

Upon arriving at Brooklyn Box 132, a visible plume was drifting south, off the property at 215 N. 10th Street and into the intersection of N. 10th and Roebling Streets. The property in question contained one 5000 gallon vertical storage tank, numerous 30 gallon carboys (labeled Hydrochloric acid), and a shed housing several 100 pound cylinders of ammonia. The evidence suggested that the plume might be an acid vapor release. Haz Mat 5 1 advised the Incident Commander, BC Dillon, Bn 35, to reposition all units upwind (north) and to secure the area for one block in all directions. FF-1 Henry (assigned Resource man) initiated an investigation of the whereabouts of the owner of the property as Lt. Culley with FF's Hay and Borkowski (Backup Team) surveyed the area for the cause of the leak. This survey disclosed that fumes were emanating from at least two separate openings atop the 5000 gallon vertical storage tank.

FF-1 Henry's search (via cellular telephone) located the owner, Mr. McGuire, at home. Mr McGuire identified the contents of the tank as concentrated Hydrochloric Acid and that the top is normally secured with a hatch cover and a vapor recovery system. (Mr. McGuire was ordered to the scene.)

A second survey by the Haz Mat Team discovered the "blown" hatch cover at the base of the tank and pinpointed the second opening to be a hose - ruptured at the point where it was connected to the vapor recovery piping.

As concentrated Hydrochloric acid is highly corrosive to the skin as well as to the respiratory system, the decision was made to secure the two openings with the Haz Mat Entry Team donned in Level "A", fully-encapsulated chemical exposure suits. It was also decided that approach to the top of the vertical tank would be made by tower ladder basket.

Tower Ladder 146 was brought to a position east of the leaking tank. Although the predominant wind was from north to south, variable breezes occasionally shifted the acid plume from south of the leaking source to an area east of the source. As this predicament would place the tower ladder's pedestal man in the vapor cloud, it was further decided that the pedestal be operated by a Haz Mat Team member wearing a chemical exposure suit.

After recovering the missing hatch cover and selecting an assortment of gasketing and clamping devices, FF-a's Awal and Martin (Entry Team) donned Chemfab Level "A" chemical exposure suits and entered the basket of TL 146. The basket was brought into position over the offending tank by FF-1 Hay who operated the pedestal controls while protected in a Level "B" Kaplar exposure suit. FF-1 Borkowski assisted Lt. Culley in guiding FF-1 Hay in the positioning of the basket as the visibility of the Entry Team was limited due to the density of the acid plume and

the limited optical field afforded by the Level "A" suits.

The Entry Team, first secured the errant hatch cover while working from the upwind side of the tank then, after repositioning the bucket to the area of the vapor recovery piping, operated within the acid vapor (downwind) to repair the ruptured hose and secure it to the piping. While working within the vapor cloud and in direct physical contact with liquid hydrochloric acid (which had recondensed on the surfaces of the tank, the piping and the hose) firefighters Awal and Martin repaired the rupture hose and properly reconnected it to the vapor recovery system's piping. At this point the 1-hour SCBA's worn by the Entry Team within their chemical suits began to go into the Vibralert mode. Lt. Culley ordered FF Hay to return the Entry Team to the street where FF's Falzone and singletary (Decon Team) were positioned for decontamination and removal of the Level "a" suits.

while decontamination procedures were going on, Lt. Culley inspected repairs to the hatch and vapor recovery system from the tower ladder basket and declared that the hazardous release had been mitigated.

Subsequent to the decontamination and securing of the Level "A:" suits, the pedestal area, the boom and the basket of Tower Ladder 146 was washed down and tested for acid residue. Upon finding "neutral" pH readings the truck was returned to its unit.

The Haz Mat Unit concluded its operations at this incident by making recommendations to the Incident Commander that (1) violation orders be issued to Mr. McGuire for the proper repair of the acid storage system and (2) that notification be made to Fire Prevention requesting an inspection of the facility.

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Hazardous Materials Co.1 of the F.D.N.Y. responds daily to a varied collection of emergencies and has been doing so since October of 1984. The unique equipment of this company is maintained by the firefighters assigned to the company and standard procedures are practiced regularly. All this notwithstanding, the direct entry into an acid vapor cloud while wearing a fully encapsulated chemical exposure suit has never been rehearsed much less carried out from the platform of a tower ladder prior to this incident. The on-site evaluation of the hazard, the selection of the proper level of protection, the assembly of the repair equipment (to match the problem at hand) was carried out in the usual professional manner which the job has come to expect from this unit.

the actual mitigation of the release of the hydrochloric acid was done from the limited space of a tower ladder basket of

about 15 square feet by a two-man team, who while wearing exposure suits occupy nearly 16 square feet leaving little or no room for the accessible placement of tools and for the maneuverability required to affect a complex repair operation. This team not only accepted their difficult task unflinchingly - they carried it out while encumbered by two layers of clothing, SCBHA's with 1-hour (wide-profile) cylinders, limited visibility in a condensing vapor cloud and the unpredictability of a spare apparatus (TL 146). Entry Team members Awal and Martin were also faced with a hose connection which was disintegrating as they worked to repair the vapor recovery system.

The smoothness of this operation, under such condition, is a testament to the skills and proficiency of these unusual firefighters - and for this I would like to recommend a Unit Citation for their actions at this incident.

Firefighter Martin, working with Firefighter Awal as the Haz Mat Entry Team, was assigned the task of securing two openings at the top of a 5000 gallon vertical storage tank. At the time this tank was topped off with concentrated Hydrochloric Acid. Hydrochloric acid has an ambient vapor pressure of 4 atmospheres and is stored in above-ground tanks with vapor recovery systems which prevent hydrogen chloride vapors from escaping into the atmosphere. Haz Mat 1 was special called to Brooklyn box 132 when a plume was discovered wafting across the intersection of North 10th St. and Roebling St. in the Williamsburg section of Brooklyn. This then was an immediate hazard to the public requiring an emergency response of a trained Haz Mat Team. An investigation and survey of the site revealed that the vapor recovery system was damaged and a hatch cover had been dislodged from the top of the storage tank.

As there was no other safe way of approaching the top of the tank, it was decided that the Entry Team would operate from the bucket of Tower Ladder 146. This procedure would put the Entry Team out of direct reach by their Back-up Team if any trouble should appear - which is slightly out of line with company policy. Instead, the Back-up Team would operate the pedestal controls and the Decon Team would be in the "ready" position if a second entry or rescue were needed. Also in variance with standard haz mat chemical exposure suit procedure was the use of FDNY handie-talkies rather than in-suit, voice activated radios, which were out-of-service at the time. This handicap severely limited FF Martin's ability to communicate with the Haz Mat officer as the operation was developing.

After assembling a selection of gasketing and clamping tools, FF Martin donned a Level "A" Chemfab fully-encapsulated chemical exposure suit and entered the basket of Tower Ladder 146. It should be noted here that such an operation (operating from a TL bucket while in a chemical exposure suit) had never been rehearsed much less actually carried out prior to this incident.

Like FF Awal, FF Martin unflinchingly accepted the task at hand with full knowledge that any breach of his exposure suit would immediately subject him the corrosive action of the hydrogen chloride vapors. The possibility of such a breach was enhanced at this operation due to the spatial limitations of the tower ladder bucket and the number of physical snares located in close proximity within the bucket, eg. the Stang assembly, the lighting fixtures, the intercom, the gate and gate locks, the snaps on the safety harness, the railing assembly, the controlling handle assembly. FF Martin also knew that any operation in such a suit would cause him to perspire and the encapsulating nature of the suit would prevent that perspiration from evaporating. Any puncture of the suit would expose his wet skin surfaces to the highly soluble hydrogen chloride vapors, which, once dissolved, would have the corrosive action of concentrated hydrochloric acid. The perspiration would also

condence on the outer surface of his mask facepiece as well as to the inner facepiece of the suit - cutting his visibility down to a few inches.

The two tasks assigned the Entry Team were (1) to replace and secure a hatch cover to the top of the acid storage tank and (2) to repair the damaged hose section of the vapor recovery system - also located at the top of the tank. While the first task was carried out from the upwind side of the opening, the second, due to the configuration of the tank and the placement of the tower ladder bucket, had to be carried out from the downwind side of the second opening. This placed FF Martin in the acid vapor cloud! This position further restricted FF Martin's visibility to nearly zero - while he had to (1) assess the nature of the damage, (2) devise a proper sealing system from the assortment of materials brought up with him in the bucket, (3) prepare and manipulate a gasket and clamp onto the damaged hose and (4) secure the leak. With the assistance of his partner, FF Awal, this task was initiated with little or no thought as to the potential danger of his surroundings.

While carrying out this operation, the damaged hose in question was actually deteriorating under the effects of the concentrated acid. This put FF Martin in direct contact with the condensed liquid Hydrochloric Acid - thus increasing the potential for injury. As the gasketing and clamp were being applied this decomposing hose broke loose from the vapor recovery system placing both FF Martin and FF Awal in direct contact with the effects of 4 atmospheres of hydrogen chloride gas. With little regard for his own danger, and with the reflexes of a professional shortstop, FF Martin recovered the damaged hose before it fell from the top of the tank. This quick action not only kept the incident from significantly increasing the immediate hazard to public safety, but also allowed the operation to go on without so much as a "hitch" in the pre-operational plan. FF Martin continued operating while his air supply was running dangerously low and, with FF Awal, continued the repair operation until the seal was set.

As the "chemical" burns from Hydrochloric acid are usually described to be nine times as severe as burns received from fire, there is little question that FF Martin's actions were carried out under conditions of extreme personal risk. The fact that he not only continued operating while conditions were deteriorating, but he managed to complete the operation in the well-disciplined, professional manner usually displayed at Haz Mat 1, is a credit not only to the Haz Mat Unit but to the Fire Department at large. For this I strongly recommend FF Martin for recognition for the abovementioned service he has rendered to the citizens of New York.

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