



EMERGENCY RESPONSE REVIEW

U.S. Environmental Protection Agency, Region 6

Alon Refinery Fire, Big Spring, Texas

FINAL Report :: May 1, 2008

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EPA Region 6 is issuing this Emergency Response Review as part of its ongoing effort to protect human health and the environment by responding effectively to chemical accidents.

Emergency Response Reviews are designed to:

- Review with a local community and state officials the response procedures and outcomes to a specific chemical accident, affecting that community;
- Share information about chemical response safety practices;
- Develop potential recommendations and lessons learned to more effectively respond to an accidental release in the future;
- Build cooperation among local, state, and federal government agencies.

Emergency Response Reviews are entirely voluntary and may include all local, state, and federal entities involved with the response, as well as the responsible party and their representatives.

SUMMARY OF INCIDENT

On Monday, 18 February 2008 at approximately 0810 hours, an explosion and fire occurred at the Alon USA Refinery, located at Interstate 20 and Refinery Road, in Big Spring, Howard County, Texas.

The refinery is a basic fuels refinery, serving West Texas by processing crude oil from the area, and shipping the refined products offsite, via pipeline, rail car and tanker truck. Alon is located on the northeast edge of the city of Big Spring, but outside the city limits.

The fire started in the propylene plant and threatened the alkylation plant where hydrofluoric acid (HF) is used and stored as part of the cracking process for propane. The source of the leak, which caused the fire, is still under investigation, and is not a focus of this review.

The fire created a large, black smoke plume, which reached approximately 6500 feet in height as it drifted slowly to the east-northeast away from Big Spring along I-20. Alon refinery personnel, as well as local emergency responders from nearby cities and counties, state and federal officials responded to the incident.

One of the main concerns was a threat from the release of HF, as well as the potential discharge of oil and refined products such as gasoline and diesel. There were also concerns of a threat of release offsite of many chemicals used or stored at the refinery, or chemicals which might have been combustion products from the fire. These include: volatile organic compounds, sulfur dioxide, nitrogen dioxide, carbon dioxide, hydrogen cyanide, ammonia, amines, hydrides, chlorine, oxygen, hydrogen sulfide, etc.

One environmental concern during the firefighting effort was the offsite drainage of oil and contaminated fire water from the refinery, which potentially could flow to Beals Creek, which then flows to the Colorado River.

This document does not substitute for EPA's regulations, nor is it a regulation itself.

It cannot impose legally binding requirements on EPA, states, or the regulated community, and may not apply to a particular situation based upon circumstances.

This guidance does not represent final agency action, and may change in the future, as appropriate.





Upon notification by Alon to the National Response Center, EPA mobilized to the site with EPA START-3 contractors and the Airborne Spectral Photometric Environmental Collection Technology (ASPECT) aircraft to conduct on-scene oversight and air monitoring.

Upon arrival, EPA and START-3 attempted to integrate into the incident command structure and immediately began conducting air monitoring of the adjacent offsite and downwind areas.

The ASPECT arrived shortly before 1200 hours and began conducting aerial over-flight assessments of the refinery, smoke plume, upwind and downwind areas.

Alon was also concerned that a possible release of Hydrofluoric Acid was possible as a 2" HF line had been damaged and was believed to be releasing HF.

However, the alkylation plant and HF area were isolated from the fire and had been blocked in. The fire was contained to four, refined product, aboveground storage tanks: two tanks contained gasoline and the other two tanks contained asphalt.

The refinery personnel were evacuated, as well as non-essential personnel at the nearby Sid Richardson Carbon Black Plant, but there was no community evacuation of Big Spring. Four personnel and one person driving a car on interstate-20 were injured but none of the individuals suffered life threatening injuries.

Interstate 20 and the Union Pacific Railroad were closed temporarily during the day, but were re-opened by 1730 hours.

Air monitoring efforts were conducted for hazardous chemicals potentially migrating offsite; the air monitoring results did not detect hazardous chemicals off-site.

ASPECT conducted two sets of aerial sweeps of the area affected by the refinery fire and the down-wind area potentially affected by the smoke associated with the fire.

The results of the ASPECT data indicated the absence of HF or other hazardous chemicals and radiation, with the exception of 1, 3-Butadiene, which was detected in minimal levels within the refinery perimeter, but only in the first aerial sweep.

Similarly, no hazardous chemicals or radiation were detected within the plume of smoke downwind of the refinery perimeter.

Alon USA emergency responders and other firefighting response crews extinguished the fire at 1730 hours after using a combination of firefighting foam and water.

The smoke plume was also greatly diminished at this time and was no longer visible late in the day.

Firefighting water runoff was contained in a large on-site water treatment (evaporation) pond for future treatment and disposal; a pH reading was taken from the firefighting runoff water. The results of the pH test were approximately 6 standard units.

At the request of TCEQ and EPA, Alon increased the elevation of the pond's dam as a preventative measure, should any rains occur.

On Tuesday, 19 February 2008, EPA continued to conduct air monitoring around the perimeter of the facility; there were not any results above background levels.





EPA also conducted wipe sampling of the perimeter of the refinery and public areas downwind of the refinery for presence and levels of asbestos. Analytical results showed very low levels of asbestos; toxicologists from EPA and the Agency for Toxic Substances and Disease Registry (ATSDR) stated that the levels did not indicate concerns for public health, given the exceedingly low amount of asbestos found, the characteristics of the incident and smoke plume, and exposure routes.


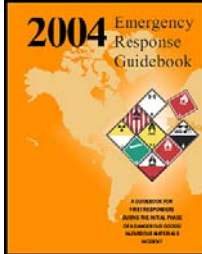

EPA monitored the level of the water in the treatment pond to determine if the pond had enough capacity to hold all of the water from the fire fighting efforts. After monitoring the water level, it was determined that there was not a threat for the water level to rise above pond's capacity.




Responding personnel included the following organizations:

- Big Spring Fire Department
- Howard County Volunteer Fire Department
- Snyder Volunteer Fire Department
- Scurry County Volunteer Fire Department
- Borden County Volunteer Fire Department
- Midland Fire Department
- Big Spring Police Department
- Midland HAZMAT
- Alon Red Hat Emergency Response
- Dawson County Volunteer Fire Department
- Howard County Amateur Radio
- American Red Cross
- Salvation Army
- Odessa Fire Department
- Glasscock Volunteer Fire Department
- Howard County/ City of Big Spring EMC
- Texas Commission on Environmental Quality
- Texas Department of Transportation
- Texas Department of Transportation
- Texas Department of Public Safety
- Howard County Sheriff
- Scenic Mountain Medical Center
- U.S. Environmental Protection Agency
- Eagle Environmental
- EPA - START: Weston Solutions

OBSERVATIONS / RECOMMENDATIONS

<p># 1</p>	<p>EPA Region 6 commends the tremendous effort carried out by all response organizations referenced above during the response effort. Throughout the response, numerous local responders displayed professionalism in their efforts.</p> <p>All local response organizations should review their response protocols based on the following: "Response teams to a disaster scene have a responsibility to first protect themselves and their team members. If you or your team is injured, not only the number of victims is increased, but the response is now delayed, resulting in additional resource utilization.</p> <p>DISASTER Paradigm: Safety and Security -- Don't be selfish - protect yourself. Scene priorities:</p> <ul style="list-style-type: none"> • Protect yourself and your team members first • Protect the public • Protect the patients • Protect the environment <p>Once your team has safely entered the scene, focus on protecting the public ..."</p> <p style="text-align: right;">"Basic Disaster Life Support Manual, Version 2.5"</p> 
<p># 2</p>	 <p>Local governments that respond to hazardous materials emergencies should always be aware of the potential for reimbursement under the Local Government Reimbursement program, operated through EPA.</p> <p>More information on this program can be found at:</p> <p>www.epa.gov/region6/lepc</p>

<p># 3</p>	<p>Response Organizations within Howard County should ensure they have the 24 hour phone numbers for EPA Region 6 (866-372-7745), State of Texas 24-emergency number (800-322-4012), as well as the phone number for the National Response Center (NRC 800-424-8802), and CHEMTREC (800-424-9300).</p> 
<p># 4</p>	 <p>The Midland Firefighters, Howard County firefighters and emergency management personnel are hazmat trained. The fire fighting teams were assigned to a “red hat” person from Alon, who was HAZMAT trained, during the response. The level of HAZMAT training for some of the other responding volunteer fire departments was unknown at the time of the response.</p> <p>Anyone who responds in a defensive mode to a hazardous materials incident should receive at least operations level HAZMAT training; offensive responses require training at the technician level. All other individuals involved in the incident, including dispatchers, public works, and other local personnel should be trained to a minimum of the awareness level.</p> <p>Awareness level training teaches personnel to recognize, identify, and notify the proper authorities and to isolate an incident.</p> <p>Operations level training provides personnel sufficient training to take defensive actions rather than try to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures.</p>
<p># 5</p>	<p>Alon, Howard and supporting Counties, the City of Big Spring, and the TXDPS did work together to respond to the incident utilizing a Unified Command (UC) structure with Alon acting as the incident commander in the response.</p> <p>There was some initial difficulty organizing the command center due to the large number people and the movement of the command post off-site due to on-site conditions.</p> <p>There was some initial confusion as to who the state on-scene coordinator was, as normally TCEQ is the lead agency for hazardous materials incidents; TXDPS personnel were already positioned in the Unified Command when TCEQ arrived on-site. TCEQ personnel determined that keeping TXDPS in the unified command structure was more appropriate, as the incident was running smoothly at that point.</p> <p>All response organizations should review their planning structures to ensure they meet the requirements of the National Incident Management System (NIMS). Additionally, response organizations should ensure their planning/response UC structure can expand to accommodate additional organizations as they arrive on scene.</p>
<p># 6</p>	<p>Alon’s 1st and 2nd sites for Incident Command were unavailable due to the fire and explosion.</p> <p>The use of a tertiary command post and its components should be further addressed in facility emergency response plans.</p>
<p># 7</p>	<p>Officials and other representatives are conducting many activities within Howard County that meet the definition of LEPC activity.</p> <p>All response / planning organizations within Howard County should meet to determine the need and effectiveness to re-invigorate an LEPC within the County, and to take credit for the work that they are currently conducting.</p> <p>Alon officials indicated the facility would like to be involved with rejuvenating the Howard County LEPC.</p> 

<p># 8</p>		<p>The local media was utilized to relay information about the fire to the community; this effort alleviated the heavy calls to the 911 dispatch center. The Mayor, 2 Congressmen, the County Judge, and Alon coordinated to generate the media releases.</p> <p>The LEPC has membership from the local media; this can assist in the dissemination of accurate information to the public. It can also assist media personnel with needed pertinent information and can lower the possibility of the media attempting to enter the hotzone to gather facts.</p> <p>During the incident PIOs (public information officers) from various organizations will be notified that they will follow the procedures outline in the city emergency plan.</p> <p>Howard County will continue to work with media contacts on their LEPC to pre-plan emergency communications.</p>
<p># 9</p>	<p>Alon received an abundance of assistance from local fire departments, so much so that they had to turn some fire departments back.</p> <p>Mutual aide agreements between departments and counties can increase the pool of assistance that a fire department can draw from, but better initial communication between mutual aid partners should be investigated to reduce response by an overwhelming response population.</p>	
<p># 10</p>	<p>The local responders were unsure as to what to expect from the state and local agencies when they arrive on-scene.</p> <p>EPA will send the EPA and TCEQ criteria to the LEPC as to what to expect when they come to an event.</p>	
<p># 11</p>	<p>Air monitoring was necessary for response duties, resources like equipment and personnel from Federal partners can aide the response event.</p> <p>TX DOT brought and implemented their traffic management plan to control traffic on Interstate 10.</p> <p>The local community can utilize the resources available from state and federal agencies.</p> 	
<p># 12</p>	 <p>Communication is always a concern in every response. The existing 911 system was overloaded by incoming calls from the community, and dispatchers were not able to call out on the system. Due to the overload of the 911 system, radios were the most reliable communication during the response.</p> <p>A decision has already been made to remove one phone line in the 911 center from the rollover system and designated solely to dispatch outgoing calls.</p> <p>Howard County is working towards obtaining GETS (Government Emergency Telecommunication System) cards to assist with future emergency responses. GETS cards help assure priority on emergency calls.</p>	

# 13	<p>Technically, Alon was not required to notify the NRC as they did not exceed the reportable quantity for any listed CERCLA hazardous substance. EPA appreciates that Alon made the effort to make notification to the National Response Center. EPA encourages all facilities to notify the NRC if there is an explosion, fire, or chemical release that may affect off-site receptors, regardless of the reportable quantity issue.</p> <p>EPA understands that notifications to all the required agencies (NRC, State, LEPC) can be time-consuming for the responsible party; however, there are many ramifications and concerns of trying to establish a one-call system to all levels of government.</p> <p>At the local level, all communities need to understand that they can request assistance directly from EPA or the State (TCEQ) without having to go through the Disaster District Committee (DDC) and up through the State Emergency Management Agency.</p>
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List of applicable standards, regulations, policies, and practices that response and planning personnel should refer to support the above recommendations:

- Occupational Safety & Health Administration (OSHA) 29 CFR 1910.120 - Hazardous Waste Operations and Emergency Response (HAZWOPER)
- OSHA 29CFR 1910.134 - Respiratory Protection (Commonly referred to in the fire service as the Two In/Two Out Rule)
- Environmental Protection Agency (EPA) 40 CFR 311 - Worker Protection
- National Fire Protection Association (NFPA) 471 - Recommended Practice For Responding to Hazardous Materials Incidents
- NFPA 472 - Professional Competence of Responders to Hazardous Materials Incidents
- NFPA 473 - Competencies for Emergency Medical Personnel Responding to Hazardous Materials Incidents
- NFPA 1500 - Standard on Fire Department Occupational Safety and Health Program
- National Incident Management System - U.S. Department of Homeland Security
- NFPA 1561 - Standard on Emergency Services Incident Management Systems
- NFPA 1994 - Protective Ensembles for Hazardous Materials Emergencies
- NFPA 1720 - Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Volunteer Fire Departments.

Overall, the response efforts by all parties (local, state, and the responsible party) are to be commended. Region 6 EPA hopes the above recommendations can be used to improve the response and preparedness readiness of the community, if a future emergency occurs.

Emergency Response Review (March 14, 2008) Attendees

Richard Franklin, EPA
Steve Mason, EPA
Angie Rochen, EPA - START
Danette Parnell, EPA - START
Jay Low
Jimmy Miller
Terry Chamness
Robert Campbell
Rich Grove
Johnny Moore

David Foster
Weinan Chen
Randy Hillman
Robert Rios
Lance Telchik
Ralph Johnson
Karen Broeder
Joe Concienne
Tony Everett