

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Carbide Industries Fire - Removal Polrep
Final Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region IV

Subject: POLREP #2
Polrep No. 2 and Final
Carbide Industries Fire
B4G3
Louisville, KY
Latitude: 38.2229174 Longitude: -85.8352375

To:
From: Art Smith, OSC
Date: 9/24/2011
Reporting Period: 3/24/11 through 3/30/11

1. Introduction

1.1 Background

Site Number:	B4G3	Contract Number:	
D.O. Number:		Action Memo Date:	
Response Authority:	CERCLA	Response Type:	Emergency
Response Lead:	PRP	Incident Category:	Removal Action
NPL Status:	Non NPL	Operable Unit:	
Mobilization Date:	3/22/2011	Start Date:	3/22/2011
Demob Date:	3/26/2011	Completion Date:	3/30/2011
CERCLIS ID:		RCRIS ID:	
ERNS No.:		State Notification:	
FPN#:		Reimbursable Account #:	

1.1.1 Incident Category - Active Production Facility

1.1.2 Site Description

1.1.2.1 Location

Carbide Industries, LLC is located at 4400 Bells Lane in Louisville, KY. The coordinates at the guard shack are N 38.2229174 W 85.8352375. The facility produces calcium carbide by electrically heating lime and coke at high temperatures. Calcium carbide is used in the acetylene manufacturing process.

Carbide Industries is located in the "Rubbertown" community of Louisville, which is home to multiple chemical manufacturing plants. The closest residential neighborhoods are located to the east of the facility within a half-mile distance.

The Ohio River is located approximately one-half mile west of the facility along Bells Lane.

1.1.2.2 Description of Threat

Calcium carbide is a water reactive solid material which evolves acetylene gas and calcium hydroxide (lime) upon contact with water. Acetylene is flammable at 2.5% in air. Calcium hydroxide is caustic and generates a high pH runoff. The threats posed by the release of calcium carbide into the environment are a potential fire and explosion hazard associated with acetylene gas evolution and the runoff of stormwater from a high intensity short duration rain event.

Calcium carbide is a hazardous substance under both Section 102 of CERCLA and Section 311 (b) of the Clean Water Act.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

An explosion involving two fatalities occurred at Carbide Industries in Louisville, Kentucky on March 21, 2011 at approximately 1740 hours EDT. The building is approximately the height of a ten-story building, containing a 40 foot tall furnace that was the source of the explosion. The force of the explosion released calcium carbide into the environment, which caused several grass fires to ignite on Carbide plant property, and which were subsequently extinguished by the fire department. It was determined that water could not be applied to the fire because calcium carbide contained within the building is water reactive, therefore the decision was made early on during the evening of 03/21 to let the fires inside the building burn itself out.

The building is composed of a non-insulated steel structure with steel, wood, and concrete flooring. The

third floor contains four- 5,500 gallon electrical transformers which contain mineral oil. One or more of the transformers caught fire late on 03/21, resulting in a conflagration which threatened the structural integrity of the furnace building.

As of 1200 hrs. on 03/24, all fires inside the building were declared out by the Lake Dreamland FD. Conditions inside the furnace building have improved and areas cleared for access by a structural engineer. The OSC completed the removal site evaluation process on 03/26.

The OSC's findings are that no additional federal response is warranted, and outlined as follows:

1. The release of calcium carbide is not governed under Section 311(c)(1) of the Clean Water Act.
2. The quantity of calcium carbide which has been released is unknown. However, areas outside of the furnace building where calcium carbide has been observed do not reveal significant accumulations to be present. (see Images section of the website: www.epaosc.orgcalcideindustriesfire).
3. Calcium carbide has been released in the furnace building in areas on the 2nd level outside of the control room. Carbide Industries personnel are providing an appropriate response in removing this material and placing it in a secure staging area, pending profiling for disposal.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

As of 1200 hrs. on 03/24, all fires in the building were declared to be under control by Lake Dreamland FD. On 03/25, the OSC inspected conditions on the 2nd level of the furnace building in an area outside of the control room. The presence of calcium carbide was documented by inserting the tip of a Multi Rae Plus gas analyzer under the lid of a 5-gallon bucket containing solid debris produced by the explosion. The instrument alarmed almost instantly with a reading of 20% of the lower explosive limit (LEL). This indicates the presence of a flammable gas and is assumed to be acetylene, which is given off as water reacts with calcium carbide. The OSC reported this to plant personnel, and procedures were established to manage the removal of this material properly.

On 03/26, the OSC and the KDEP Environmental Response Team toured the grounds of the facility where evidence of calcium carbide was found in the areas where grass fires were discovered in the aftermath of the explosion on 03/21. Only minor accumulations were noted, and it appeared as if the conversion to lime was complete at the time of the inspection. The staging area for solids to be removed from the area of the explosion was inspected and considered to be suitable for staging debris.

The OSC demobilized the site at approximately 1250 hrs. on 03/26.

The OSC communicated transfer of lead agency role to KDEP to all parties by email on 03/30

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

Carbide Industries, LLC is the responsible party. No enforcement actions have been taken by EPA at this time.

2.2 Planning Section

2.2.1 Anticipated Activities

2.2.1.1 Planned Response Activities

Louisville Fire Department is leading the accident investigation. Other agencies participating include ATF, CSB, KY SFM, KY OSHA, KY State Police, and private investigators from insurance companies.

2.2.1.2 Next Steps

The OSC is awaiting analytical results from air samples collected on 03/23, and plans to compile all air monitoring and sampling results for this incident.

2.2.2 Issues

None

2.3 Logistics Section

NA

2.4 Finance Section

No information available at this time.

2.5 Other Command Staff

2.5.1 Safety Officer

The Louisville Fire Department and the plant safety representative are coordinating on appropriate safety procedures for additional response activities.

2.6 Liaison Officer

All participating and cooperating agencies have on-site representation on the incident management team.

2.7 Information Officer

2.7.1 Public Information Officer

All media interviews were completed on 03/25/11.

3. Participating Entities

3.1 Unified Command

US EPA, Kentucky Department for Environmental Protection (KDEP), Louisville Fire Department Arson Squad, and Carbide Industries, LLC.

3.2 Cooperating Agencies

KY OSHA, KY State Fire Marshal's Office, ATF, Chemical Safety Board, Lake Dreamland FD

4. Personnel On Site

Carbide Industries, KY OSHA, KY State Fire Marshal's Office, ATF, Chemical Safety Board, Louisville Metro FD

5. Definition of Terms

No information available at this time.

6. Additional sources of information

No information available at this time.

7. Situational Reference Materials

An excerpted account of the Calcium Carbide manufacturing process is posted in the documents section of the website (www.epoaosc.org/carbideindustriesfire).