

United States Environmental Protection Agency
Region V
POLLUTION REPORT

Date: Tuesday, August 24, 2004
From: Kevin Turner and Steven Faryan

To: Brian Schlieger, U.S. EPA Jason El-Zein, U.S. EPA
Kevin McCormack, U. S. Coast Guard

Subject: Hartford Area Hydrocarbon Plume Site
N. Olive Street, Hartford, IL
Latitude: 38.8361210
Longitude: -90.0951620

POLREP No.:	5	Site #:	524
Reporting Period:		D.O. #:	
Start Date:	10/20/2003	Response Authority:	CERCLA/OPA
Mob Date:		Response Type:	Non-Time-Critical
Demob Date:		NPL Status:	Non NPL
Completion Date:		Incident Category:	Removal Assessment
CERCLIS ID #:		Contract #	
RCRIS ID #:		Reimbursable Account #	
FPN#	E04503		

Site Description

Incident Category

Removal Assessment/Investigation of a large subsurface petroleum plume created by releases from several pipelines and refineries in the area.

Site Description

Location

The Hartford Area Hydrocarbon Plume Site is located within the northern most half of the Village of Hartford, Illinois just east of Illinois Route 3 and the Mississippi River. The site boundary is defined by Olive Street to the east, Rand Avenue to the north, Old St. Louis Road to the west and Donna Drive to the south. Investigations have demonstrated that the free product plume footprint extends beyond the site boundary to the north and east. Furthermore, the western most edge of the plume is less than 0.41 miles from the eastern bank of the Mississippi River and may fluctuate closer depending on river levels. The site is 3.65 miles to the northeast of the confluence of the Missouri and Mississippi Rivers.

Description of threat

Through the years, the Illinois Environmental Protection Agency (Illinois EPA), have documented dozens of releases of hydrocarbons to the environment. This has resulted in several million gallons of petroleum hydrocarbons including leaded gasoline, diesel fuel, jet fuel, and unrefined petroleum products released over a 30+ year period to form an extensive below ground plume. These documented releases are from petroleum pipelines and adjacent site refinery operations.

Larger spills or those releases from pipelines are likely to follow established corridors toward the Mississippi River. These corridors may have been sewers, other utilities, other pipelines or abandoned pipelines. Each refinery had river docks with the associated pipeline facilities. Each pipeline is an easy corridor to the river. In addition, until the late 1970's, the city sewer system and the Premcor (former Clark refinery) industrial waste water sewer were one system. During heavy rain events (>2 inches) the entire system would be over loaded, bi-pass any treatment and discharge directly to the Mississippi River. Such an event could have resulted in a sudden flood of product to the river.

During a recent sewer replacement project on Watkins Street, Village of Hartford personnel found hydrocarbon vapors and residual oil product in the sewer. Based on this and conversations with Village Public Works personnel, it is known that liquid petroleum products are routinely in and around the sewers

and that more recently recorded releases to the sewers occurred on 4/28/2000, 11/8/2000, 10/15/2001, 6/6/2002 and on 4/8/2003. Also, the Watkins Street sewer replacement project demonstrates the desecrated state of the entire village sewer system. Much of the system is in a bad state of disrepair. A camera survey commissioned by the Village confirms this. When a pipeline break occurs, product can (and does) flow directly into the sewer system. In addition, if the clean up of a spill is not complete, than the product can (and does) seep into the sewer at a slower rate.

The current subsurface gradient maps show that depending on depth, groundwater (w/ product) flows in different directions. For example, one depth (or one sand layer) shows groundwater flowing more northeast. At another depth groundwater flows more northwest. Regionally, groundwater flows more southwest. In addition, depending on the time of year, the Mississippi River can either be a localized recharge of groundwater or a localized discharge of groundwater. With the proximity of the oil products to the Mississippi River and the known groundwater flow patterns, the potential for direct discharge through groundwater to the river is great.

During heavy rainfall events and in conjunction with rising Mississippi River stages, petroleum vapors seep into basements of those residential homes on top the below ground plume. Hydrocarbon odor complaints have been documented by the Illinois EPA since the mid-1960s. It has been further documented that house fires resulting from petroleum vapor intrusion have occurred in the past since the early 1970's.

Continuing impacts from abandoned interstate or intrastate liquid pipelines and related rights-of-ways have not been assessed at this time.

Site background

The adjacent refinery operations were constructed in 1941 by Wood River Oil and Refining Company. Since that time, the refinery has been owned and operated by Sinclair Oil Company, Clark Oil and Refining Company, Apex Oil Corporation, AOC Holdings, Inc, Clark Refining and Marketing, and Premcor. Starting in 1953, additional buried pipelines were installed to facilitate the movement of products between the river terminal and the refinery. Since the 1960s, over 3 million plus gallons have been released from the various refineries and adjacent buried pipeline systems.

On November 20th, 1984, Apex Oil had an oil pipeline release which entered the Village of Hartford storm water sewer system creating a release of oil to the Mississippi River. U. S.. Coast Guard, MSO St. Louis and Illinois EPA responded to the 1984 release.

In 1991, Clark Oil Company installed a soil vapor extraction (SVE) and free phase hydrocarbon recovery system. Until recently, the SVE system attempted to controlled vapor intrusion into residential homes in Hartford, Illinois. The free phase hydrocarbon recovery system is currently not operating to design performance standards. U.S. EPA will oversee project activities including operation and maintenance of the existing dual phase treatment system for hydrocarbon removed by the oil companies identified in the Administrative Order of Consent, (Docket No. V-W-03-C-XXX) and the ultimate final remedy.

State and local actions to date

The Hartford Area Hydrocarbon Plume Site came to U.S. EPA, Removal Branch attention through the Illinois EPA. Illinois EPA has performed RCRA inspections and spill response support activities in the area since the 1970's. In June, 2003, Illinois EPA referred the Hartford Area Hydrocarbon Plume Site to U. S. EPA. Illinois EPA will continue to oversee clean-up activities within the established RCRA Corrective Action program for the adjacent refineries.

Current Activities

After a series of meetings with the Hartford Work Group (HWG) respondents in the Summer/Fall of 2003, the U.S. EPA requested that Work Plans be submitted and site activities commence during negotiations of a final AOC. Representatives from U.S. EPA and Illinois EPA continue to meet with the HWG technical committee once per month in addition to monthly teleconferences.

Vapor Related Activities

– Determine the status of current operations and maintenance activities regarding the existing SVE system including a series of vacuum tests to determine the vacuum influence exerted upon the vapor control

boring's and corresponding vapor probes.

- Control of vapors into selected residential living spaces by interim protection measures.
- Investigation for petroleum pipelines and utility lines contaminant migration pathways.
- To date, a total of 70 homes have been inspected for “needs assessment” purposes.
- Oversee the pilot testing for interim control of petroleum vapors from an internally and externally installed sub-slab de-pressurization systems. Oversee PRP conducted tracer gas studies for in-home vapor protection systems effectiveness.
- Due to vapor intrusion into the Village of Hartford Community Center, an investigation to determine the cause and a series of vapor probes were installed adjacent to the Community Center. Additional vapor sampling wells and use of Gore-Sorber™ screening capabilities to measure the extent of petroleum vapors will be utilized.
- Representatives from the Illinois Department of Public Health (IDPH) have completed the quarterly air sampling activities using summa canisters. An ATSDR fact sheet is currently in development reflecting IDPH's air sampling results.
- U. S. EPA stipulated that elevated levels related to lower explosive limits must be ventilated to mitigate the potential of explosive vapor concentrations invading into the Village sanitary sewer system.
- A portion of a deteriorated sanitary sewer line along Watkins Street was replaced in April, 2004. This street has previously experienced a high frequency of residential vapor complaints. START observed and recorded oil impacted residuals from the deteriorated municipal sewer line. This documented observation further demonstrates actual or potential impacts to the Mississippi River.
- The U.S. EPA requested revisions upon the needs assessment procedures had greatly improved the manner by which information is collected on individuals homes and the speed at which interim response measures are to be provided.
- The HWG has completed the replacement to the remaining 11 out of 12 vapor extraction wells that were plugged.
- The HWG has submitted a conceptual design for expansion of the existing soil vapor extraction system. 3 additional vapor extraction wells were installed along E. Watkins Street related to the future expansion of the vapor extraction system.

Groundwater Related Activities

- Install 5 sentinel wells for Village of Hartford wellhead protection purposes. These wells have been sampled in January and April 2004 with no impact discovered.
- Present data for conceptual site groundwater modeling (CSM) purposes. The CSM will be updated as data is collected and will help determine impacts to the Mississippi River.
- Investigate the lateral extent of free product hydrocarbons with the Working Groups recommended random optical screening tool (ROST™). Review ROST™ data and evaluate the lateral extent of the free phase hydrocarbon plume.
- Oversee the pilot tests for free product hydrocarbon removal and “bio-slurping” hydrocarbon removal.
- At this time, the U.S. EPA awaits data depicting the vertical extent of the dissolved phase hydrocarbon plume.

General Project Activities

- A public availability session and U.S. EPA sponsored public meeting including presentation was held on March 19, 2004. Residents provided comments to a court reporter.
- A second public availability session was held on July 8, 2004 to communicate the HWG offer for the planned basement ventilation fan installation offer.
- U.S. EPA has participated in the development of a formal program with the local fire department to

prepare for and respond to vapor intrusions through the 911 emergency notification system.

Planned Removal Actions

Vapor Related Activities

The existing SVE system continues to operate at this time.

Groundwater Related Activities

Product removal continues at one location as directed by the OSC.

Next Steps

Vapor Related Activities

- Future actions will include continued vapor removal utilizing the existing SVE system.
- Oversee vapor migration pathway assessment and related investigations.
- Expansion of the existing soil vapor extraction system will occur in various stages over a longer time frame.

Groundwater Related Activities

- Oversee the ongoing pilot testing of a multi-phase hydrocarbon pumping system utilizing “bio-slurping” technology which started on May 17, 2004 and completed on July 30, 2004. Two locations were evaluated.
- Oversee petroleum pipeline and utility line investigation activities and continue to assess their contributions to the on-going problems and the effects on the Mississippi River.
- Oversee dissolved phase investigation activities.

Key Issues

- U. S. EPA has issued a response to public comments obtained during and after the public meeting held on March 19, 2004. As a result of comments provided during the public meeting, the U.S. EPA has committed to a more active role in the implementation of the required needs assessments.
- The language related to a formal access agreement between the HWG and the residents is no longer an issue. However, at this time, many residents represented by counsel will not allow oil company representatives or their agents into the homes to perform the initial needs assessments.
- The current ceiling using OPA funds is \$249,000.00. As the project progresses additional reimbursable monies will be needed from the oil pollution fund in order to maintain current levels of efforts.

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