

Hazardous Materials Chemical Protective Clothing

by FF Jeff Borkowski, Haz-Mat Co. 1

Until recently, Chemical Protective Clothing (CPC) had been used by only one unit in the FDNY--Haz-Mat Co. 1. With the recent worldwide and domestic terrorist acts involving the use of Chemical Warfare Agents and other Weapons of Mass Destruction (WMD), the FDNY has taken great strides forward in training and equipping its first responders to combat these threats.

Currently, there are 19 units (Rescues 1, 2, 3, 4 and 5, Squads 1, 18, 41, 61, 252, 270 and 288 and Ladders 1, 2, 6, 10, 21 and 35, in addition to Haz-Mat Co. 1) that employ many kinds of CPC. Additionally, two more units (Ladders 80 and 87) are undergoing training in the use of CPC. (This does not include the units within the EMS Command that also use CPC.)

While this is a great step forward, it mandates that a thorough program be in place to address the many complex issues associated with CPC. These issues include:

- Selection of the proper kinds of CPC.
- Procurement of a sufficient supply of all selected kinds of CPC.
- Care and maintenance of the CPC in the field.
- Initial and re-training of personnel who will use the CPC.
- Decontamination and disposal of potentially contaminated CPC.

The FDNY's CPC program is directed by the Office of Haz-Mat Operations, located in the Brooklyn Navy Yard. All procurement, testing and maintenance are handled through this office. Training takes place at the Haz-Mat Technician Training School located at the Bureau of Training on Randall's Island.

Selection of CPC dates back to 1992, when the Department hired a consultant to perform a study of Haz-Mat Co. 1 responses. At that time, the Department had a total of 16 of one kind of reusable level-"A"* suit, which was extremely expensive and which the responders felt did not meet their needs for the tasks they were performing. During this study, the responders from Haz-Mat Co. 1 evaluated many different types and brands of level-"A" CPC and ultimately chose the Tychem® 10,000 suit used today.

Currently, there are more than 350 of these



Inflation (pressure) testing of level-"A" suit.



Pictured, left to right, are the PVC Splashsuit, Tychem 10,000 Level-"A" Suit and Tychem 9400 Suit. The Tychem 10,000 provides the highest level of protection, but probably is the least used garment in the FDNY's CPC program.

all photos courtesy of FF Jeff Borkowski

suits in the FDNY inventory. Each of the suits assigned to response companies requires testing and inspection by certified personnel on a bi-annual basis. A rotation program has been established for each CPC company to receive newly tested suits at the same time the current ones are removed from service for testing. This allows the FDNY to maintain its current level of available in-service CPC companies. If a suit fails during the testing process or there is any question regarding its serviceability, it is removed from service and designated as a training suit. While the Tychem 10,000 suit provides the highest level of protection for our members' needs, it probably is the least used garment in the program.

Many levels of protective clothing are necessary to perform the everyday haz-mat tasks that units are called upon to perform. This is accomplished by using other types of CPC that are not as cumbersome or restrictive to the wearer, but protects them as dictated by the situation. Some of those items include the Tychem 9400 suits, PVC splashsuits, Tyvek and Saranac suits. These are not as protective or rigorously tested as the Tychem 10,000; however, they do afford some limited chemical protection and are used at incidents when thorough, on-scene research deems them adequate for the hazard faced and task to be performed.

Most CPC suits do not come as a single, complete ensemble. Gloves and boots are part of the package. The Haz-Mat Company carries at least six different kinds of chemical-resistant gloves and three kinds of boots or booties for chemical responses. Each item has different chemical compatibilities and is used according to the hazard involved.

Decontamination and disposal are issues that until the "one-use" policy was adopted, were complex at best. Re-usable suits had to be

decontaminated after use and tested before being put back into service. This presented a variety of problems and concerns. Is the suit contaminate-free? There is really no true way to certify that a suit is contaminate-free after exposure without destructive laboratory testing of the fabric. This presents a confidence problem for the wearer, who is expected to put on a suit that has been returned to service after use. The FDNY has addressed this concern by switching to "limited use" suits and establishing the policy that once the suit is worn in a contaminated or suspected contaminated environment, it is considered contaminated and disposed of as hazardous waste. This is true for any item of CPC, including boots and gloves.

There are many issues that need to be addressed when dealing with Chemical Protective Clothing. While challenging, the Department has taken the appropriate steps to implement proper procedures to ensure that its responders are well-protected and properly trained to deal with the tasks confronting them.

*Level-"A" is an EPA definition for a level of protection. A level-"A" suit as referred to is a fully encapsulating, vapor-protective ensemble, capable of providing the wearer with the highest level of chemical vapor protection at a haz-mat scene.

About the Author...

FF Jeff Borkowski was appointed to the FDNY in October 1985. He is assigned to Haz-Mat Co. 1 and currently detailed to the Office of Haz-Mat Operations, where he is responsible for research, development and procurement of equipment used in the haz-mat program. He also represents FDNY on the NFPA committee responsible for specifications for Hazardous Materials Protective Clothing and Equipment.

