United States Environmental Protection Agency
Region IV
POLLUTION REPORT

Date: Wednesday, August 19, 2009
From: Alyssa Hughes, On Scene Coordinator

Subject: Fire Suppression Operations
Severn Peanut Company
1333 Severn Rd, Severn, NC
Latitude: 36.5177180
Longitude: -77.1952880

POLREP No.:	3	**Site #:**	
Reporting Period:		**D.O. #:**	
Start Date:	8/12/2009	**Response Authority:**	CERCLA
Mob Date:	8/12/2009	**Response Type:**	Emergency
Demob Date:		**NPL Status:**	Non NPL
Completion Date:		**Incident Category:**	Removal Action
CERCLIS ID #:		**Contract #**	
RCRIS ID #:			

Site Description

Severn Peanut Company houses the largest dome silo of its kind in the country. The dome is 192' in diameter with a height of 100', for an interior volume of 1,791,000 cubic feet. The walls of the dome are constructed with 22" concrete thickness at the bottom, which tapers to a 10" thickness at the top. Inside of the concrete there is 3" thick R19 insulation, and a membrane roof on the exterior. The silo holds 21 million pounds of peanuts, which occupy an estimated 1,345,000 cubic feet of space. The total volume of space within the dome is 1,791,000 cubic feet, leaving approximately 500,000 cubic feet of head space.

On Monday August 10th, on-site personnel detected the smell of burning peanuts. At approximately 1600 hrs on August 11th, the on-site representative observed smoke emanating from the top of the dome. Once he noticed this smoke, he contacted his supervisor and local fire department. Local fire department, NC RRT, and Northampton County EMA responded to the scene.

Aluminum phosphide tablets, used as a fumigant throughout the grain industry, were applied to the peanut silo on August 4. IFC applied 28.4 grams/1000 cubic feet, for a total of 49,000 grams applied in flasks containing 500 grams each (98 flasks). Standard procedure is to drop the flasks into the dome at the location of a 1' x 3' plate at the top of the dome. Once complete, the plate is replaced and bolts are tightened. Aluminum phosphide reacts with water to produce phosphine gas, which disperses throughout the pile and serves as a rodenticide for the peanuts. Under normal conditions, this reaction takes place within 7 to 10 days, after which the phosphine gas reaches a level suitable for release into the atmosphere (< 0.3 ppm). IFC, the company responsible for application of the fumigant, has taken phosphine readings from a tube which descends 15' into the top of the dome, since application of the fumigant.

Phosphine is a flammable, reactive gas which dissipates quickly in the open environment. Please see the links section for additional information.

The dome, manufactured by DOMETECH International, can reportedly withstand temperatures up to 1000 degrees F. There are 20 thermal cables descending into the dome, which constantly measure the temperature. Currently, these thermocouples are indicating maximum temperatures in the vicinity of 250 degrees F.

It is not possible to isolate the location of the fire within the pile based on the information known at this time.

Current Activities

8/16/09
At 0830 hrs all participants signed in at the Incident Command Post/Staging Area and listened to the Operational Briefing conducted by Deputy Incident Commander Tim Byers. Incident Action plans were distributed and followed during the briefing. EPA OSC Hughes contributed to the safety message detailing

air monitoring operations and describing the hazards posed by the presence of Phosphine Gas. At the conclusion of the Operational Briefing, individuals involved in the ground support operations, dome top operations and air monitoring support mobilized to the dome and prepared for team entry into the dome house. Three volunteer fire departments were staged in various locations on the ground to support with water operations in the event of a fire. A back-up unit with foam supply was staged and on alert at the Incident Command Post.

OSC Hughes and START personnel Stubbs and Sanchez set up AreaRaes along a 50' perimeter surrounding the dome. Two units were placed downwind, and one unit upwind where ground support teams were staged. The fourth unit was attached to OSC Hughes' vehicle and operated as a mobile unit. A weather station, with wind vein, was also attached to the vehicle. A wind sock was placed at the top of the tower for all responders to view during operations.

Prior to the entry team's ascent to the top, additional Draeger readings were taken from the tube descending into the dome. Phosphine readings were approximately 1.5 ppm. The team, composed of three Williams Fire Specialists, traveled to the dome house in full turn out gear and on supplied air. They carried the QRae monitoring device with them. Once in the dome house, the team worked to remove the plate from the floor of the dome, gather temperature readings with a thermocouple cable, and gather air quality readings with the QRae. Phosphine levels reached a maximum value of 4 ppm, with carbon monoxide reaching 350 ppm. The team completed the entry and began their descent in approximately 20 minutes.

Once the crew safely reached the ground, plant personnel began dry ice operations. A 4-gas meter was given to the operator of the conveyor system to ensure adequate oxygen levels. Please see images section. A total of 76,000 lbs were loaded into the dome by 1900 hrs. A 2 minute delay between loads had to be applied due to extreme cooling of the conveyor system. Once the operations were complete, the plate was replaced and sealed until Monday morning. During operations, downwind AreaRae #3 reached a maximum value of 0.7 ppm for phosphine. A Draeger tube sample was taken next to the unit, and no elevated readings were indicated. The mobile unit was driven in accordance with wind direction. No elevated readings were attained. Please see the documents section for a map of the data.

EPA and START left the scene at 1500 hrs and demobilized from the area the following the morning.

8/17/09
Deputy IC Tim Byers informed OSC Hughes that operations continued as planned on Monday beginning with the application of 40,000 lbs of dry ice in the morning, and an additional load of 40,000 lbs of dry ice in the evening. The plate was replaced and sealed, and the dome will remain closed until next Monday (8/24/09) when they will enter and confirm the fire was extinguished.

Planned Removal Actions
Once confirmation of the fire extinguishment takes place next Monday, crews will begin work of removing and sorting through the peanuts.

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
Intramural Costs				
Total Site Costs	$0.00	$0.00	$0.00	0.00%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.