preincident plans with accurate information regarding access to the facility. Hastily placed fences or barriers may affect water supply sources or supply points such as hydrants or fire department connections. If these changes have been made, discuss them with facility management, and ensure compliance with local fire department and building codes. Fire department personnel must be vigilant to spot any problems with access or other modifications that may affect fire department operations when inspecting or touring facilities.
- Additional companies may be needed to provide for the difficult forcible entry and ventilation mandated by the additional security measures. Request their response early in the operations. Their forcible entry operations may be needed for firefighter escape or rapid intervention team entry in case personnel or units become lost or disoriented. Additional rapid intervention teams may also be needed because of the size and complexity of operations.
- Test response plans by holding drills and exercises. Tablet exercise, as well as limited and full response drills, should be conducted periodically. During these drills, verify apparatus access and placement information. Lessons learned should be used to update the department’s and the facility’s emergency response plans.

With today’s increased security issues related to the terrorism threat, it stands to reason that fire department operations at industrial occupancies will be affected in some way. It is up to the fire service to recognize and understand this and to acquire the knowledge needed to modify our planning and operations. We can do this by observing conditions in our response areas, educating ourselves relative to changes in laws and codes, doing preincident planning and updating plans as necessary, and developing dialogue and relationships with industry and security personnel. Neglecting to do this will adversely affect our ability to respond to terrorist incidents. We must be ever vigilant of the life-altering changes that have taken place in our society since September 11, 2001, and their effects on security and emergency response.

References