



hrs. on the morning of Sunday September 3, 1989 Haz-Mat 1 was called to Manhattan box 366, 51 St. and 8th. Ave. Unknown to the members responding, this operation would last for 35 hours.

Upon arrival the following information was relayed to Capt. Kennedy of Haz-Mat 1. A 20 inch water main burst at 0330 and an estimated 50 pounds of asbestos (cancer causing) was stripped off steam pipes by the rushing water and washed 8th. Ave.

The main job of the Haz-Mat was to apply foam from the water main break at 51 St. to 45 St. A map and plan was drawn on the blackboard and also on a clipboard so the officer working in Haz-Mat would have a copy with him at all times. Prior to the start of this operation various contractors were called in to prepare 8th. Ave. All openings into subways, manholes etc. were sealed with plastic to prevent any foam or water entering and causing other problems. Asphalt dikes were at all street intersections to stop any contamination from leaving 8th. Ave. The Police Dept. was on the scene to control traffic in the area. A task force consisting of the Transit Authority, Dept. of Environmental Protection and asbestos removal experts were also represented.

A list was compiled of the special Fire Department units that would be needed to complete this operation.

1. Mask Service unit to provide enough one hour cylinders for the Haz-Mat teams.
2. Searchlight Unit for night operations.
3. A flat bed truck was dispatched to a Haz-Mat depot to provide enough drums for overpacking contaminated equipment.
4. A foam coordinator.
5. Four foam units and their related equipment.

6. Safety Chief
7. Rescue Liaison

The plan called for a foam unit to be located on alternate streets beginning with 51 St. down to 45 St. At this location there also would be three drums with bung wrenches, plastic bags for lining the drums, extra one hour cylinders for the teams in chemical suits and sufficient gloves. A check was made several times to be sure the items listed were together. The Haz-Mat command post was located in a parking lot on 50th. Street where all equipment was laid out. To successfully complete this mitigation it would take 13 firefighters and two Officers from Haz-Mat.

The members were split up into teams of two. Starting at the pumper on 51st. Street, Team 1 stretched a 1-3/4 inch line and applied foam down to 50 Street. Team 2 stretched uptown to the South side of 50 St. and covered 50 St. to 49 St. with foam. Teams 3 and 4 worked off the pumper on 47th. Street applying foam in the same manner as teams 1 and 2. This was all performed simultaneously. When their assignments were completed the teams continued working down to 45th. Street. At the conclusion 8th. Ave. would be completely covered by foam building line to building line, thus preventing asbestos on the street from drying out and becoming airborne. After a change of air cylinders the whole procedure was started over again, this time with water to wash down any residue into the sewer. The two decon teams were standing by at 47 St. and at 45 Street. The Lieutenant in Haz-Mat supervised the members working with the foam line. The Captain coordinated the operation between the teams and other city agencies.

A van was used by the resource man and officer to travel up and down

the side streets because they were unable to enter the hot zone  
Vital signs taken by EMS would be recorded at the beginning and  
at the end of this operation as well as other information pertaining  
to this incident.

No precedent had been set for this type of operation. Due to  
the team work and professional manner in which it was carried out,  
the citizens of New York City received the very best service from  
Haz-Mat Co. 1. I therefore request consideration by the Board of  
Merit.

There were no heroes or rescues at this operation; only 34  
hours of continuous, unglamorous, hard, hazardous material control and  
cleanup. By using experienced hazmat personnel instead of inexperienced  
company firefighters the FDNY save several million dollars in  
decontamination procedures. Because of the 34 hours of continuous work  
by the members of this unit there was no costly apparatus cleaning at  
the division of training, no uniform and equipment replacement. Haz mat  
personnel efforts and expertise prevented this asbestos incident from  
becoming another Grarrerency park disaster.

Capt.	Howard R. Kennedy	Haz-Mat Co. 1
Lieut.	James Oliveri	Batt. 35
Lieut.	Albert Warta	Batt. 46
FF lst.	Joseph Iovino	Haz-Mat Co. 1
FF lst.	Michael Kanner	Haz-Mat Co. 1
FF lst.	William Bokelmann	Haz-Mat Co. 1
FF lst.	John Olewnicki	Haz-Mat Co. 1
FF lst.	John Cassidy	Haz-Mat Co. 1
FF lst.	Richard Gimbl	Haz-Mat Co. 1
FF lst.	Kevin Smith	Haz-Mat Co. 1
FF lst.	Thomas Nouza	Haz-Mat Co. 1
FF lst.	Philip Hudak	Haz-Mat Co. 1
FF lst.	John Hack	Haz-Mat Co. 1
FF lst.	Sean Cotter	Haz-Mat Co. 1
FF lst.	Larry Singletary	Haz-Mat Co. 1
FF lst.	Robert Ingram	Haz-Mat Co. 1
FF lst.	<u>Vincent</u> Doherty	Haz-Mat Co. 1
FF lst.	Kevin Shea	Lad. Co. 108
FF lst.	Jeffrey Borkowski	Eng. Co. 288
FF lst.	Frank Derop	Eng. Co. 288
FF lst.	Joseph Proscia	Eng. Co. 324
FF lst.	Brian Kearney	Eng. Co. 324
FF lst.	Vincent Zano	Lad. Co. 138



Additional facts are now being presented to the Board for their consideration which will show the cooperation and teamwork performed by members of Haz-Mat Co. 1

1. Members of Haz-Mat assisted the Dept. of Environmental Protection personnel in obtaining samples of asbestos for analysis.
2. Technical advice given to Acting Chief of Dept. Rivera, DAC Kearney and Deputy Chief Dunn, Div. 3, helping them to reach a decision.
3. All members working in the five teams expended two 60 minute Scott cylinders each, approximately 100 minutes of operating time per member. All operations in the "hot zone" were performed in level "B". This equipment causes severe psychosomatic stress. (Temp.-low 60degrees and high of 80 degrees)

The estimated equipment expended will show the complexities of this "job".

5. The diagram of operation illustrates the teamwork of the Haz-Mat Unit.
6. Above all, no Fire Dept. members were contaminated from the 1st. units on the scene until the last firefighter returned to quarters. There was no recurrence of Gramercy Park due to the dedication and cooperation of this company. All vehicles at the scene were decontaminated before they were put back in service, eliminating the spread of contamination.

On the basis of additional information I therefore request that the Board reconsider this appeal for a Unit Citation in favor of Haz-Mat 1.



**STEPHEN L. HERMANN**  
Hazardous Materials Unit  
Commander  
Arizona Department of Public  
Safety

# PSYCHOSOMATIC INJURIES: HOW COMMON ARE THEY?

DURING THE PAST 12 YEARS AS A HAZARDOUS materials specialist for the state of Arizona, I have had an opportunity to respond to more than 100 accidents and incidents involving hazardous materials. During this time, I have seen dozens of persons become symptomatic. In my experience, more than 50 percent of these people were suf-

fering apparent psychosomatic injuries, in that their symptoms were not consistent with the chemical(s) involved in the incident.

I have been told that medical doctors who specialize in toxicology and who teach classes to paramedics specializing in hazardous materials have recognized this same phenomenon. Paramedics are taught not to list symptoms and then ask

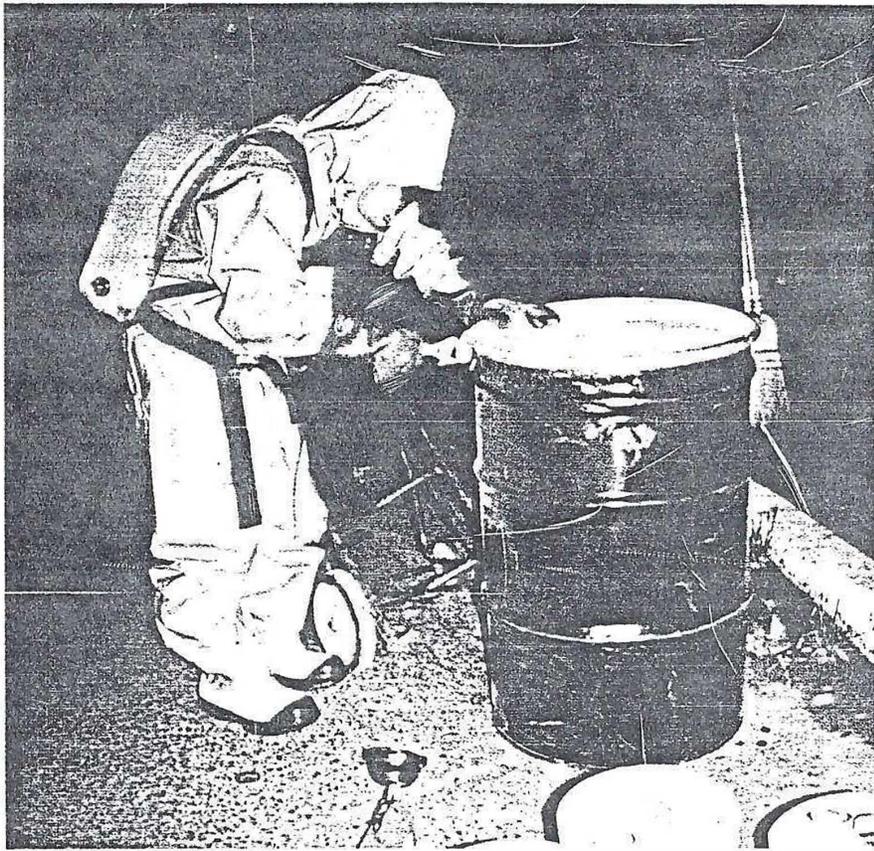
victims if they have any of them, because the patient invariably will develop some of the symptoms that are listed. Paramedics are taught instead to ask patients what they are feeling and to treat them accordingly.

For a variety of reasons, it appears that stress is the factor that produces the most symptoms at the chemical spills I have attended. The symptoms in many cases

**No matter how real and dramatic the symptoms at a hazardous materials incident are, this author says there is a fifty-fifty chance they could be caused by stress and not by the chemical(s) involved.**



PHOTOGRAPH BY STEVE HERMANN



**The author and his partner had psychosomatic injuries after sampling unknown substances from hazardous waste containers.**

were very real and dramatic; they just were not caused directly by the chemical involved in the incident.

The complex psychological factors that may be present in incidents involving hazardous materials are not well understood. An exhaustive study was made on the inadvertent and massive polybrominated biphenyl (PBB) animal feed contamination incident that occurred in Michigan in the seventies. The report states, "While there is very limited evidence that PBBs are responsible for the reported neurological symptoms, (including nervousness, dizziness, depression, and sleep problems), the majority of researchers feel the stress of the incident is a more likely culprit."<sup>1</sup>

Health evaluations of the most heavily exposed failed to prove that significant ill effects resulted from PBB ingestion. For example, a study on a subset of 23 farmers who experienced heavy exposure and reported multiple disabling health problems failed to link PBB exposure with the problems. Although the farmers complained frequently of such constitutional symptoms as depression, fatigue, weakness, and memory loss, all medical tests were negative. Researchers concluded that reactive depression, not PBBs, was responsible.<sup>2</sup>

One research team carried out two studies on exposed farmers who were complaining of memory dysfunction. When administered specialized tests, the farmers did show memory loss, but re-

searchers blame it on psychological dysfunction.<sup>3</sup> Another group of scientists who studied heavily exposed farmers were unable to find any evidence to suggest physical changes or damage to the brain.<sup>4</sup>

A PBB Scientific Advisory Panel appointed by Michigan Governor William G. Milliken eventually recommended that the most prudent action was the removal of all PBB sources that might lead to further human contamination. But the panel's extensive report noted:

"While this information may be disputed with respect to symptoms reported by patients to their physicians, the panel received no report or data correlating symptoms to body burden of PBB, or abnormal blood chemistry, in a concentration-effect relationship. The panel received no evidence that significant health effects resulting from PBB ingestion have been documented in man."<sup>5</sup>

The exact role that stress plays is uncertain; however, it has been reported that anxiety commonly causes physical symptoms that may be manifested long before a person is aware of his anxiety.<sup>6</sup> Such symptoms include dizziness, palpitations, weakness, chest and abdominal pains, headache, back pains, and diarrhea. In addition, chronic anxiety, depression, or emotional distress may affect a person's susceptibility to a variety of diseases.<sup>7</sup>

A questionnaire administered to exposed and nonexposed groups of individ-

uals at the Price Landfill in Atlantic County, N.J., determined that the number and frequency of adverse health symptoms in the exposed group were greater than would be expected, given the known toxicity of the comparatively low levels of chemicals found in the drinking water. The report noted that a similar study of water contamination in another part of New Jersey also showed an increased number of reported symptoms in the exposed group; however, when the water data were reviewed it was found that the exposed group was misclassified and that this group's water was not, after all, contaminated.<sup>8</sup>

The fact that the same increase in reported symptoms occurred among individuals who thought their drinking water was contaminated as occurred among individuals who really did have low level water contaminants suggests that stress may be a factor in the etiology of health complaints.<sup>9</sup>

Even experienced hazardous materials emergency responders are not immune to this apparently psychosomatically-induced form of injury. I attended a spill involving an insecticide in a commercial neighborhood during which 13 persons, including members of the fire department's hazardous materials team, were taken to a poison control center for treatment.

The insecticide involved was an organophosphate, which is a "nerve agent" that inhibits the enzyme cholinesterase. This fact was recognized at the scene, since the 5-gallon drums were clearly labeled and because of the strong odor of the spilled contents of one 5-gallon can. Both policemen and fire fighters became symptomatic and were evacuated to a hospital.

Poison control center doctors and nurses had difficulty treating the exposed individuals because their symptoms were inconsistent with nerve agent poisoning. Laboratory blood tests failed to show any evidence whatsoever of cholinesterase inhibition. The hospital even called for a container from the incident to verify the diagnosis. But hospital personnel did not understand what was occurring until they learned the exact chronology of events at the scene.

Household bleach had been used to neutralize the spilled insecticide. The patients' symptoms were consistent with those displayed by swimming pool treatment workers and by housewives exposed to chlorine fumes. It was clear that the symptomatic individuals had smelled small amounts of chlorine liberated in the neutralization reaction or had sniffed the odor of chlorine bleach and had become ill.

The longer I respond to hazardous materials emergencies, the more convinced I become that psychosomatic injuries are

fairly common. In fact, I myself have become psychosomatically ill. This type of injury may simply be part of the learning curve or work experience of a seasoned hazardous materials responder. Sooner or later a responder will make himself psychosomatically ill.

The situation is reminiscent of the saying about pilots who fly airplanes with retractable landing gear which can be left up inadvertently on landing: "There are two types of retractable gear pilots—those who have landed with the gear up, and those who will land with the gear up." It is probably safe to say that there are also two types of hazardous materials emergency responders: those who have suffered psychosomatic injuries and those who will.

My own experience involved an investigation years ago of nine abandoned 55-gallon drums in a remote desert area.

We surveyed the scene and, after having found and lifted several good fingerprints, determined that we might have a felony dumping case. To prove an element of the crime, we needed samples from the drums.

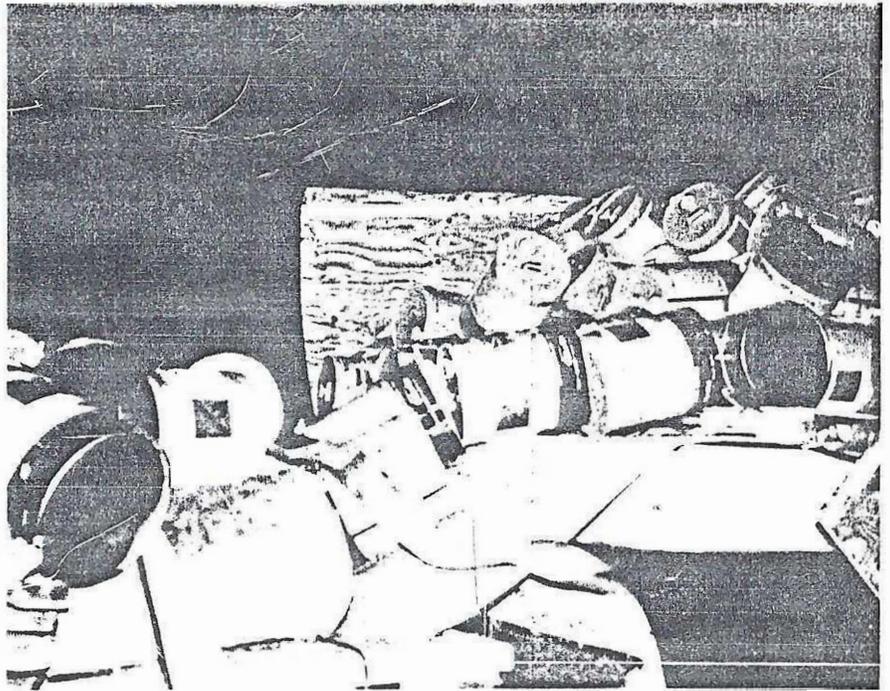
My partner and I worked for several hours in protective clothing and self-contained breathing apparatus (SCBA) to obtain the samples. We each went through several air cylinders because of the high temperatures, and we were thoroughly exhausted when we went to bed that night. The following morning, we each decided to telephone the other within five minutes of coming to work. We both felt terrible, and we decided that we had poisoned ourselves. We had a respectable list of symptoms when we turned ourselves in to the poison control center which supports our operations. Following several thousand dollars worth of sophisticated laboratory tests and blood work, the attending toxicologist concluded that I was getting too old for this type of work and that my partner was psychosomatically ill.

The chemical in the drums turned out to be pure paint thinner, obviously abandoned mistakenly by a rather stupid dumper or thief. The chemical had nothing to do with our symptoms, which apparently were caused by a combination of exhaustion and our belief that we had poisoned ourselves during the sampling.

I have concluded that when people become psychosomatically ill at the incident scene, several common factors are present:

1. The lack of an effective and clearly competent incident command structure.
2. Uncertainty about the exact nature of the chemical.
3. Inexperience in the operation being performed.

The available literature in the hazardous materials emergency response field is almost totally silent on the subject of psychosomatic injuries at hazardous materi-



**Thirteen people were treated for symptoms following an incident involving these 5-gallon cans of insecticide.**

als incident scenes. It is probable that many responders have observed or experienced the phenomenon but either didn't recognize it or felt it was not macho to admit that it had happened. In many instances there is insufficient follow-up to link cause and effect.

The news media frequently carry stories of people who become ill at spill

**The exact role that stress plays is uncertain. However, it has been reported that anxiety commonly causes physical symptoms that may be manifested long before a person is aware of his anxiety.**

scenes or of entire classrooms of students being evacuated with symptoms following some form of chemical exposure. There is good reason to suspect that more than half of these injuries are stress-related and not truly caused by the actual chemicals involved in the incident.

To do a more effective job of safeguarding the public and responding to hazardous materials emergencies, more study of this apparent phenomenon is needed. We need to know how such psychosomatic injuries occur and, more to the point, how we can avoid them in the future.

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2. J. K. Stross et al, "Human Health Effects of Exposure to Polybrominated Biphenyls," *Toxicology and Applied Pharmacology*, 58 (1981): 145.
3. G. G. Brown and R. Tixon, "Exposure to Polybrominated Biphenyls: Some Effects on Personality and Cognitive Functioning," *JAMA*, (1979) p. 523.
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5. Report to William G. Milliken, Governor, State of Michigan, on Polybrominated Biphenyls (PBB), PBB Scientific Advisory Panel (May 24, 1976), p. 11.
6. W. E. McGough, "Stress and Mental Illness: Clinical Psychiatry for the Occupational Physician," *Clinical Medicine for the Occupational Physician*, Editors M. H. Alderman, M. J. Hanley; Marcel Dekker, Inc. (1982).
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8. "Health Survey of the Population Living Near the Price Landfill, Egg Harbor Township, Atlantic County," Prepared in cooperation with Atlantic County Health Department, New Jersey Department of Health, (1983).
9. *Health Aspects of the Disposal of Waste Chemicals*, Edited by Joe W. Grisham, M.D., Pergamon Press (1986).

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EQUIPMENT USED: Booties, Overpack Drums, Foam, Film, Gatorade, Gloves, Hose  
Plastic Bags, Plastic Sheeting, Suits (Level "B"), Tape  
(Barrier), Tape (Duct).

<u>SUPPLIES EXPENDED:</u>	Booties (PVC)	30 pair	Drums (85 gal)....	
	Drums (55 gal)	3	Drums (15 gal)	
	Film (35mm) .....	3 rolls	Foam (F-P) .....	715 gal
	Gatorade (32 oz)	24 bottles	Gloves (PVC) ....	30 pair
	Gloves (Surgical)	100 pair	Hose (1-3/4")	28 lths
	Hose (2-1/2")	14 lths.	Hose (4-1/2")	1 lth
	Plastic Bags .....	4 boxes	Plastic Sheets ..	4 rls.
	Suits (XL) .....	20	Suits (XXL)	10
	Tape (Barrier)	15 rolls	Tape (Duct)	10 rls

<u>OPERATED UNDER:</u>	DAC	Rivera	Car 3	DAC	Kearney	Car 6A
	DC	Dunn	3rd Div.	DC	DeRosa	3rd Div.
	BC	Rohlfing	9th Bn.	BC	McDermott	9th Bn.

3 September 1989:

Upon arrival, Hazardous Materials Company No. 1 surveyed area and assisted Department of Environmental Protection personnel in obtaining samples for analysis. Set up contamination Zones and worked with Police Department Units on the scene to cordon off 8th Avenue between 45th Street and 52nd Street, a total of 8 blocks.

After finalization of the Office of Emergency Management's plan to foam and was down the contaminated area, Haz-Mat members offered Fire Department Commanders on the scene, Technical advice and suggestions on implementation of this plan.

It was determined that a Foam unit be placed at 45th, 47th, 49th, and 51st Streets, a total of 4 units. They were to be placed on the East side of 8th Avenue at the closest hydrant to the corner (See Map). In addition, these streets would also contain Overpack Drums, Scott (60 min) Cylinders, Plastic Bags and Rolls of Plastic (See Map).

Engine 96, stationed at 45th Street, would supply foam with 1 hose line, to cover from the north corner of 46th street to the south corner of 45th street. (See Map)

Engine 95, stationed at 47th street, would supply foam with 2 hose lines, to cover from the north corner of 48th street to the north corner of 46th street. (See Map)

OPERATIONS (Con't):

3 September 1989 (Con't):

Engine 206, stationed at 49th street, would supply foam with 2 hose lines, to cover from the south corner of 50th street to the north corner of 48th street. (See Map)

Engine 260, stationed at 51st street, would supply foam with 1 hose line, to cover from just south of the excavation to the south corner of 50th street. (See Map)

Hazardous Materials Company No. 1 would man each hose line with 2 men. In addition, 2 men manned an emergency decontamination station at 47th street and 2 men manned a decontamination station at 45th street. (See Map)

Private contractors, under the direction of D.E.P. personnel, picked up all loose debris and covered all Subway vents, manhole covers and electrical vaults, with plastic. At the same time the highway department set up earthen berms at all intersections.

While waiting for these two operations to be completed, Haz-Mat made arrangements for all of their equipment to be picked up and delivered to the various locations, and assisted F. D. personnel in off loading and setting up this equipment for a smooth operation.

4 September 1989:

At approximately 0400 hours, Haz-Mat members donned Level "B" suits and washed down all vehicles leaving 8th Avenue. By 0530 hours the foaming operation of 8th Avenue was begun. All 5 teams (10 men) expended 2 - 60 minute Scott bottles, (approximately 100 minutes operating time).

By 0800 hours the foam had been laid down and the first wash down was 2/3 completed. Haz-Mat members were decontaminated at the 45th street site.

At 1030 hours after rest and a partial change of crews Haz-Mat members again donned Level "B" suits and finished the first wash down.

D.E.P personnel took samples off the street and determined a second wash down was needed. Haz-Mat members performed this operation. A final test was taken and the street was declared clean by D.E.P.

All appliances, nozzles, and fittings were decontaminated by Haz-Mat and returned to their companies. All hose used was bagged and overpacked in drums for disposal by the contractor. All Level "B" suits and equipment was overpacked and left for disposal.

DISPOSITION:

D.E.P. and O.E.M. were left in charge to oversee the final cleanup of the area by the private contractor.



The following is a list of equipment and supplies expended at Manhattan box 866, Con Edison Asbestos Contamination:

30 pr.	Booties, (PVC Hard Soled)	@ \$ 5.20 per pr.	\$ 156.00
15 ea.	Drum, (85 gal. Overpack)	@ \$96.56 each	\$ 1,448.40
5 ea.	Drum, (55 gal. Overpack)	@ \$32.00 each	\$ 160.00
5 ea.	Drum, (15 gal. Overpack)	@ \$26.00 each	\$ 130.00
3 rls. -	Film (35mm)	@ \$14.75 per rl.	\$ 44.25
715 gal.-	Foam, (Floro-Protine)	@ \$ 6.63 per gal.	\$ 4,740.45
24 ea.	Gatorade, (32oz. Bottles)	@ \$ 1.27 each	\$ 30.48
30 pr.	Gloves, (PVC)	@ \$ 4.25 per pr.	\$ 127.50
100 pr. -	Gloves, (Surgical)	@ \$ .05 per pr.	\$ 5.00
28 ea.	Hose, (1-3/4"x50' Length)	@ \$64.75 each	\$ 1,813.00
14 ea.	Hose, (2-1/2"x50' Length)	@ \$87.00 each	\$ 1,218.00
1 ea.	Hose, (4-1/2x35' Length)	@ \$440. each	\$ 440.00
4 bx.	Plastic Bags	@ \$56.40 per bx.	\$ 225.60
4 rls. -	Plastic (Sheeting)	@ \$81.00 per rl.	\$ 324.00
20 ea.	Suits (Chemrel XL)	@ \$11.00 each	\$ 220.00
10 ea.	Suits (Chemrel XXL)	@ \$15.00 each	\$ 150.00
15 rls. -	Tape (Barrier)	@ \$14.25 per rl.	\$ 213.75
10 rls. -	Tape (Duct)	@ \$ 4.48 per rl.	\$ 44.80

**EQUIPMENT TOTAL** \$11,491.23

52 St.

COMM. POST

EMS

1 D DECON

POLICE BARRIER  
XXXXXXXXXXXXXXXXXX

51 St.



E-260 Foam 21

50 St.

AREA COVERED BY HAZ-MAT TEAM-1 & TEAM-2

HAZ-MAT

HAZ-MAT 1 STAGING AREA

PARKING LOT

10-SCOTT CYLS.  
3- DRUMS

E-206 Foam 86

49 St.

STORM DRAIN

EARTH BERM

STORM DRAIN

48 St.

8th Ave.

E-34 L-4 B-9

5- XTRA DRUMS

47 St.

STORM DRAIN

EARTH BERM

STORM DRAIN

COVERED BY TEAM-3

E-34 L-4 B-9

10-SCOTT CYLS.  
3- DRUMS  
EMERGENCY DECON

E-91

46 St.

COVERED BY TEAM-4

45 St.

STORM DRAIN

EARTH BERM

10-SCOTT CYLS.  
4- DRUMS

E-91

MAIN DECON