U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Cinnaminson Groundwater Contamination Site - Removal Polrep
Initial Removal Polrep

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region II

Subject: **POLREP #1**
Initial POLREP Vapor Intrusion RV1
Cinnaminson Groundwater Contamination Site
02F7
Cinnaminson, NJ
Latitude: 39.9985047 Longitude: -74.9995027

To:
From: Shawna Hoppe, OSC
Date: 3/1/2011
Reporting Period:

1. Introduction

1.1 Background

Site Number:	02F7	**Contract Number:**	EPS2-10-03
D.O. Number:	0002	**Action Memo Date:**	5/20/2010
Response Authority:	CERCLA	**Response Type:**	Time-Critical
Response Lead:	EPA	**Incident Category:**	Removal Action
NPL Status:	NPL	**Operable Unit:**	OU 3
Mobilization Date:	9/17/2010	**Start Date:**	9/17/2010
Demob Date:		**Completion Date:**	
CERCLIS ID:	NJD980785638	**RCRIS ID:**	
ERNS No.:		**State Notification:**	Yes
FPN#:		**Reimbursable Account #:**	

1.1.1 Incident Category

Residential neighborhood being impacted by a contaminated groundwater plume causing vapor intrusion into residences

1.1.2 Site Description

1.1.2.1 Location (39.9999000 N, -74.9914890 W)

The Cinnaminson Groundwater Contamination Site (Site) is located in the Townships of Cinnaminson and Delran in Burlington County, New Jersey and covers approximately 400 acres. It includes properties bounded by Union Landing Road, U.S. Route 130, River Road, and Taylors Lane as well as properties outside these boundaries where contaminants may have migrated or threaten to migrate. The Site consists of residential properties and light to heavy industrial properties and properties where landfill operations were historically conducted. The contaminated groundwater plume requires further delineation; however, the U.S. Environmental Protection Agency (EPA)'s current understanding indicates that the plume extends approximately 3,000 feet from the Site east southeast toward Route 130 and approximately 1,000 feet west toward the Delaware River.

The Delaware River is approximately 1,000 feet northwest of the Site and is the primary surface water body in the area. Two small streams, Pompeston Creek and Swede Run, provide immediate pathways for surface water runoff from the Site to the Delaware River. Potable water is provided by the New Jersey American Water Company, Delaware River District. Seventeen wells tapping the Potomac-Raritan-Magothy (PRM) Formation serve a population of 70,500. There are seven pumping stations within a two-mile radius of the Site

1.1.2.2 Description of Threat

The Site consists of a groundwater plume with several identified sources of contamination. Identified sources of contamination include a former sanitary landfill that received municipal and industrial wastes, as well as, a number of industrial facilities that contain underground storage tanks and a least one industrial property that contains unlined slurry pits and cooling ponds.

Remedial Investigation/Feasibility Study (RI/FS) work completed by EPA in 1990, identified the presence of

contaminants in two aquifers including VOCs and inorganic compounds. Contaminants included, but were not limited to, vinyl chloride, benzene, trichloroethene (TCE), tetrachloroethene (PCE), and arsenic. Soil contaminants identified in samples from locations at the industrial facilities include TCE and PCE. Sub-slab soil gas, indoor air, and sump water samples collected from the residences that make up the Site show elevated levels of TCE, PCE, and benzene.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

On May 22, 2009, the EPA Removal Action Branch (RAB) received a request from the New Jersey Remediation Branch (NJRB) to conduct a Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) removal action evaluation at the Site. This referral was as a result of the presence of elevated concentrations of TCE and PCE in sub-slab soil gas and indoor air samples collected from a number of residential locations at the Site. The affected residences are located in the East Riverton section of Cinnaminson Township.

The Site is an area of groundwater contamination that covers approximately 400 acres in Cinnaminson and Delran Townships in Burlington County, New Jersey. It includes properties bounded by Union Landing Road, US Route 130, River Road and Taylors Lane, as well as properties outside these boundaries where contaminants may have migrated or threaten to migrate. The Site consists of a landfill, residential properties, and light to heavy industrial properties. Unlined slurry pits and cooling ponds are located on one industrial property. The landfill portion of the Site originally began as a sand and gravel mining pit. During the late 1950s, municipal solid wastes were deposited in the completely unlined mining pits, while mining operations continued in other parts of the property until the late 1960s. After the mines were closed, large amounts of refuse and solid waste were deposited in the pits. Municipal and institutional wastes, bulky wastes, vegetable and food processing wastes, and industrial wastes, including hazardous substances were deposited into two areas of the landfill. In 1980, operations ceased. A clay cap was installed over the landfill to restrict rain and surface water from infiltrating into the wastes, thus reducing the amount of contaminated liquid flowing from the landfill and entering the groundwater. The underlying aquifer is a source of drinking water for people living around the Site. There are both public and private water supply wells within one mile of the Site; however, the private wells are not being used for drinking water. Approximately 55,000 people live within a three mile radius of the Site.

Since the early 1980s, private parties under Administrative Orders issued by the New Jersey Department of Environmental Protection (NJDEP) and EPA have conducted hydrogeological and soil investigations associated with historical disposal practices of the former landfill and several industrial properties that comprise the area-wide groundwater contamination. These investigations were conducted to determine the nature and extent of site-related contaminants. In addition to identifying volatile organic compound (VOC) contamination in the groundwater beneath the Site, the investigations confirmed the presence of chlorinated VOCs, primarily TCE and PCE in soil and groundwater. Groundwater contamination was discovered by NJDEP through the review of groundwater monitoring data collected as part of the closure plan for the landfill in the early 1980s. Contaminants including, but not limited to, vinyl chloride, 1,2-dichloroethane (1,2-DCA), PCE, TCE, cis-1,2-dichloroethene (cis-1,2-DCE), benzene and arsenic were found in the groundwater and soil.

EPA included the Site on the NPL in June 1986.

EPA began an investigation of the groundwater contamination during a RI/FS that was completed in 1989. The investigation included the installation of monitoring wells and sampling of the groundwater around the Site to locate the areas of greatest contamination. The hydrology at the Site is complicated by the presence of discontinuous clay layers, or lenses, beneath the Site that tend to create a shallow aquifer above the deep aquifer. Both the shallow and the deep aquifers were found to be contaminated. In 1990, EPA developed and evaluated the alternatives for remediation of the groundwater contamination at the Site.

Remediation of the Site is being addressed in three operable units. The first operable unit, OU-1, is ongoing and is directed at the cleanup of the groundwater contamination from the landfill at the Site. EPA is addressing OU-1 by pumping the groundwater, treating it to remove the contaminants, and re-injecting the treated groundwater into a deep underground layer of water. The second operable unit, OU-2, is ongoing and will address the effectiveness of the clay cap in reducing the generation of leachate. The third operable unit, OU-3, is currently in progress with an RI/FS being performed by a private party pursuant to an Administrative Settlement Agreement and Order on Consent entered into between EPA and that party. OU-3 addresses certain light to heavy industrial properties on the northwestern part of the Site, at which historic disposal and operational practices have resulted in soil and groundwater contamination.

In conjunction with the RI/FS being implemented as part of OU-3, EPA determined the need to perform a vapor intrusion investigation. Four rounds of vapor intrusion investigations at the Site in 2009, conducted by NJRB, revealed that vapors from VOCs, including TCE and PCE associated with contaminated groundwater at the Site, are present in the sub-slab soil gas and indoor air of residential properties at the Site. Sub-slab soil gas and indoor air samples were collected and analyzed from 54 residential locations, two daycare facilities and two commercial buildings. Water samples were also collected from the sump pits of thirteen residential locations.

The vapor intrusion investigation is on-going, and there is a potential that other residential locations overlying the groundwater plume may be impacted by the VOC vapors in the near future.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

During the ongoing vapor intrusion investigation, conducted by EPA New Jersey Remediation Branch (NJRB) in 2009, elevated levels of TCE in sub-slab soil gas and indoor air which pose an unacceptable risk to public health or welfare have been detected in five locations, thus far.

2.1.2 Response Actions to Date

As discussed above, there are on-going remedial actions being performed at the Site. Impacted groundwater related to the former landfill operation is being addressed by the groundwater extraction, treatment, and re-injection system that has been operating since 2000. A portion of the impacted soil and groundwater at the BOC Gases, a Division of The BOC Group, Inc., now known as Linde, Inc. (Linde) property is being addressed with a soil vapor extraction (SVE) system. However, there has not been complete delineation of soil and groundwater contamination at the Site. Migration of the groundwater plume has not been fully delineated. Supplemental soil and groundwater investigations are currently being performed to address area-wide groundwater contamination.

During the course of this supplemental investigatory work, the potential for vapor intrusion into residences and other locations was identified in March/April 2009.

The analytical data from air samples collected during the vapor intrusion investigation indicated that at five locations, TCE concentrations present in the indoor air pose an unacceptable risk to public health or welfare. The indoor air analytical results indicated that these vapors associated with the VOC contamination in the groundwater underlying the residence had migrated into the living space of the residence. An Action Memorandum was signed on May 20, 2010 to address the threats posed by indoor air and sub-slab contamination at these five residential locations.

On September 17, 2010, the installation of carbon filtration units was completed in three residences which have been impacted by vapor intrusion of TCE. Carbon filtration units were not installed in the other two residences due to access issues. The carbon filtration units were installed as an interim alternative to sub-slab depressurization systems (SDS) which could not be installed due to ongoing water infiltrations issues.

During the week of January 17, 2011, air samples were collected from two residences using Summa canisters. These residences were previously equipped with carbon units as an interim measure, while a more permanent solution is evaluated to address the indoor air contamination. Validated results from the indoor air sampling event were received on February 7, 2011. A reduction of TCE concentrations in basement and first floor indoor air in both homes was detected.

Additional residential locations may require follow-up sampling, and other locations may be identified during subsequent sampling events which will also require mitigation**.** EPA will continue with the on-going vapor intrusion investigation.

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

Pursuant to a Unilaterial Administrative Order (UAO) issued by EPA on June 28, 1991, Sanitary Landfill, Inc., now known as SC Holdings, Inc. (SCH), a subsidiary of Waste Management, Inc., (SCH) designed and constructed the ground-water pump and treat system that is currently operating at the Site.

Through a series of enforcement actions NJDEP was working with Linde to investigate and remediate its property, which is part of the Site. In consultation with NJDEP, EPA assumed the regulatory lead for the BOC property, and on April 30, 2008, EPA entered into an Administrative Settlement Agreement and Order on Consent for an RI/FS and removal action with Linde with respect to the BOC property.

2.1.4 Progress Metrics

None

2.2 Planning Section

2.2.1 Anticipated Activities

2.2.1.1 Planned Response Activities

The OSC is currently reviewing the indoor air data collected after the installation of the carbon units and the long term options for mitigation. Remedial activities continue.

2.2.1.2 Next Steps

The carbon filtration units were installed as an interim alternative to sub-slab depressurization systems (SDS) which could not be installed due to ongoing water infiltrations issues. OSC is currently reviewing options for long term mitigation.

OSC will attempt to contact the two residents where the carbon filtration units have not been installed yet due to access issues. The vapor intrusion investigation is ongoing and there is a potential that other residential locations overlying the groundwater plume may be impacted by the VOC vapors in the future. NJRB is coordinating with the residents for additional air sampling. This may result in the need for the installation of additional carbon filtration units.

2.2.2 Issues

In November 2010, there was a fire at one of the residential locations where a carbon filtration unit had been installed and the house, as well as the unit, were destroyed.

2.3 Logistics Section

A logistics section was not activated for this response. No logistical challenges or issues were encountered during this reporting period.

2.4 Finance Section

No information available at this time.

2.5 Other Command Staff

2.5.1 Safety Officer

No safety challenges were encountered during this reporting period.

2.6 Liaison Officer

A liaison officer was not activated for this response.

2.7 Information Officer

2.7.1 Public Information Officer

2.7.2 Community Involvement Coordinator

The Community Involvement Coordinator for the Site is Natalie Loney.

3. Participating Entities

3.1 Unified Command

Unified Command is not relevant to this response.

3.2 Cooperating Agencies

The NJDEP has been involved in the Site since the early 1980's.

4. Personnel On Site

Currently, there are no personnel working on the Site

5. Definition of Terms

Vapor Intrusion- when chemicals or petroleum products are spilled on the ground or leak from underground storage tanks, they can give off gases, or vapors that can get inside buildings. Common products that can cause vapor intrusion are gasoline or diesel fuel, dry cleaning solvents and industrial degreasers. The vapors move through the soil and seep through the cracks in basements, foundations, sewer lines and other openings. Vapor intrusion is a concern because vapors can build up to a point where the health of residents or workers in those buildings could be at risk. Some vapors, such as those associated with petroleum products, have a gasoline odor. Others are odor free.

Tetrachloroethene (AKA: Tetrachloroethylene, Perchloroethylene, PCE)- A manufactured chemical used for dry cleaning and metal degreasing.

Trichloroethene (AKA: Trichloroethylene, TCE)- A manufactured chemical used in metal degreasing.

6. Additional sources of information

6.1 Internet location of additional information/report

EPA's Cinnaminson Groundwater Website:
www.epaosc.org/cinnaminson

Agency for Toxic Substance and Disease Registry:
http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=30#

6.2 Reporting Schedule

The OSC is currently reviewing the indoor air data collected after the installation of the carbon units and the long term options for mitigation. OSC will attempt to contact the two residents where the carbon filtration units have not been installed yet due to access issues. The vapor intrusion investigation is ongoing and there is a potential that other residential locations overlying the groundwater plume may be impacted by the VOC vapors in the future. NJRB is coordinating with the residents for additional air sampling. This may result in the need for the installation of additional carbon filtration units.

7. Situational Reference Materials

None