

50-413/414 02

I-Joint-52

6/7/84

REPORT ON CHEMICAL FIRE

Fire Incident: 82-3630
 Address: 1716 North Tryon Street
 Occupant: Baxter-Harris Company, Inc.
 Owner: Edgar R. Dimmette
 Building: One-story warehouse, ordinary construction
 Area of Origin: Rear section of warehouse
 Point of Origin: Drum of Sodium Hydrosulfite

Materials stored in warehouse:

- 1) Sodium Hydrosulfite (trade name Virtex-D); Manufacturer: Virginia Chemical Company; Amount: 700-800 drums, 250 pounds per drum.
- 2) Paraquate; Manufacturer: Chevron Chemical; Amount: 800 cases, 4- 1 gal. containers to each case.
- 3) Orthene - Tobacco-insect spray; Manufacturer: Chevron Chemical; amount: 800 cases.

Date of Alarm: September 13, 1982
 Time of Alarm: 1611

Responding Firefighting Units:

1st Alarm: Car 2 - Battalion Chief L. L. Fincher, Engine 11, Engine 4, Engine 7, Ladder 4.

2nd Alarm: Time: 1634, Engine 1, Engine 5, Engine 2, Platform 1, Truck 7, S-1, Hosetender, Car 1 - Battalion Chief R. R. Weaver.

Special Alarm Companies: Blaze 7, Ladder 2, Engine 64, Engine 18, Grass 22.

Agencies Assisting:

Charlotte Fire Department
 Charlotte Police Department
 Charlotte Street Maintenance Department
 Charlotte Department of Transportation
 Mecklenburg Environmental Health
 Charlotte-Mecklenburg Emergency Management Office
 Mecklenburg Emergency Medical Service (MEDIC)
 Mecklenburg County Volunteer Fire Departments
 Mecklenburg County Fire Marshall's Office
 Charlotte-Mecklenburg Schools
 Charlotte Lifesaving
 North Carolina Department of Agriculture
 Region IV, U.S.A., E.P.A.
 American Red Cross
 Salvation Army

Private Agencies:

Virginia Chemicals
 Crowder Construction Company
 Moss Trucking Company
 American Scientific Products

U.S. NUCLEAR REGULATORY COMMISSION
 EXHIBIT No. EP-52
 Applicant Staff Intervenor L
 Identified Received ☒ Rejected
 Date: 6/7/84
 Reporter: M. M. J.

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Fire Cause: Self ignition due to defective drum. Sodium Hydrosulfite is a combustible solid that will heat and ignite when exposed to the atmosphere.

Damage: \$725,000 (estimated damage to Ralston-Purina: \$65,000)

SUMMARY OF EVENTS -

Fire Control: After being dispatched by the Fire Communications Center, the fire companies arrived at 1613, two (2) minutes after receiving the alarm, with Battalion Chief L. L. Fincher in command. Upon arrival an employee of the company met Chief Fincher and stated they had a hot drum of Sodium Hydrosulfite located in the rear warehouse area of the building. Battalion Chief Fincher established a command post on the North side of the building and began directing the fire fighting operations.

Firefighters found considerable amounts of yellow smoke and fire around the drum. Working in protective clothing and self-contained breathing apparatus (SCBA's) under the direction of Chief Fincher, they used dry powder extinguishers in an attempt to control the fire. The drum was located among other drums, therefore requiring the removal of many drums to gain access to the one on fire. Dry Powder was used to control the fire while other drums were being removed. In order to obtain a sufficient number of dry powder extinguishers, a second alarm was sounded including a special alarm for B-7, which is a unit stationed at the Airport Fire Station and carries 450 pounds of dry powder. This process continued and firefighters were able to control the fire around the drum, but each time the drum was extinguished it would reignite. It continued to heat until the building became untenable and other nearby drums were beginning to heat and ignite. Chief Fincher, being advised of this, withdrew firefighters from the building. This withdrawal was at approximately 1700 hours.

Assistant Chief R. L. Blackwelder arrived on the scene at that time and upon reporting to the command post was advised of the situation. Chief Blackwelder and Chief Fincher conferred and considered the options -

- 1) To use copious amounts of water and extinguish the fire and attempt to control water run off or,
- 2) To allow the building to burn to minimize water pollution.

The decision was to allow the building to burn until it burned through the roof to create a large opening in order that large amounts of water could be applied. Fire lines were laid, large master streams were placed at strategic points and the order was not to apply water until all lines and nozzles were in place. Firefighters were withdrawn in case of an explosion and the order issued to charge all lines at one time. All nozzles were opened with approximately 3,000 GPM being applied to the fire. After the initial water was applied firefighters were able to return to the master stream nozzles to direct them for

maximum control. Ralston-Purina Feed Mills was an exposure 4 feet to the South. Several large streams were directed to protect that exposure.

Fire fighting continued using master streams for approximately one hour, at which time smaller fire streams were used to extinguish the fire. The structure fire was under control at approximately 2100 hours but the Sodium Hydrosulfite continued to burn until they could be removed, opened up and flooded with water which took most of the night and was secured at approximately 0500 Tuesday.

At approximately 1730 it was learned that Paraquate was also stored in the building and was involved in the fire.

Evacuation: Early in the fire fighting process Battalion Chief Fincher realized that Sodium Hydrosulfite when burning released an extremely toxic sulfur dioxide gas. In fire emergencies involving hazardous materials it has become standard operating procedures for the Police Department to assign a police officer to the fire command center. At approximately 1630 Battalion Chief Fincher made the decision to begin evacuation. This task was assigned to the Police Department. The first area to be evacuated was from North Tryon Street East to Brevard Street and 16th Street North to 30th Street. This area being a railroad yard did not require moving many people.

At approximately 1800 the wind shifted to the West. At this point the area West from North Tryon Street to North Graham Street and from Dalton Avenue North to include Keswick was ordered evacuated. This involvement required many police officers and under the direction of Major Laney evacuation was performed. By the time this area was clear, the evacuation area had to be extended Westward and ultimately extended to Beatties Ford Road and West to LaSalle Street. As the wind shifted the area North to 24th Street was included. Major Laney organized and conducted the evacuation and throughout the process there was communication between the fire command and the progress of the evacuation. The method used in evacuation was with police cruisers riding the street announcing the evacuation through loud speakers. Some foot patrols were used going door to door warning the residents in close proximity to the fire. Evacuations continued as the wind shifted until approximately 2100 hours.

Shelters: According to the City of Charlotte Protection Response Plan it is the responsibility of fire command to identify shelters. This was done and the coordination of managing shelters was delegated to Mr. Wayne Broome, Operations Officer of Emergency Management, who contacted officials of the Red Cross and reported to and provided management of the shelters. Five (5) schools were designated as shelters - Carringer High, Harding, Ranson Jr., Hawthorne Jr. High, later moving to Metro. The House of Prayer located on Beatties Ford

Road voluntarily opened their building to be used as a shelter. Approximately 1,300 persons reported to the shelters and were housed and fed. They were released and allowed to return to their residences' at 0530 Tuesday morning, September 14, 1982.

Transportation: It was recognized that many people had no transportation to the shelters. The City Department of Transportation was called and with a total of 4 buses moved 600 to 800 people to shelters and were available to return them to their homes at 0530 on September 14th. The Police Department coordinated the efforts of the Department of Transportation.

Emergency Broadcast System: The Emergency Broadcast System was alerted and used with the first broadcast at approximately 1900 to alert people being evacuated to the designated shelters. It was used several times throughout the night to inform the public as to precautions that should be used upon returning to their homes and to food establishments in the area.

Environmental Control: It is standard operating procedure to notify the Mecklenburg County Environmental Health Department in Hazardous Material Emergencies. As a result, Mr. Ron McMillian reported to the fire command post early in the operation. He was delegated the responsibility to manage the water run off and to advise on other environmental problems. He immediately took steps to control water run off and called for assistance. With the aid of the City Street Department many loads of sand were hauled in and by using Fire Department salvage covers over the catch basins, sand was dumped on the covers to control water run off. Control of water was accomplished early in the emergency, but as time passed it was discovered by McMillian that the contaminated water was seeping through and getting into the stream. Two decisions were made to alleviate the problem, one was to dig a pit at the building site to hold the hazardous materials while the barrels were being broken open to flush and completely extinguish. Crowder construction Company was called to supply a bull dozer to dig the pit. Secondly, the City Street Department was called to dam up Little Sugar Creek at Davidson St. This was accomplished with a front end loader and a second dam built at 17th and Little Sugar Creek. Other environmentalists' arrived from Environmental Health, the N. C. Department of Agriculture, and Region IV from Atlanta. They proceeded in taking air samples of fall out from firefighter helmets, and from different points throughout the neighborhood and water samples from the run off and the streams. The following morning they inspected all food handling businesses in the area, and directed the clean up process which lasted several days.

Assistance from Mecklenburg County Volunteer Fire Companies: Early in the emergency it was realized that there were insufficient numbers of self-contained breathing apparatus for all firefighters, police and other workers within the area. A call was initiated to the Mecklenburg County Fire Service and five (5) volunteer departments responded with extra S.C.B.A. and cascade systems which are large cylinders of air. Over the course of the emergency more than 50- 300 cubic foot air cylinders were used, which is probably the most breathing air ever

used in an emergency by the Charlotte Fire Department. The cylinders were refilled many times at the Fire Department Supply Section where a large air compressor is located. At least 10 large air cylinders were recharged at a company located in the Arrowood Industrial Park. The air supply was maintained by volunteer firefighters and the Charlotte Fire Department recruit class.

Medical Care: MEDIC and the Charlotte Life Saving Crew responded early.

MEDIC was assigned the task of providing medical care on the scene and transporting injured persons to the hospital. They used a record amount of oxygen to aid those who were suffering from inhalation problems. Five firefighters, eight police officers, and several civilians were transported to the hospital with 2 firefighters being admitted. MEDIC also assisted in the evacuation of some handicapped persons in the neighborhood. Over the course of the next several days the City Employee Medical Services checked 61 firefighters who were suffering from flu like symptoms and skin rashes. They also collected blood and urine samples from 109 firefighters in an effort to determine the severity of the medical problem. Many of the samples were sent to the Chevron Chemical Lab in San Francisco, California for analyses. The Medical Division, under the direction of Dr. Naso and Rachel Fulp, is continuing a follow up on the medical effect. It was reported that over 100 civilians in the area also reported to the hospitals over the next several days. At this time the total medical effects of City employees or civilians are not known.

Media: The media was well represented and was considerate and maintained a safe distance throughout the course of events. Different fire officers from the fire command post met with the media giving them updates on the situation.

Salvation Army and Red Cross: The Salvation Army and Red Cross responded and remained at the staging area providing food throughout the evening and night. They also supplied plenty of liquids to firefighters, police officers and other workers. Many food establishments throughout the area volunteered their services and donated food and drinks for persons housed in the shelters, this also included breakfast before being released to return home.

Conclusion: 1) People throughout the community, including doctors, responded to the emergency in volunteering their services to both firefighting forces and to the needs of those being sheltered.

2) Firefighting procedures were proper and according to recommended standards for the problem at hand.

3) Procedures as outlined in the City of Charlotte Protective Response Plan were used.

4) Communications between the different agencies at the fire scene were good. The incident commander delegated the various functions to the proper agencies.

- 5) Evacuation was spread over a long time frame due to shifting winds, therefore it was felt there was no need to ask for the emergency operation center to be set up.
- 6) The situation on the scene was assessed regularly throughout the night with all agencies in the fire command resulting in command decisions:
- 7) Firefighters were relieved from the fire lines regularly throughout the course of the emergency.
- 8) The Media was informed and the emergency broadcast system activated.
- 9) Chemtrex and other technical assistance were used including Chevron Chemical in San Francisco, Ca.
- 10) Representatives from Virginia Chemical responded from South Carolina and gave technical assistance.
- 11) Management of the Baxter-Harris Company cooperated in every way to bring the emergency scene under control.
- 12) Outside private agencies, Crowder Construction Company, Moss Trucking Company, and American Scientific Products assisted when called upon.
- 13) The volunteer fire service including the County Fire Marshall, responded and assisted.
- 14) Other City departments such as Street, Transportation, responded and took steps other than the task assigned such as reprogramming the signal system to aid in fast and effective evacuation.
- 15) The Police not only provided the task of evacuation but managed crowds and traffic control, plus sealed off the evacuation area to prevent looting.

Problems: 1) Communications

- a. All lines to Fire Communications and Police Communications both city and county were jammed, delaying some important decisions that needed to be communicated via telephone.
- b. Failure to notify school officials.
- c. Difficulty in communicating with agencies that were not represented in the fire command post.

2) Fire Command Post

- a. No clear identification of the command post.
- b. No clear identification of the assigned roles of the people of various agencies operating in the command post.
- c. The lack of portable radio communication for those who had to leave the command post to carry out their assigned responsibilities.

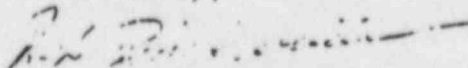
3) Equipment

- a. Lack of protective self contained breathing units early in the emergency.
- b. Time involved to mobilize equipment not assigned to the Fire or Police Departments such as, front end loaders, forklifts, and dozers.

Recommendations:

- 1) Evaluate the City of Charlotte Protective Response Plan to determine if revisions are necessary.
- 2) To set a policy to activate the E.O.C. to provide better communications and assistance at the point where individuals being evacuated have to be sheltered.
- 3) Establish a spokesman to provide constant updates to the media from the fire command post and from the E.O.C.
- 4) Develop a command vehicle to be used in major emergencies such as hazardous material incidents and multi-alarm fires. This vehicle should have all radio frequencies for all agencies who are involved in these emergencies. Other equipment should include:
 - a. A supply of handie talkie radios on a separate frequency to be used only by the command structure.
 - b. Telephone both line hook up and via radio to establish direct communications to E.O.C., Fire Communications and Police Communications Center.
 - c. Identification for all command participants.
 - d. Pertinent resource materials.
 - e. Maps, water information, building pre-fire plans and etc.
 - f. Work area for command participants.
 - g. Generator and self contained power source.
- 5) Establish information center to divert the information seeking calls from fire and police command centers.
- 6) Develop a reserve of breathing equipment that is readily accessible for workers in the contaminated environment.

Submitted by,


R. L. Blackwelder, Assistant Chief
Operations Division
Charlotte Fire Department
(Incident Commander of the Emergency)