

United States Environmental Protection Agency
Region VI
POLLUTION REPORT

Date: Saturday, September 15, 2007

From: Chris Ruhl

Subject: Agrifos Acid Spill

2001 Jackson Street, Houston, TX

Latitude: 29.7458000

Longitude: -95.3647000

POLREP No.:	5	Site #:	
Reporting Period:	9/12 - 9/15/2007	D.O. #:	
Start Date:	9/7/2007	Response Authority:	CERCLA
Mob Date:	9/6/2007	Response Type:	Emergency
Demob Date:		NPL Status:	
Completion Date:		Incident Category:	
CERCLIS ID #:		Contract #	
RCRIS ID #:			

Site Description

On 9/6/2007, EPA's R6 Emergency Response Team was notified of an ongoing release from Agrifos Fertilizer Inc. located at 2100 Jackson Road, Pasadena, TX. The National Response Center (NRC) has assigned the incident NRC # 847936. The release occurred when a retaining wall failed resulting in the discharge of process water from a large gypsum mound. The discharge is reported to exhibit a pH of 2, contain sulfuric and phosphoric acids, and metals. The USCG has confirmed a fish kill associated with the release with a noticeable "dead" zone. The RP has estimated that 10 million gallons of process water has been discharged since the incident began. It is estimated approximately 6 million gallons of process water has been pumped and discharged within the past two days. This discharge was pumped by the responsible party (RP) to reduce hydraulic pressure on the retaining wall and provide additional capacity for future rain events. The RP has requested an emergency discharge permit for the discharge from the Texas Commission of Environmental Quality (TCEQ). Currently, the release is an un-permitted discharge from the facility to Cotton Patch Bayou and then into the Houston Ship Channel.

It is estimated that 25-35 million gallons of process water is contained behind the retaining wall. An additional 175 million gallons of process water is contained within the impoundments located on the top of the gypsum mound. The RP is concerned about the potential catastrophic release of either of the impoundments. The facility has had similar releases from the facility in the past.

The USCG, TCEQ, and Harris County Pollution Control were responding to the incident.

Current Activities

Wednesday September 12, 2007

0700 (Weather Report). Based on a briefing at the Unified Command meeting by a local National Weather Service forecaster, numerous showers and thunderstorms were expected in the region for 12 Sept. Rainfall amounts were forecasted near 1 inch, with isolated accumulations of 3 to 4 inches. The chance of rain was expected to continue through 13 Sept. (Thur.) with additional rain fall of 2 to 6 inches possible.

0800 - UC meeting. NWS weather briefing indicated 1-3" rain for the 12th with 6-7" over next three days. Winds estimated to be 15-20 kts from the east. A water level update was given at meeting.

0900 - The local National Weather Service forecaster, called the NOAA Scientific Support Coordinator to report that the disturbance in the Gulf of Mexico would soon be upgraded to a tropic depression that would threaten the area within 24 hours.

1000 - RRT meeting at USCG Sector office. Coast Guard and EPA OSCs reiterated the seriousness of current situation. The facility has NO SURGE capacity at this time and without active pumping of pond water from the top ponds and moats, catastrophic failure of the stack(s) could occur. Further, the

pumping of water to the moats would cause overflow and potential failure of the retaining wall. The weather update indicated that the tropical depression was being upgraded to a tropical storm, and projected to land west of Galveston. Rain estimates of 10-15 inches in heavy bands and 30-45mph winds were predicted. EPA Region 6 notified the RRT that they were in the process of issuing Agrifos a written CERCLA Order to authorize discharge and EPA would serve as the lead for the response.

1000 - A Tropical Storm Warning was issued by the National Weather Service. The 1000 hrs forecast predicted that the storm would intensify to a Tropical Storm and the center of the storm would reach the Agrifos Facility at 0700 hrs, 13 Sept. Sustained tropical force winds were predicted and rainfall of 5 to 10 inches with accumulations of 15 inches was possible. The storm track had the facility on the NE quadrant of the storm center, or on the quadrant that would receive the greatest rainfall amount, strongest winds, and possible tornados.

1300 - A Tropical Storm Warning remained in effect. The 1300 hrs report stated that the depression had intensified into Tropical Storm Humberto, and the center of the storm would still reach the Agrifos Facility at 0700 hrs, 13 Sept. Sustained tropical force winds were predicted and rainfall of 5 to 10 inches with accumulations of 15 inches was possible. The storm track had the facility on the direct path of the storms center. Winds had intensified to 45 mph and intensification was expected. Storm surge was also expected to push tides 2 feet above normal tides for the upper Houston Ship Channel.

1500 – Planning meeting & UC meeting to discuss strategy for dealing with fast developing/moving Tropical Storm Humberto. Crisis objectives were discussed and set:

- 1) Health and safety of personnel (with approaching tropical storm)
- 2) Manage the pond water to prevent catastrophic release of stacks. RP indicated that to prevent stack failure; pumping and siphoning needed to be initiated at the greatest extent possible. Agrifos prepared for the pumping and siphoning from top of moats to gain freeboard to prevent stack failure. Any additional water added to Moat #3 would cause additional pressure on the retaining wall. RP reported that notification to neighboring facilities and downstream waterway users updated as to the status of the facility. Unified Command reviewed IAP and made adjustments to address the changing weather conditions.

1700 - EPA issued CERCLA Order to Agrifos to prevent failure of stacks.

1700 – Agrifos commenced pumping. The facility started discharging from Moat #4 approximately 1730. The center of Tropical Storm Humberto was located 50 miles south of Galveston Texas. The storm track was drifting slightly to the west, but the winds had intensified. The new track would move the center of circulation just east of the facility. Tropical force winds were expected upwards of 60 miles for the storm's center. Intensification to hurricane status before landfall was expected. The Unified Command was instructed that with the intensity of the storm the Stacks should have 3 ½ feet of freeboard. Throughout the next 6 hours Agrifos added additional pumping to the South Stack increase the pumping capacity. At approximately 2000, OSC Ruhl directed Agrifos to maximize the rate of discharge from the facility WWTP.

Thursday September 13, 2007

0005 - Hurricane Humberto, continued to shift to a more northeastern track. OSC Ruhl requested a weather update. Just after midnight, a forecaster at the Houston Office of the National Weather Service provided an update that indicated only light precipitation was expected on Thursday, and winds would continue to clock around to the W by daylight with winds in the 10 to 15 knots range. Friday there was a chance of afternoon showers (40-50%) but the volume was thought to be relatively light, maybe as little as one tenth of an inch. Saturday and Sunday were expected to be relatively dry with only a chance on rain.

0205 - Once it was determined that Humberto would not impact the facility, OSC Ruhl requested Agrifos to cease pumping from stack ponds due to change in forecasted path of Hurricane Humberto further east. Additional pond water continued to be drained thru 3 suction hoses that could not be removed until daylight. A controlled release continued from the Moat #3 to bring the moat level down to prevent failure of retaining wall and potential uncontrolled release of 25 million gallons.

0730 - At the Operations meeting it was determined that approximately 4,113,750 gallons were pumped since pumps started last night. They had 28" freeboard on pond #2, 18" on pond #5 of South Stack; 12" freeboard on Stack #4 pond.

0800 - UC objectives meeting. Weather outlook significantly improved because of Humberto's path eastward however, storm could re-circulate and come back into gulf. Total water level 13.6 million

gallons lower, approximately 5 million in rain, making the total release between 17-19 million gallons overnight. Agrifos is to provide a more exact amount. Agrifos will also be conducting a new survey of the actual levels of the stack ponds and there may need to be a one-time adjustment to the totals being tracked. OSC Ruhl emphasized because the immediate emergency (hurricane) had passed, the limits outlined in EPA's CERCLA Order would need to be followed. The emphasis was on a more "normalized discharge" of 3-5 million gallons/day utilizing the maximum amount of gross pre-treatment possible. Additionally, the facility should maximize the discharge rate of the facility's WWTP. This is expected to continue as long as the emergency exists unless another option is identified.

1200 - The environmental assessment began. Agrifos, EPA START, and TCEQ conducted the assessment. A comprehensive sampling and monitoring plan was developed to provide a framework for the assessment teams to follow. Preliminary results indicated limited visual wildlife impacts. pH monitoring indicated that there was stratification of the water column with the lowest pH levels (3-4) being from 20-25 feet. This level is consistent with depth of the barge canal that connects to the Houston Ship Channel. pH at the outfall Cotton Bayou outfall was as low as 1.9. NOAA believes that the stratification was due to a salt wedge that was pushed by a storm surge caused by Humberto and the lack of mixing by and Ship Channel traffic. This also resulted in the plume moving upstream approximately 2 miles.

Throughout the day, the facility continued to pump water from Moat #3 to the County Ditch as well and water continued to overtop the retaining wall. The discharge flowed to Cotton Bayou and then to the Houston Ship Channel. The facility was pumping from Moat #4 to Moat #3 to prevent Moat #4 from overflowing.

EPA OSC Warren Zhener arrived on scene. OSC Zehner has been assigned as EPA's Deputy FOSC for the incident.

At approximately 2000, OSC Ruhl provided verbal notification to Exxon Mobil of a pending EPA Order.

Friday, September 14, 2007

0700 - EPA OSCs Gary Moore and Jhana Enders reported to the incident. Scott Wilson (EPA NPDES Permitting) also reported. Additional TCEQ Strike Team also arrived. OSC Moore and Scott Wilson will assist the Pond Water Transportation, Treatment, Storage, and Disposal Plan Group. OSC Enders has been assigned to ensure that EPA receives all generated information as a result of the incident.

0800 - UC/General Staff meeting. Briefed on water level status; levels continue to drop; balance now 22.6 million with 27 inches freeboard in South Stack pond #2, 22.5 inches in pond #5, and 15 inches freeboard in Stack #4's pond. The 8" discharge line was stopped at 0200 but the 10" line remains discharging into the ditch from the pump station location next to moat #3. Estimated discharge amount from this line is 3.6 million gallons/day. Water sampling team deployed to locate plume and conduct stratified sampling at outfall, downstream, and upstream. Sampling plan is developed and approved. RP's contractor, Benchmark, is engaged. Current estimated "burn" rate of wastewater is approximately 6.2 million gallons/day using the following means: 3.6 million gallons released to county ditch via 10" line; 1.2 million gallons/day processed by plant's treatment facility, 800 thousand gallons used in plant fertilizer production process; and, 600 thousand gallons of naturally occurring evaporation. The facility is maintaining pumping records as well updated water balance results.

Environmental assessment teams continue to conduct monitoring and sampling. The plume has dissipated and pH levels have dropped in the Houston Ship Channel. It is believed that this is due to lower discharge rates and increased traffic in the shipping channel. EPA has set up a sample and monitor data management system for the response. Collected data will be used to provide a representation of conditions seen in the channel as a result of discharge.

The wastewater treatment plant was off line for 6 hours to complete modifications to the system in order to increase the production capacity for the long-term processing of water. Movement of water from Moat #4 to Moat #1 for treatment continues.

A meeting with Agrifos, FOSC, and Ardaman engineers resulted in new estimates for the wastewater system requirements that would enable the facility to move out of the emergency phase. The change was based on engineering estimation that 24 inches of freeboard is minimum necessary (not 30 inches as previously estimated) to give facility needed safety margin. This estimation includes a surge capacity in the event of a significant weather event. Original 50 million gallon estimate is now 39 million gallons; therefore,

only 14.5 million gallons (not 22.6) remain to be dealt with to get out of critical emergency phase. Ardaman on-site survey is scheduled to be completed by 1200 on 15 September to verify this change.

Saturday September 15, 2007

0800 – UC/General Staff meeting. Weather update indicated a regional high will remain until Friday. The Liaison Officer continues to notify neighbors and develop an emergency notification process in the event of a catastrophic release. The water balance has dropped to 11.4 million based on revised 39 million gallon baseline. The RP is scheduled to initiate and complete stack and moat survey this morning. Unified Command agreed release strategy will change significantly if survey confirms new baseline. Agrifos will discontinue the discharge from Moat #3, rebalance water levels to optimum pond and moat levels, and discharge thru the WWTP. Once discharge is discontinued, the adjusted “burn” rate will be approximately 2.6 million gallons/day. This amount will be pretreated and released on a daily basis.

The discharge from Moat # 3 to Cotton Bayou was stopped at 1400.

Planned Removal Actions

Agrifos has hired a remediation company that will provide a plan for UC review on Monday for the environmental damage to the county ditch, Cotton Bayou, and the Houston Ship Channel.

Next Steps

- 1) Conduct environmental damage assessment in areas of impact.
- 2) Continue monitoring and sampling of discharge and conditions within the Houston Ship Channel.
- 3) Continue the partial treatment, evaporation, and process use of approximately 11.3 million gallons of pond water (approximately 2 million/day).

Key Issues

On September 12, 2007, Agrifos initiated the emergency discharge of pond water. It is estimated that approximately 15-20 million of gallons was discharged between 1700, September 12, 2007 and 0700, September 13, 2007. This was done in anticipation of the arrival of Hurricane Humberto and Agrifos’s gypsum expert indicating a 3 ½ foot freeboard requirement was required to prevent catastrophic stack failure.

On September 13, 2007, Agrifos adjusted discharge to meet upper limit of 5 million gallons allowed under the EPA CERCLA Order.

Environmental assessment has been initiated to determine environmental damage from release.

At 1400, September 15, 2007, Agrifos discontinued the discharge from Moat # 3 to the county ditch to Cotton Patch Bayou to Houston Ship Channel.

The facility will provide a complete accounting of pond water discharged.

TCEQ, USCG, and EPA continue to work well within Unified Command. NOAA has provided critical technical assistance during the response.

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.

response.epa.gov/Agrifos

POLREP #5 Last Updated 9/15/2007