

Hazardous Materials Co. 1 SOC

Unit

Battalion

Division

1419

Brooklyn

Sept. 11, 1996

1207

Box

Borough

Date

Time

1245

Sept. 11, 1996

Time of Act

Date

2. MEMBERS RESPONDING

RANK	NAME	UNIT	ASSIGNED UNIT
Capt.	Peter M. Stuebe	Haz Mat 1	haz Mat 1
FF/1	Richard D. Keller	Haz Mat 1	Haz Mat 1
FF/1	Thomas W. Nouza	Haz Mat 1	Haz Mat 1
FF/1	Kevin Smith	Haz Mat 1	Haz Mat 1
FF/1	Richard V. Smith	Haz Mat 1	Haz Mat 1
FF/1	Dominick A. Tralli	Haz Mat 1	Haz Mat 1
FF/3	Anthony Castagna	Haz Mat 1	Ladder 48
FF/1	Carl Bini	Haz Mat 1	Rescue 5

3. ARE ANY OF THESE MEMBERS BEING RECOMMENDED INDIVIDUALLY FOR MERITORIOUS ACT IN CONNECTION WITH THIS FIRE? No (If yes - list names)

4. LOCATION OF UNIT OPERATIONS:

a) If in building: Address 882 Third Ave., Brooklyn

Height 120' Area 100x100 Construction fire proof

Occupancy Factory Number of apartments in building _____

Floor(s) 6 Room _____

b) If not in building: Give complete descriptive information so that physical setting can be recreated.

5. PERSON(S) AIDED:

NAME	
ADDRESS	
AGE - SEX	
RESCUE BREATHING	
EXTERNAL CARDIAC MASSAGE	
RESUSCITATOR APPLIED	
HOSPITALIZED	
NAME OF HOSPITAL	
DIAGNOSIS	
LENGTH OF HOSPITALIZATION	

REPORT OF UNIT CITATION

Haz Mat 1

Unit

Sept. 11, 1996

Date

6. DESCRIPTION OF UNIT OPERATION:

See attached report.

7. RECOMMENDATION:

Deputy Chief

Division

Date

Hazardous Materials Company 1 was directed to respond to box 1419 by the Brooklyn dispatcher upon receipt of the initial alarm. The incident was reported to be a bromine spill on the sixth floor of a building, with a report of people overcome. Captain Stuebe of Haz Mat 1 relayed to the responding units via Department radio to avoid contact as much as possible with both the liquid and vapors of the product. Bromine is extremely poisonous (its IDLH is 3 ppm), with a sharp irritating odor. Because of its high vapor pressure (172 mm Hg), bromine turns quickly into a vapor, thus potentially threatening many more people than would be endangered by a liquid spill.. Since bromine is also an oxidizer, it may cause a fire upon contact with any combustibles, and enhance any fire already burning, similar to what pure oxygen would do in a fire situation.

Upon Haz Mat 1's arrival, we were briefed by Battalion Chief Lutz of Batt. 48, the first-due companies, and the company chemist. We were told that there were two cardboard boxes, lined with Styrofoam, each holding four one-gallon glass bottles of bromine. The boxes had fallen and at least some of the bottles were known to have broken, possibly all eight. The employees of the factory had covered the liquid with soda ash, which was reacting with the bromine. They then placed large stainless steel pots over the product to contain the fumes being given off by the reaction. This reaction also generated considerable heat. Hydrogen bromide, another poison, was also present, due to the free bromine reacting with normal air.

Three civilians had been treated by EMS for exposure to the vapors, with one in critical condition.

Haz Mat 1 evaluated the information, and realized we would have to make an entry to mitigate the release. Because of the highly poisonous nature of bromine, and the fact that the spilled bromine and soda ash were still reacting and giving off vapors, we determined that our highest level of chemical protective suits would be required. This is a fully encapsulating, gas/vapor tight "level A" suit, with the SCBA worn on the inside of the suit. While this is our best protective suit, the compatibility chart for the suit indicated that bromine would break through the suit in eighteen minutes. We decided to take the risk due to the threat from the bromine, but to limit each entry to fifteen minutes. The use of these suits drastically limits the user's manual dexterity and vision, due to the three pairs of gloves and two facepieces that the ensemble requires. We put the backup team in a "level B" suit, so that they were wearing different protective suit in the event entry team had a problem with their suits. The fifth floor was used for the staging area and dress-out, with the decontamination station set up in the sixth floor elevator lobby.

The entry team (FF Kevin Smith and FF Richard Smith) dressed, and with the back-up team (FF Thomas Nouza and FF Dominick Tralli) manning a protection hoseline, they made an initial reconnaissance into the area. When the stainless steel pots were removed, a large cloud of reddish-brown-vapor was released and settled near the floor. (The members also saw that the stainless steel was badly corroded from the corrosive bromine vapor.) Also, upon contact with the air, the unreacted bromine formed a cloud of hydrogen bromide. This stratified on top of the heavier-than-air bromine cloud, with the

two layers of highly poisonous vapors plainly visible to the entry team. The boxes and Styrofoam were heavily charred from contacting the oxidizing bromine, indicating that a fire had taken place, and could flare up again at any time now that the combustibles were once again exposed to air. The entry team carefully segregated the intact bottles from the other materials. It was determined that two bottles had broken in the first of the boxes, and the other two were leaking vapor from their caps. The same procedure was done to the second box, with the same results: two broken bottles and two leaking from the caps. The plastic caps had melted from the exothermic reaction generated by the bromine and soda ash reaction. The extreme heat from the reaction also melted the solvex outer gloves of the "Level A" suit. When the reconnaissance and separation of the materials was complete, the entry team exited and a wet decon was performed by FFs Castagna and Bini.

After extricating the entry team from their suits, a meeting was held with all members of Haz Mat 1, Battalion Chief Lutz, the Department of Environmental Protection representative, and the chemist. We determined that a second entry would have to be made to overpack all the broken and open bromine bottles (eight in all) into a 12.5 gallon overpack drum. The contaminated soda ash would be placed in a fifty-five gallon overpack drum. This entry would again have to be made in the "Level A" suits. For additional personal protection, we also decided to add thermally protective gloves to the suit ensemble, due to heat being generated.

We decided that we would allow a time limit of twenty minutes for this entry. The compatibility chart did show a breakthrough time of eighteen minutes, but this is for pure bromine. Since by this time the cloud was not pure bromine, but had mixed with air, we felt comfortable with this decision. The second entry was then made, again with the back-up team manning the protective hoseline. When they had overpacked almost all the contaminated soda ash, they had to be removed due to the limited time allowed by the suit and air supply.

After decon, a second discussion was held with all members. We decided to have the back-up team make the third entry to complete overpack of the contaminated soda ash and bromine. We also decided to overpack the 12.5 gallon drum with the broken bottles in to an eighty-five gallon drum as an additional measure to contain the highly poisonous bromine.

The back-up team made their entry and accomplished their mission in just under twenty minutes. They completed the overpacking of the reacting soda ash and liquid bromine, and the boxes and bottles. Because of the gasses produced by the continuing neutralization reaction, the bungs of the overpack drums had to be left loose to allow venting, to prevent an overpressurization failure of the drum. Upon completion, the back-up team exited and was deconned.

The overpack drums were removed outside the building by Squad 1, who had been special-called to back-up Haz Mat 1. The reaction was still ongoing inside the drum, as

evidenced by the fact that the drums were too hot to touch with an ungloved hand. After the drums were safely outside the building, about three hours since the start of the incident, Haz Mat 1 began the process of repacking our gear and taking up.