



**National Fire Fighter Near-Miss Reporting System
Reports Related to Hazardous Materials Incidents.**

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05-461

Event Description

Response: Fire on the roof of a four-story building. First arriving chief officer requested second alarm. Moderate smoke conditions with extreme ambient and thermal heat conditions. First alarm companies working on fire and floor below conditions. BC (battalion chief) responsible for Division 4, fire floor, requested HazMat captain to report to third floor to investigate commonly used cryogenic liquid container, LS-160, secured to concrete column. Assessment by HazMat captain identified contents to be Liquid Oxygen with 3/4 capacity releasing from pressure gauge. Further assessment revealed an increase in internal pressure requiring immediate attention to the container to relocate to exterior opening. Within several minutes a rapid release occurred requiring immediate evacuation of companies operating on the release floor and fire floor. At the time of this release, companies were performing overhaul operations with numerous hot spots.

Command advised by BC of evacuation from floors in question. Prior to re-engagement of overhaul operations container was again relocated by HazMat and fire personnel to a remote location where a second rapid release occurred resulting in failure of pressure gauge. Again, container was allowed to release to exterior where controlled venting was administered by opening a vent valve. All involved areas rendered safe for continuation of overhaul operations.

Lessons Learned

Primary safety concern was the catastrophic failure of the container resulting in a high liquid-to-gas expansion ratio, 860-865, causing an accelerating combustion effect and oxygen-saturated PPE resulting in numerous thermal injuries and/or deaths. HazMat's must always be high on the size-up and/or assessment process at all types of events. Importance of HazMat Awareness/Education of Chief Officers and First Responders. Response to any types of occupancies under construction and/or renovation most likely will have multiple DOT hazard classes on-site, flammable liquids, gases, corrosives, oxidizers, etc.

When exposed to thermal conditions all bets are off. Time becomes essential. Container and contents become the enemy not the fire and life safety the utmost importance.

06-88

Event Description

We were dispatched to a call for gas inside a structure this morning. We arrived and found the owner out front of a single story wood frame dwelling. We spotted at the hydrant near the A/B corner of the building. We packed up (donned SCBA), tooled up and met with the (owner). She stated she just bought the home and came in with a painting contractor to complete the job on her house before she moved in. They opened the front door and garage door, smelled gas, then called 911.

As we made our way to the open front door you could pick up whiffs of gas every now and then, nothing too strong at all. As we stepped inside the house the smell of gas was much stronger. My nose has no way of knowing LEL for this stuff and the thought of securing utilities entered my mind. I thought I'd just take a quick peek at the furnace area to see if I could isolate the source and secure the furnace gas feed. Nothing too tough.

As my firefighter and I were making our way to the furnace, no more than 15 seconds after entering the front door, we heard, "click, click, click, click" as the igniter on the furnace tried to click on. The hair on the back of my neck stood up. What are the chances that the thermostat was set to go off at the exact temperature the room had gotten to as we hit the door? Who would have thought? Mr Murphy was on this call. I had visions of the gas detonation that leveled a section of an apartment complex in (battalion deleted) way back when, as well as visions of Spensor and Humbolt fire that was secondary to a natural gas explosion. Then, "Boom!"

Trapped NG (natural gas) in the furnace room detonated with enough force to blow the metal face off of the furnace unit, as well as shatter the wooden frame of the hollow core interior door as it blew it open. The sound and the pressure wave we felt was pretty impressive. We "quickly" exited the house, secured utilities, and found no evidence of fire or extension.

We all have been on so many of these calls. Many times we don't smell too much so we walk in. Or, if we do smell a bit, we walk in further looking for the source. What about those times when the leak has occurred in an underground pipe feeding the home where the ethyl mercaptin odorant has been scrubbed from the gas? We could be well within the explosive limits for NG (natural gas) and have no smell at all.

Lessons Learned

Next time I get to a call like this and I smell gas at the front door, no matter how faint, I am going to kill the utilities right off the bat. I would rather inconvenience the homeowner a bit by knocking out the utilities than to have an isolated potential explosive atmosphere somewhere in the house. Knowing that PG&E (Power, Gas and Electric) is a simple phone call away gives us that flexibility.

Another consideration is apparatus placement at these kinds of events. It is important to park a few houses down in case this is the real thing. Like all haz mats: uphill and upwind.

06-149

Event Description

Responded on a structure fire as a mutual aid company in a chemical pickling facility. Had members enter the structure with first due company and was involved in minor firefighting. Both members were exposed to a caustic corrosive acid in solid form. When acid gets wet, it liquefies and turns green. Both members exited the structure and were immediately decontaminated. Both members started to have burning sensation to the hands. One was transported to the hospital and the other drove himself to the hospital after returning to the station. Both members were wearing leather firefighting gloves. One member said that he reached down to grab the nozzle that was submerged in the green liquid.

Lessons Learned

Lesson learned: Know what the haz-mat situation is and take action plan for necessary hazards.

Corrective Action: Although the local Haz-Mat deputy chief was on scene, there should have been better communication between Haz-Mat and the participating Fire departments. Proper decon facility set up and used, not just a hose off a truck.

06-266

Event Description

A local company called the fire department business line to report a chemical leak. The career Fire Chief sent two awareness leak trained volunteer firefighters to investigate the leak. They respond alone in a tanker truck to the company. They find a leaking chlorine tank. The firefighter reported the odor of Chlorine to the chief who was not on scene via cell phone. A company rep. joins the firefighters on scene and reports a leaking quarter inch line, which can be shut down by turning the valve off on the tank. The fire chief directs the lone fire fighters again by cell phone to go on air and shut the leaking valve off. The firefighters enter the area and complete the task. They return to the station. The following events occurred days later. The firefighters were training in the station, when other firefighters notice a strong odor of chlorine on their gear. The gear was removed and bagged. The SCBA that were used had visual corrosive signs on metal snaps and buckles. The firefighters admitted to rashes on skin and soar throats after the event. The symptoms by this time had self corrected. The LECP became involved and reported the spill to the EPA. there was a failure to notify local government both on the part of the company and on the part of the fire chief. The Fire department and the company are now both under investigations by state OSHA and EPA due to the handling of this event. The career/paid city Fire Chief tendered his resignation. We could have two dead firefighter that were directed by a chief officer who was not on scene. The firefighters were asked to take action which endangered there lives. This was a training issue on the chief's part and the firefighters. The department has learned a valuable lesson. There is no substitute for training.

Lessons Learned

This was a training issue on the chief's part and the firefighters. The department has learned a valuable lesson. There is no substitute for training. We must handle HazMat by the book. Do not ask firefighters to perform tasks that they are not trained to do. Report hazmat released as required by law. No command on scene. A complete failure of leadership.

06-311

Event Description

Our Level A hazmat response team responded to an interstate weigh station outside of our city for a liquid leak coming from a semi-truck and trailer. The local fire department was on location and had reviewed the truck's shipping papers and found that there were several consumer commodities on board, including cleaning fluids and cutting oil. The liquid on the ground outside of the truck was safely sampled for pH and two different readings were found with pH's of 10 that indicated a base was leaking. The fluid amounting to nearly 1 gallon was also sampled with a photo-ionizing detector, PID, and a 5 gas monitor with no reactions.

The weather was clear and 68F. The hazmat team decided to enter the trailer and find the source of the leak. A team of two hazmat technicians from the team opened the back doors to the trailer and one person boarded the trailer. He had a four gas monitor, but both entry team personnel were only wearing coveralls and no breathing protection. The entry person made his way through the trailer and around pallets and drums of cleaning compounds and other commodities until he found that a cardboard box with 4 one gallon plastic bottles had been crushed and were leaking. The leak was identified as a corrosive glass and hard surface cleaner. The situation was then handed over to a private contractor for clean-up.

While no responder was injured, the potential was present because of entering a trailer with no ventilation and without adequate personal protection, both respiratory and skin. Furthermore, without sufficient information of the source of the leak the situation was lacking information or unknown and state and federal hazmat regulations require that self-contained breathing apparatus be used until the material and environment is characterized. Additionally, none of the air monitoring instruments would have detected a corrosive environment if it was airborne in the trailer. This would have made it a hazardous atmosphere for the unprotected responders. Chemical reactions could have taken place in the trailer that could have caught the responder's off-guard and injured them. Finally, hazmat regulations and team SOG's also require back-up teams be in place for hazmat entries.

Lessons Learned

Lessons learned: Follow SOG's, use team position checklists, wear proper PPE, and utilize a broad range of detectors.

06-447

Event Description

Engine & PM Squad responded to a medical aid. Upon entry into the residence, FD personnel detected a strong "Sewer" smell. All occupants were evacuated from the home (husband & wife).

A 69 y.o. male was sleeping in bed when someone laddered the exterior of the house, opened his window, and poured an unknown product on the sleeping man. The man was in severe pain presenting with SLUDGE symptoms. Once the man was brought to the front lawn area, he was deconned for approx. 15 minutes with soap & water using the Engine Company decon bucket. Atmospheric monitoring was conducted and the utilities were secured. Paramedics transported the patient to local hospital's decon shower area adjacent to the ER.

Battalion Chief was requested. A Hazardous Materials team and Health Hazmat were then requested. Off gassing of the unknown liquid was observed venting from the open bedroom window. Adjacent residents in all directions were evacuated; including a home daycare, two doors south (a total of 6 homes). The police was requested for crime scene purposes. A unified Command was established. A site safety plan was completed by the BC.

The product's pH was 0, indicating an acid.

Exposure reports will be completed for all personnel who were exposed. No Fire personnel experienced any medical complaints/symptoms.

Patient reportedly was intubated with severe airway compromise & possible blindness.

Lessons Learned

Engine Company was anticipating a medical aid based on the dispatch. Conducting thorough size ups on all responses is vital. Good situational awareness and training resulted in solid decision making and performance.

07-756

Event Description

My station was dispatched by a mutual aid county for a vehicle collision involving an overturned propane truck. We were due with an ambulance, medic chase vehicle, heavy rescue squad and engine company and this was our first-due area. The incident was reported to be along a section of railroad tracks running parallel to a major road in the area.

While en-route, the dispatch center advised our duty officer that a propane delivery truck had overturned in a creek next to a section of rail track. The sheriff's office went on

the scene prior to the fire department and stated the same as the dispatch information. The duty officer, ambulance, and medic chase vehicle arrived at approximately the same time. The duty officer established command, confirmed the dispatch information, and began investigating the incident. The driver of the truck had already exited the vehicle without injury. There was a heavy odor of propane upon arrival of units.

Communications had already been established between the dispatch center and the railroad company that owned the track. The incident commander made the request for all train traffic to be shut down on the track.

The incident commander set-up the initial command post on the other side of the tracks, near the only entrance road to the location. This put him on the incident side of the tracks. The medic chase vehicle was sent to drive toward the incident and investigate. The propane truck was unable to be seen at this time. They got close enough to where they could see the truck overturned in the creek and citizens standing in front of a house trailer where the truck was trying to back up to.

At this time, personnel looked up the tracks and saw a train coming toward the incident. The train was able to stop, but not before the locomotive was in front of the propane trucks location. The train had also blocked the only direct access to the incident location. The medic chase vehicle had the citizens evacuate the area and proceeded back toward the command post. The wind directions had changed, pushing propane vapors towards the command post.

The incident commander made face to face contact with the train engineer. He asked about backing the train up, but was told it would take a great deal of time. The engineer advised he could uncouple the train at the access point and pull out of the incident area. This was agreed on.

When the train went to move, the engineer never uncoupled the train and all 6800 feet of train went by the incident. This increased the potential for sparks and put the hot exhaust stack on the diesel locomotive less than 25 feet from the propane truck.

After the train passed, all units proceeded back to the main road and established operations. HAZMAT and suppression operations were instituted without any further incidents.

Lessons Learned

Establish the command post further away from the incident.

Have train traffic stopped while en-route to the incident.

Confirm and make sure train engineer understands and follows your requested action.

Have personnel go on foot with meters in hand to investigate the incident.

07-906

Event Description

We responded to a call for a haz-mat investigation. We were informed via dispatch that the Sheriff's Bomb Squad was already on-scene. Our first engine company arrived and found that County Haz Mat and the Bomb Squad were already there. The residence we responded to was a two-story duplex, one of which had just been sold. The owner of the home, an elderly male, had recently died and the home had just completed the escrow process. The inside of the house was a complete mess, there were rats inside, trash, and junk piled everywhere. The new owner had hired a crew of people to clean out the home to have it re-modeled inside. In the process of cleaning out the home, the workers began to find bottles containing various chemicals. After finding a significant amount of these, a call was made for assistance.

After the arrival of Haz Mat and the Bomb Squad, all of the hazardous materials were moved out of the structure and cataloged for identification and disposal. Among the materials found in this home were explosives, poisons, acids, radiological elements, and others. The haz mat and bomb squad personnel were utterly amazed at the sheer amount and variety of extremely dangerous substances that this person had collected over the years. The explosives were removed from the premises and detonated at the Sherriff's bomb disposal site on the same day.

Lessons Learned

The close call on this incident was if we had responded to this home for a structure fire unaware of the contents inside this home. From the street, this home looked like any other home in the neighborhood. From the outside, the duplex did not look run-down or suspicious in any way. Had there been a fire, our personnel would have been walking in to a nightmare of hazards that could have severely injured or killed them. After discussing it with the other agencies on scene with us, the only thing that might have been a clue had there been a fire would have been smoke of an abnormal color due to the burning chemicals.

This is just another reminder that a call that seems like just a "routine fire" could have some very nasty surprises in store for us. This is another good reason to be vigilant about wearing SCBA's at all structure fires when exposed to any products of combustion, and for everyone maintaining good situational awareness.

07-949

Event Description

Our department received a call for a suspicious package, with a powdery substance in it, which was located at a mail/postal handling facility in our county. Upon arrival on the scene our chief (IC) went in to investigate the package with-out appropriate PPE.

Upon coming in contact with the suspicious package, and confirming a powdery (unknown) substance, our chief brought the package and substances out of the building to his Command Vehicle to have the proper agencies perform the appropriate screening tests on it.

This action put numerous personnel in danger of coming in contact with an unknown powder, and could have caused a wider and more dangerous situation than already existed. This individual broke all SOG's, and Protocols involving an unknown powdery substance.

Lessons Learned

In my opinion, no lessons were learned from this incident. This individual has not admitted he made a mistake, and will probably do this again.

We have a Haz-Mat Team in our county that is trained in these types of incidents. They should have been called and utilized in the testing of this substance in the building where it was found.

Follow all SOG's and protocols pertaining to any unknown substance.

08-34

Event Description

Shortly after initial units arrived on the scene of an accident involving a passenger car and tractor trailer, a clear liquid was discovered leaking from the rear of the cargo trailer. After inspecting the trailer contents, the driver determined that the load shifted causing the batteries to overturn and leak their contents of sulfuric acid. Hazmat units were dispatched to assist and on arrival confirmed a spill within the trailer.

Concerned with operating on the shoulder of the highway, the Hazmat Duty Officer requested the tractor trailer be relocated to an existing highway construction area where Hazmat could safely mitigate the hazard. Once relocated, the Hazmat Duty Officer requested an entry into the trailer to determine the size of the spill and whether the acid was reacting with the contents and/or structure of the trailer. Entry Team and a Backup Team donned Level "B" chemical protective coveralls [name deleted], chemical protective gloves and boots and self-contained breathing apparatus (SCBA). As a standard practice prior to entry, team members had their gloves, boots and SCBA mask sealed and bonded to the coverall with chemical tape. An Entry Team member entered the trailer via a ground ladder and surveyed the area. He determined a small spill having a pH of 1 with no reaction taking place. The member exited the trailer and proceeded to Decon.

After assessing the situation and consulting with the State Environmental Protection Representative, a recommendation was made to neutralize the acid with a slurry of soda ash and water. The Hazmat Duty Officer had the Entry Team member re-entered the

trailer and applied two, five gallon buckets of the neutralizing mixture. Afterwards, members were Decon'ed and dressed down, equipment was picked up and units were placed in service.

Later that shift the member who had performed both entries began experiencing signs and symptoms indicative to a skin reaction similar to hives. During this period the member came in contact with three separate officers who were made aware of the condition but failed to consider the member was suffering from a possible allergic reaction. They failed to initiate medical treatment. Unable to sleep without relief from the itchy rash that seemed to be getting worse, the member check into the local hospital emergency room at the end of his shift. Taking medication for three days and missing one day of work the member later returned to full duty.

Lessons Learned

1. Increasing the level of chemical protective clothing should be considered when hazmat members are entering and/or working within confined areas that have limited air movement or areas that may confine vapors and products of chemical releases.
 2. When appropriate, provide forced ventilation to reduce accumulation of toxic/corrosive vapors.
 3. The neutralizing mixture used was not a standard method members were trained on and accustomed to performing. In hindsight, adding soda ash to water created a base solution which should have been applied in small amounts while monitoring the pH. The rapid application may have caused a sudden release of corrosive vapors that the Level "B" CPC was not intended for and capable of providing adequate protection.
 4. Officers should be more cognizant of acute medical conditions that may affect members during the course of the shift and be proactive in insuring members receive prompt treatment.
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08-221

Event Description

As the officer on an engine company responding to an ammonia leak in an ice rink, I along with the truck company officer decided to enter a utility closet to turn off the leaking valve. Upon arrival, I learned that no one was trapped or inside the building and after being led to the closet by 2 building workers, the workers showed us a valve that they felt was the one that needed to be turned off. They were both obviously affected with tearing and respiratory symptoms. When we (the truck officer and I) came within 10-15 feet of the closet, we got a strong odor of ammonia causing us to cough and tear. We immediately donned SCBA and were wearing structural firefighting PPE. We could see the valve 5' inside the door and felt we could quickly shut it off and mitigate the situation. We entered unable to hear our radios because of the leak and running compressor. The near-by responding Haz-mat Team was advising us to stay out until they arrived with proper gear. We entered and turned off the valve. We were inside the closet for 3-5 minutes. While inside I noticed mild to intense burning of several areas of my body. We were not sure if we shut the system down properly and later learned that

we had not. We were de-coned with a 1 1/2" trash line, removed our gear, and transported to the hospital. We were fine but things could have gone much worse. Some areas that I would have changed about the call: use ERG book, await hazmat team, and relay information to hazmat team.

Lessons Learned

Allow Haz-mat (or any specialty team) to do what they are trained to do. Use resources given to gain insight on the incident at hand (ERG book).

08-240

Event Description

Don't Get Complacent

This is a true story of both complacency and not following basic procedures. It involves me and my crew here at Station [number deleted]. Although this story has a good ending it could have easily been otherwise. I'm writing this in the hopes that it makes all who read it stop and think.

Recently a woman rang the bell at Station [number deleted]. She was carrying something. I invited her inside like I generally do visitors and she stepped inside and said, "My husband worked at Los Alamos years ago and brought this home. He always told us it was plutonium but we thought he was joking. He died eight years ago and I'm cleaning out the garage. I didn't know what to do with this. Can you help me?"

Well, (here's my first mistake) I didn't look at it that closely. It looked like a PVC tube about 4" in diameter and about 6" long with a cap on the end. It looked like it had old masking tape around it. (I didn't see the radiological symbol hidden by her hand). I directed my firefighter to take the container and put it outside. He did so and I asked the woman for contact info, getting name and number but not address (second mistake).

I notified Battalion [number deleted] of the events and then called another station and gave them a heads-up. Then I called dispatch and requested a Haz-mat response to the station. We got our Mini Radiac Dosimeter and it read 7 micro roentgens as a "normal" background reading. When we placed it near the object it jumped to 80 at 6" from the container. Haz-mat arrived and did what they do and got a reading of 800 micro roentgens, approximately one inch from the container. They also identified the material as radium 226.

Meanwhile we obviously needed to contact the woman and check her and her home for problems. Since we didn't have her address and she wasn't home when we called we had to get her address the long way through the PD. The engine company that went to her home found no traces of any radiological substance.

According to the Haz-mat guys, the exposure to this container was less than we would receive while getting an x-ray. Good news.

Lessons Learned

If it happened again today here's how I would handle it:

First I'd be attentive to what she or anyone else is holding/carrying while they are still outside the station door. If somehow she was inside with the container I would have her back right back out and put it on the ground. We wouldn't touch it. I'd also keep her at the station outside for her own safety. I'd have my firefighter place a carryall or salvage cover over the container, while wearing full PPE.

I take full responsibility for this incident. Through complacency and not following basic procedure (isolate, identify, deny entry) I potentially endangered all of us. For my crew and me, a review of Haz-mat SOG R-1 was in order. I know that at times it seems like many of the procedures are "overkill" and/or unwarranted. I just ask that you think about what you've read and what you'd do if a similar event occurred to you.

I learned/relearned the importance of "the basics", isolate, identify, and deny entry. It applies to every unknown substance! I was also reminded of the importance of getting all witness info and keeping that witness nearby.

Finally, react severely first and then you can relax the reaction if the situation allows it.

09-893

Event Description

I was working as a relief lieutenant detailed into a technical rescue station. We were dispatched to a Freon leak in a grocery store. Our engine company with a crew of four arrived on this first due box with the battalion chief. A full alarm assignment was in route which included the Hazardous Materials Team.

I spoke with the store manager that advised us they had a complete release of their refrigeration unit. The unit was in a compressor room on the second floor to the rear of the store. Three store workers were exposed that investigated and entered the room. They backed out, closed the door, and called 911.

The medic unit arrived and went to work checking out the patients. The chief assigned me to take a crew and line to recon the room. I discussed with the crew the properties of Freon that I was aware of. An inert gas that is heavier than air. We were all on air with our SCBAs. At the bottom of the stairs it was colder than it was when we entered the room. There were two large doors that we asked command if we could open to ventilate. The huge compressor was making a loud hissing sound. We checked the area, shut down a small quarter turn line valve, and the hissing stopped.

We advised command of actions taken and exited the building. The Hazardous Materials Team arrived, took their meters and checked the entire store and exposures. I advised the Haz-Mat Captain what we were assigned and actions taken. He came back and informed me that my crew had shut down a relief valve that was actually doing what it was designed to do. We were informed if this valve had been shut down earlier in the incident it could have caused an explosion.

I learned that with any mechanical equipment that you are not familiar with, leave it alone. The Haz-Mat team was enroute. We should have checked the room, ventilated, left the equipment alone, and let them do their job.

Lessons Learned

Before you shut down any mechanical equipment, make sure you know what the outcome will be.

Slow down and wait for the subject matter experts.

10-919

Event Description

Brackets [] denote reviewer de-identification.

On [date and time deleted], I was involved in a hazardous materials incident of removing some small chlorine tanks from a school chemistry room and transporting them to a remote open area to dilute the chlorine in a solution in a five gallon bucket. We arrived at the site and donned our Level B suits for the second time. As I was placing our small tank into the bucket, and before opening the valve to release the chlorine, I noticed the water solution coming into the suit at my wrist area from the duct tape around my glove and suit area. I notified the other Hazmat technician that I was having an equipment failure and the water solution was leaking into my suit by my wrist. I was removed from the area, decontaminated, and taken to the safety area. I evaluated the entire incident and found that after we removed our suits after being in the school, I left the tape on the suit and donned it for a second time. I did not inspect the tape job.

Lessons Learned

After donning and doffing a Hazmat suit, re-tape after every job.

10-930

Event Description

Note: Brackets denote reviewer de-identification.

At [time omitted] our department responded to a HAZMAT incident involving ethyl alcohol. Approximately 2000 gallons of product were spilled onto the ground when the tanker truck rolled onto its side, damaging the man-way cover and rupturing the tank.

*National Fire Fighter Near-Miss Reporting System
Grouped Reports: Hazardous Materials Incidents*

We used an in-line inductor due to the fact that the on-truck foam tanks contained AFFF. I was placed in charge of the in-line foam inductor on our main suppression line. We only had 15 gallons of AR-AFFF foam available, so a call for more foam was placed to other departments in the area. When the foam arrived, it was in five gallon containers. There was a mixture of new, old and several different types and concentrations of AR-AFFF. When switching from an empty bucket to a fresh one, the inductor plugged, causing a loss of foam on the line and interrupting vapor suppression tactics. The problem was brought to the attention of our operations chief, and due to the lack of materials, we continued to use the foam and clear the plugged inductor as was needed for the duration of the call.

Lessons Learned

This had no detrimental effect on the overall outcome of the situation. After the debriefing, we were able to start the process to order and maintain a reserve of AR-AFFF and re-educate ourselves on foam compatibility and recognition of possible problems.