United States Environmental Protection Agency
Region IV
POLLUTION REPORT

Date: Saturday, August 15, 2009
From: Alyssa Hughes, On Scene Coordinator

Subject: Preparation for Firefighting Operations
Severn Peanut Company
1333 Severn Rd, Severn, NC
Latitude: 36.5177180
Longitude: -77.1952880

POLREP No.:	2	**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 base don the information known at this time.

Current Activities

8/13/2009
A certified industrial hygienist arrived on-site today in order to provide consultation to the responsible parties during the fire fighting operations. An additional monitoring instrument, a QRae which is a type of 4 gas meter, will be utilized during the opening of the hatch. The instrument will log the phosphine and carbon monoxide readings during the event.

EPA and START began air monitoring the perimeter of the dome today with AreaRAEs. No elevated levels of phosphine were detected outside of the dome. Interior levels of phosphine, attained using the tube that extends into the dome, continue to drop. A crew consisting of two members from IFC (Industrial Fumigant Company) and one START member traveled to the top of the dome in level B in order to perform a reconnaissance of the "nut house", which is the structure on top of the dome in which the plate opens up into the dome. The crew brought an AreaRAE, a camera and a thermocouple to attain information regarding the characteristics of the atmosphere within the dome. Phosphine levels were on the order of 10 ppm, with a maximum of 17 and a minimum of 4 ppm at the door. CO levels maxed out at 1500 ppm. It is noted on the AreaRAE sensor sheets that for every 50 ppm CO present, phosphine levels may be inaccurately detected at 1 ppm.

8/14/2009
This morning the group met for a planning meeting to lay out a course of action for fire fighting operations. A crew of hazmat trained fire fighters will ascend to the dome house in full turn out gear and open the plate. The crew will take the QRae monitoring instrument with them so that levels in the dome can be known at this time. Once the plate is open, the crew will descend to the ground and fire fighting operations will begin. Approximately 76,000 lbs of dry ice in pellet form will be carried to the top on the conveyor belt and dropped into the dome via the plate opening. It is expected that this activity will take approximately 6-8 hours.

During the initial plate opening, a rescue crew will be in place with air ready at the foot of the stairs, three fire fighting units and EMS will be on the ground.

Following the initial drop of dry ice the dome will be monitored, and 2 more 40,000 lb loads will be dropped on Monday morning and evening.

At the planning meeting the group established Incident Command Structure for the operational period beginning at 0800 hrs tomorrow morning. The local fire chief is the sole incident commander. EPA and START contractors compose the Air Monitoring Branch. All fire fighting units are divided into various groups and divisions within operations.

Planned Removal Actions
Tomorrow's operations, as outlined in the previous section, will commence at 0830 hrs tomorrow with a safety meeting. Dry ice loading operations are expected to begin at 1000 hrs.