Meeting Expanding Challenges with Innovative Concepts: The FDNY Hazardous Materials Response Program

by Battalion Chief John J. Fanning (2), Haz-Mat Operations

Dealing with hazardous environments and materials is nothing new for members of the New York City Fire Department. It is--and always has been--at the heart of our mission to protect the citizens of this City. However, in the early 1980s, the need for specialized hazardous materials response and mitigation services became more apparent as the volume of hazardous materials being transported, used and manufactured in the City escalated.

During this time, the Federal Government reacted to the proliferation of these materials and a rise in the number of serious incidents related to them. Sweeping legislation was passed in areas such as community right-to-know and worker protection standards.

The defining event for the FDNY occurred on August 8, 1980, when a propane tank truck developed a leak on the off ramp of the George Washington Bridge, threatening the residents of nearby Washington Heights and stranding thousands of motorists throughout the region for hours. In addition to the hazards involved, the region's economy was impacted adversely as a result of shutting down this main transportation artery. At this operation, the members of Rescue 4 succeeded in preventing a catastrophic explosion by plugging the leak (see cover of *WNYF*, 3rd/80).

As a result of this incident, the Department and some forward-thinking members of Rescue 4 outfitted an old salvage truck with haz-mat response gear and resource materials, giving birth to the formal haz-mat response program in the FDNY. Despite the best efforts of Rescue 4 to meet the growing demand for this service--while at the same time providing their rescue services--the need for a fully dedicated, highly trained and totally equipped haz-mat company became clear. On September 22, 1984, the Department established Hazardous Materials Co. 1 (HMC-1) in Maspeth, Queens.

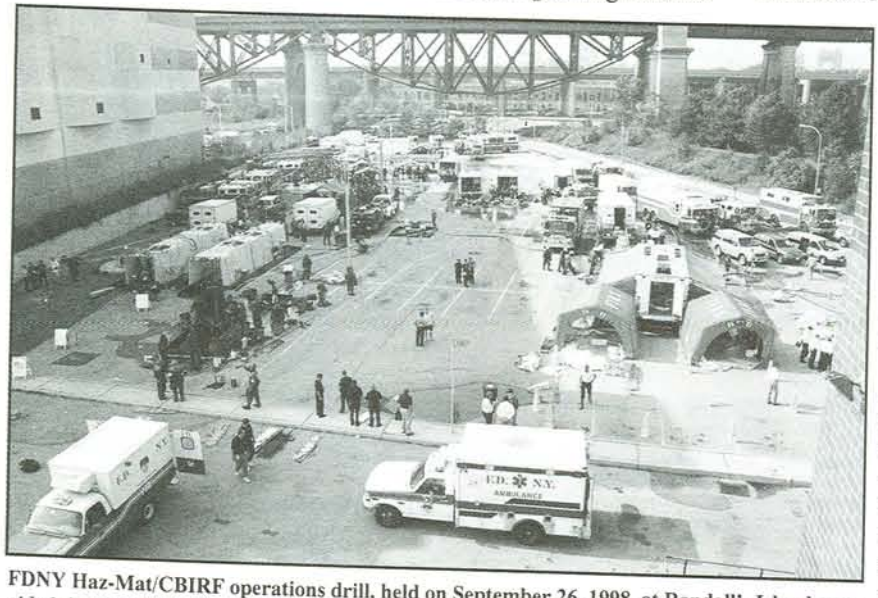
Since its establishment, HMC-1 has met the call for specialized services with enthusiasm and expertise. They are the first-line response to haz-mat emergencies, not only for the FDNY, but for all City agencies as well. They are relied upon heavily by FDNY Incident Commanders and are an indispensable resource at major emergencies. They have evolved into a premier hazardous materials response team. The experience and technical knowledge of this unit were key factors considered by the Mayor's Office in making the FDNY the lead agency for response to all incidents of this nature.

Even with the formidable resources that HMC-1 brings to bear, the City's response to major haz-mat incidents had to be re-examined as a result of the March 20, 1995, terrorist attack in Tokyo, Japan. The Tokyo subway system was the target of an intentional release of sarin--a nerve agent--that quickly overwhelmed the city's fire, police and medical forces. The resulting 12 deaths and thousands of injuries highlighted the need for a thorough reevaluation of response capabilities to chemical, biological and nuclear events. This effort focused on the abilities of the individuals who could, with proper training and equipment, probably do the most for the victims of such an event--the first responders. This reappraisal continues today in cities and communities--both large and small--in this country and abroad. New York City is no exception. Due to our size and target potential and an in-depth proactive effort by the FDNY and the City Administration, our efforts are the model for others to emulate.

The FDNY takes this role seriously and continues to work closely with the Mayor's Office of Emergency Management to formulate an effective response to the consequences of the use of weapons of mass destruction (chemical, biological and nuclear) and to releases of any and all hazardous materials as well.

The FDNY's efforts were bolstered further by the Mayor's Direction and Control Document (see Supplement No. 51 to D.O. No. 49, dated May 8, 1997), which designated the Fire Department responsible, as the Incident Commander, for dealing with the consequences of the explosion or release of material resulting from a terrorist act. Responsibility for mitigation of the material likewise was delegated to the FDNY by the same directive.

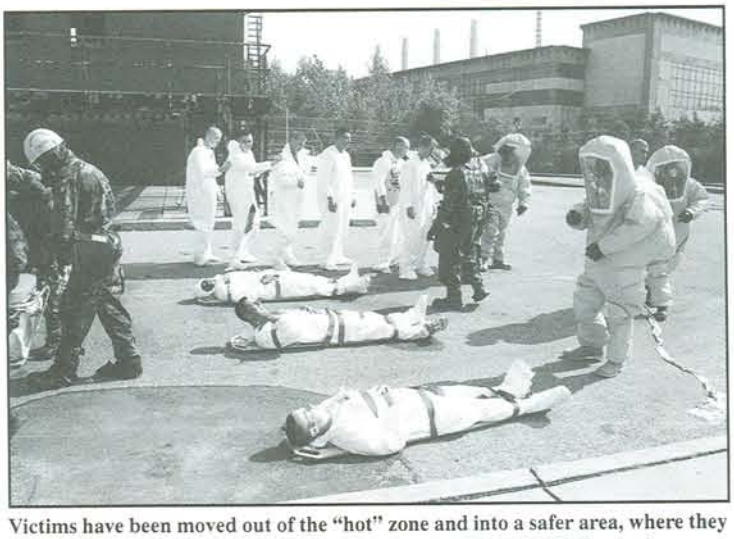
To meet this enhanced mission, the Department



FDNY Haz-Mat/CBIRF operations drill, held on September 26, 1998, at Randall's Island, provided firefighters with realistic scenarios for responding to the aftermath of terrorism and weapons of mass destruction attacks.

all photos by FF Mike McGevna unless indicated otherwise

restructured its hazardous materials response assets. HMC-1's role was enhanced and new equipment assigned. Other units were identified for additional training and equipment and an overall program was designed around the new Haz-Mat Response Group.



Victims have been moved out of the "hot" zone and into a safer area, where they can be examined and decontaminated during the FDNY/CBIRF exercise.

The FDNY Haz-Mat Response Group

The Haz-Mat Response Group consists of those units, including HMC-1, which are assigned distinct haz-mat response functions in addition to their other duties. All are at the disposal of an Incident Commander to bring haz-mat operations under control. The FDNY units that make up the group are listed in the table on page 4 and their functions are described below.

Office of Haz-Mat Operations

The Office of Haz-Mat Operations is responsible for overall implementation and support of the program as directed by the Bureau of Operations. The office is managed by the Chief of Haz-Mat Operations and his staff. Preparing directives, writing response policy, researching and purchasing haz-mat equipment, issuing and maintaining haz-mat equipment and overall support for the haz-mat program and the units assigned to the Haz-Mat Group are some of the duties of this office.

In May 1998, the Fire Department put the new Squad companies in service as Hazardous Materials Technician Units. Personnel from this office worked diligently to ensure that the units were supplied with the necessary vehicles, equipment, direction and support needed. (See Special Apparatus by Battalion Chief John A. Calderone on page 24. A feature article on the Squads by Battalion Chief Raymond Downey will appear in the 2nd/99 issue of *WNYF*.)

The office likewise represents the Department in relations with the Mayor's Office of Emergency Management and other city agencies (e.g., the Departments of Environmental Protection, Health, Police, etc.) on haz-mat issues. More recently, a direct involvement with this office and various federal agencies (Department of Justice, FBI, Department of Defense, Secret Service, United States Marine Corps, National Guard, Public Health Service, etc.) has resulted in improved mutual understanding of common concerns. Personnel assigned to the Haz-Mat Operations Office also sit on key National Fire Protection Association committees on chemical protective clothing and training.

There are many ongoing projects. Of particular interest is the Department's close relationship with the U.S. Army Soldier & Biological Chemical Command's (SBCCOM) Biological Weapons Improved Response Program (BW/IRP), part of the Domestic Preparedness Program, to prepare first responders to deal with a biological weapons attack. New York City serves as the model city for this project. First responders here and elsewhere stand to benefit a great deal from this joint effort. Training and operational initiatives also have been developed and implemented with the Department of Environmental Protection, Department of Health and Con Edison.

Haz-Mat Operations, in concert with the Bureau of Training's Haz-Mat Technician School, plan and orchestrate FDNY and inter-agency haz-mat drills and exercises.

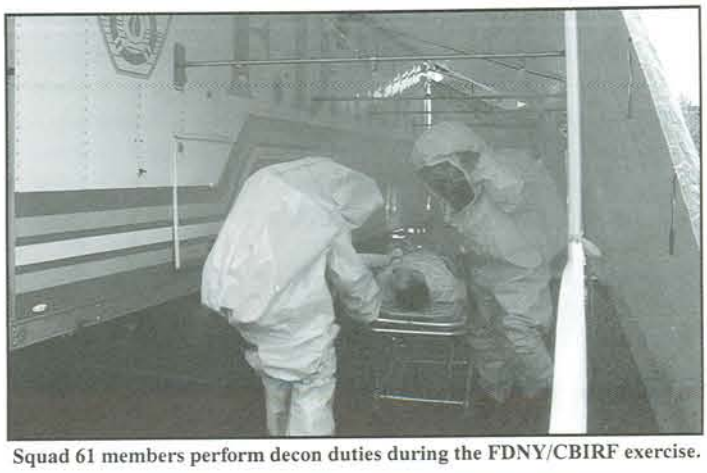
Additionally, the office is responsible for the logistics needs of New York Task Force 1, New York City's Urban Search and Rescue team. The team is co-sponsored by the Federal Emergency Management Agency and the Mayor's Office of Operations. It includes members of the FDNY Special Operations Command (SOC), the FDNY Emergency Medical Command and the Police Department. Haz-Mat Operations maintains the team's huge equipment cache and deploys it when needed.

SOC and Safety Battalions

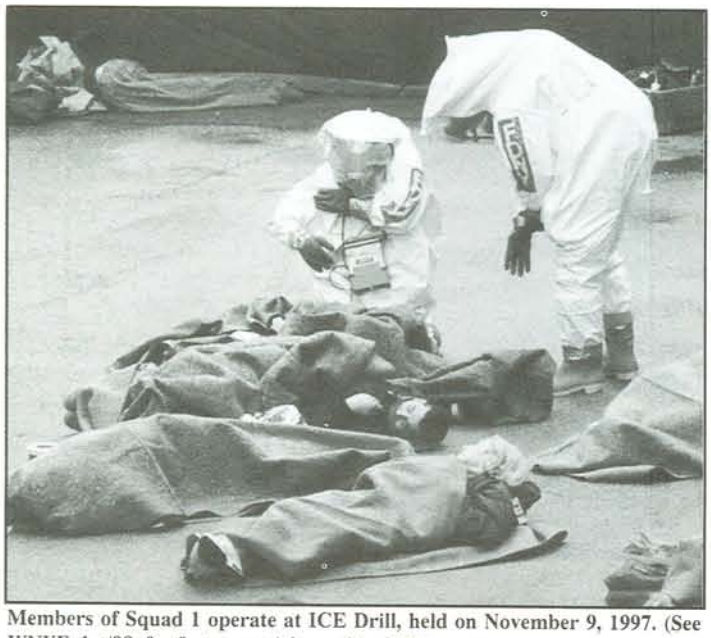
Chiefs assigned to the SOC have been trained as haz-mat technicians. The SOC Battalion, in addition to their other duties, is assigned to haz-mat incidents. His specialized training would allow him to better fill the role of haz-mat sector chief at these operations. This role is critical to freeing the IC to perform strategic functions for resolution of the incident, while the SOC Battalion assists in carrying out the tactical duties associated with the IC's objectives and directs the units in the Haz-Mat Group accordingly. The Safety Battalion Chiefs likewise are trained to technician level so they can perform their safety-related duties at haz-mat operations more effectively.

Hazardous Materials Company 1

HMC-1 is the City's only dedicated, fully staffed, around-the-clock hazardous materials team. The unit is the centerpiece of the haz-mat program. Unit personnel are trained to the hazardous materials technician/specialist level. The personnel assigned to the unit receive extensive training to achieve this level. At a minimum, they must achieve technician status before being assigned



Squad 61 members perform decon duties during the FDNY/CBIRF exercise.



Members of Squad 1 operate at ICE Drill, held on November 9, 1997. (See *WNYF*, 1st/98, for feature article on this drill.)

photo by FF Tom McNulty

to the entry, back-up or resource positions in the company. After becoming technicians, they cover these positions in the unit and move on to more specialized training (National Fire Academy, U.S. Environmental Protection Agency, U.S. Army Chemical School, etc.). Then, they gain two years of experience in the unit before receiving the designation of technician/specialist. Officers must, at a minimum, be trained haz-mat technicians.

The unit brings formidable haz-mat resources to the scene in addition to their experience and training. Besides their complete array of chemical protective clothing, detection instruments, sampling equipment, onboard chemical databases (CD-ROM and hard copy-based), etc., the unit is being issued state-of-the-art technology for detecting chemical and biological agents. Their recent involvement in the biological arena has shown the unit's depth and versatility in meeting new demands. The unit's new digital camera enables them to display photos immediately from inside the hot zone and print them on-scene as well. This has proved invaluable to the IC at recent operations. To expand their identification capability, a portable gas chromatograph/mass spectrometer and a polarized light microscope are being considered for acquisition. The proper use of these technologies will enable the unit to provide the IC with more and better information to assist in his operational decisions.

The company responds with two apparatus, the first piece and a crane-equipped carrier. The first piece has a command area staffed by the resource man, from which he performs his critical functions of information retrieval, in-suit time monitoring, on-scene and outside communications, etc. The haz-mat officer is in constant communication with this member and relies heavily on him for the safe and efficient operation of his unit.

Hazardous Materials Technician Units (HMTU)

To meet the growing needs and challenges of haz-mat response in the City, on August 1, 1998, the Department established eight Hazardous Materials Technician Units (see Supplement No. 42 to D.O. No. 80, dated July 31, 1998). The members of seven Squad companies and one Rescue company were trained as haz-mat technicians. Their units were assigned a second apparatus to serve as their haz-mat tender, which responds with the unit to hazardous materials incidents. Their level-"A" chemical protective suits, however, are carried on their main apparatus, available to the members at all times. (See Hazardous Materials Chemical Protective Clothing by FF Jeff Borkowski on page 7.)

Functions of the HMTUs follow:

- Augment and support Hazardous Materials Company 1
- Provide response coverage to haz-mat incidents when HMC-1 is not available
- Respond with other units in the Haz-Mat Group to large-scale haz-mat incidents (e.g., major haz-mat operations, mass casualty haz-mat operations, terrorist incidents, etc.), to provide for mitigation and mass decontamination.
- Reduce response time by technician-level response units citywide.

Strategically placed around the City, they rendezvous with HMC-1 whenever that unit responds into their respective areas.

If HMC-1 is operating elsewhere, HMTUs can--within the limitations of their training and equipment--operate as an independent haz-mat team in the control and mitigation of an incident. With the availability of the HMTUs, Incident Commanders have an invaluable technical resource at their disposal, even if HMC-1 is not available immediately.

HMTUs will be augmented with additional equipment as they receive training for operating at nuclear, chemical and biological incidents. They will play a pivotal role in New York City's Hazardous Materials Emergency Response Plan.

Chemical Protective Clothing Units (CPC Units)

CPC Units are trained specifically to work safely and effectively in chemical protective clothing, primarily for search, rescue and removal of victims and first responders. They are trained to operate in level-"A" and -"B" CPC and the unit can perform decontamination of their own members. However, they are neither trained nor equipped to perform mitigation. They can be used at any incident where the Incident Commander feels their training and equipment would be beneficial; e.g., long duration and/or manpower-intensive CPC operations. (See Fire Tactics and Procedures, Hazardous Materials 5, Chemical Protective Clothing (CPC) Units, dated October 22, 1998).

Currently, eight Ladder companies and four Rescue companies are designated as CPC Units. Rescue Company personnel--and all members of SOC--are trained haz-mat technicians. However, their Haz-Mat Group function, with the exception of Rescue 5 (which is an HMTU), is that of a CPC Unit, which is primarily search, rescue and removal. All CPC Ladder companies are trained to haz-mat operations level as is the rest of the firefighting force.

Major exercises, such as New York City's Interagency Chemical Exercise (ICE) on November 9, 1997, and more recently, a joint exercise with the FDNY Haz-Mat Group and the U.S. Marine Corps Chemical and Biological Incident Response Force (CBIRF) on September 26, 1998, highlighted how invaluable the CPC Units are in entering the hot zone repeatedly and rescuing large numbers of victims. Due to the success at these exercises, additional Ladder companies have been trained and put on-line as CPC Units with the prospect of further expanding this part of the program.

Emergency Response Squad (ERS) and Haz/Tac Ambulances (HTA)

The Haz-Mat Group is enhanced by the addition of the Emergency Response Squad and the Haz/Tac Ambulances of the Emergency Medical Service Command. The HTAs are Department ambulances that, in addition to their normal 911 response functions, are staffed by paramedics and EMTs who have been trained as hazardous materials technicians. In addition to their medical capabilities, they are able to work in chemical protective clothing and perform limited medical duties in hazardous areas. They can address medical issues during removal and decontamination and provide critical medical support to contaminated victims and the other units in the Haz-Mat Group.

Ten HTAs, supervised by the Emergency Response Squad (ERS), are available to respond to haz-mat operations. The ERS is staffed with an EMS officer and an EMT. The ERS provides a liaison to the Haz-Mat Group supervisor, with an emphasis on medical issues and medical support at haz-mat operations. This unit can provide "one-stop shopping" for myriad haz-mat medical issues that arise for the IC.

Decontamination Units and the Decontamination Support Unit (DSU)

The Department currently has two Decontamination Units. One is quartered at Ladder Company 15 in Lower Manhattan and is brought by that unit to the scene when requested. The second unit, to go in service shortly, is kept at the Fire Academy on Randall's Island with Engine Companies 35 and 83, designated as transport and back-up units, respectively. This is a mass casualty decontamination unit that can be used at incidents involving any number of contaminated victims. Additional Decontamination Units will be activated in the future.

The Decontamination Support Unit (DSU) on Roosevelt Island responds to every incident to which decon units are called. The DSU is staffed by members trained in decontamination procedures and the logistics and mechanics of setting up and using the Department's decon equipment. They ease the flow of tedious decon operations and provide for both personnel and equipment decontamination. This unit arranges for cleaning contaminated turnout gear and the issuance of necessary loaner gear. DSU personnel also operate the FDNY Decontamination Laundry and Reclamation Facility in Brooklyn. By virtue of their specialized experience, the DSU is an indispensable asset to the IC whenever decon operations are being considered.

Other FDNY haz-mat assets

In addition to the above, Haz-Mat Operations maintains other specialized equipment for response to major haz-mat incidents. Two trailers carrying containment vessels for extremely dangerous materials and agents are available to overpack and remove these materials to proper locations. Two expandable trailers are stocked with equipment and supplies to support major, long-term operations.

Haz-Mat Operations also supports a refurbished military ambulance as a meter repair truck. It operates out of HMC-1's quarters and makes regular cycles to the Haz-Mat Group units to provide repair, calibration and training services for the Group's detection equipment.

Likewise, special events are supported by Haz-Mat Operations, often providing the services of an additional, fully staffed, hazardous materials response unit. Examples of these events are United Nations General Assembly sessions, major concerts in Central Park, ticker-tape parades up lower Broadway, etc.

Containment vessel trailer.

Much of what has been accomplished in the program is due, in large part, to the efforts of the Bureau of Training, particularly the Haz-Mat Technician School held at Building No. 8. This facility has taken on and kept pace with the enormous amount of training that had to be delivered to properly prepare units for their new roles. This unit now is working on quality, innovative ways to provide for both the needs of new personnel and the proper level of maintenance training for all current Haz-Mat Group personnel.

Conclusion

The Fire Service is charged with ever expanding responsibilities in its role of protecting the public. The FDNY embraces these challenges in its mission of hazardous materials response as we do in all others--with determination, professionalism and innovation. The age of terrorism and weapons of mass destruction has raised the bar in our profession. By adapting to and preparing for our increased roles with the same level of expertise and resolve that we bring to all other facets of firefighting, we make ourselves ready--not just for the worst-case event, but for all of our day-to-day operations as well. The FDNY lead in response to hazardous materials incidents will be extended into this area as well. The Fire Service, with the FDNY as a prime example, is at the forefront in protecting its communities from the consequences of dangerous releases of hazardous materials of all kinds.

About the Author...

Battalion Chief John J. Fanning (2) is a 29-year veteran with the FDNY and Chief of Haz-Mat Operations. He has been assigned to Squad 5, TCU-712, Ladder 59, Ladder 26, Haz-Mat Co. 1 and Engine 332. Additionally, he has served as Chief of Technical Services and Chief of Fleet Services. He is a task force leader for NY-TF1 and was deployed with the team to Oklahoma City, OK, and Puerto Rico. He also served on FEMA's Incident Support Team for the 1996 Summer Olympics in Atlanta, GA.