United States Environmental Protection Agency
Region IV
POLLUTION REPORT

Date: Tuesday, February 12, 2008
From: David Dorian

Subject: Vapor Intrusion Study
CTS of Asheville Superfund Site
235 Mills Gap Road, Asheville, NC
Latitude: 35.4933000
Longitude: -82.5063000

POLREP No.:	4	**Site #:**	A4P5
Reporting Period:	12/10/07-1/2/09	**D.O. #:**	
Start Date:		**Response Authority:**	CERCLA
Mob Date:		**Response Type:**	Time-Critical
Demob Date:		**NPL Status:**	Non NPL
Completion Date:		**Incident Category:**	Removal Action
CERCLIS ID #:		**Contract #**	
RCRIS ID #:			

Site Description

The Site is located off Mills Gap Road, approximately 1 mile east of Skyland, Buncombe County, North Carolina and consists of approximately 9 acres of maintained grounds containing a large single-story building. In 1952, IRC, Inc. (IRC) bought the land for the Site and constructed the building which it then used for its electroplating operations. In 1959, IRC sold the Site to CTS, Inc. From 1959 until 1986, CTS operated an electroplating facility at the Site. The chemical compound trichloroethylene (a.k.a. trichloroethene or "TCE") was employed by IRC and CTS to clean and/or degrease metal objects prior to electroplating. In 1987, Mills Gap Road Associates (MGRA) purchased the Site and is the current owner.

In 1999, chlorinated solvents were identified in two springs and one domestic well, located topographically down-gradient from the site. In August 1999, the NCDENR referred the Site to the U.S. EPA's Emergency Response and Removal Branch (ERRB) for removal eligibility consideration .

On August 20, 1999, the ERRB conducted a removal site evaluation in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR §300.410 (Ref. 2). Conditions at the site, specifically contamination of potable drinking water supplies with chlorinated solvents, were found to pose a threat to public health or welfare or the environment. Consequently, bottled water was provided to the four households that had used the contaminated sources for potable water. Subsequently the affected residences were connected to the Asheville-Buncombe municipal water supply.

Analytical results derived from the samples collected from beneath the former CTS plant revealed elevated concentrations of VOCs (e.g. 830,000 ppb TCE), base neutral and acid extractable compounds (BNAs), and petroleum hydrocarbons, most likely #2 fuel oil. TCE was detected in all samples and was typically present at the highest concentrations relative to other chemical compounds identified. Sampling by EPA has indicated TCE, 1,1 TCA, and petroleum contamination in surface water emanating from the site.

Following mitigation of the immediate threat posed by the contaminated springs and waterwell, EPA entered into negotiations with the identified Potentially Responsible Parties and executed an Administrative Order on Consent (AOC) with CTS Corporation and Mills Gap Road Associates in January 2004. On-Site removal activities began in June 2004. Operation of a Soil Vapor Extraction system commenced in July 2007 and is currently on line.

Current Activities

From December 10-14, 2007, EPA examined the potential for vapor intrusion at homes near the site. In groundwater contaminated with volatile organic chemicals (VOCs), there is an equilibrium between the aqueous and vapor phases. As the vapor travels in the vadose (unsaturated zone) there is the potential for

vapors to seep into homes. For homes with concrete slab, boring into the sub-slab and extracting a vapor sample provides an indication of exposure risk. Shallow soil gas (e.g., subslab gas and soil gas measured at 5 feet or less from the base of the foundation) is conservatively assumed to intrude into indoor spaces with an attenuation factor of 0.1. For homes with crawls spaces, passive air sampling (e.g, Summa Cannisters) provide a worst case scenario for VOCs that are heavier than air, such as TCE; however, an attenuation factor is not applied.

Residential sampling included placement of 10 Summa Cannister in crawl spaces and 10 sub-slab measurements. Air was collected in the Summa Cannisters for 24 hours and analyzed for VOCs with GC/MS. The sub-slab measurement were collected over a 24 hour period and analyzed for trichloroethene (TCE) and tetrachloroethene (PCE). EPA's Trace Analytic Gas Analyzer (TAGA) was deployed to screen homes for TCE and PCE prior to sampling. Environmental sampling (non-residential) included 18 soil gas measurements and 5 seep samples inside the spring air channels were conducted.

Low levels of TCE vapors were detected in some crawl spaces of homes, but all of the measured crawl space values of TCE vapors were within an acceptable, health-based, risk range currently being used by EPA. Trace quantities of other VOCs were detected (see January 23, 2008 Analytic Report in Documents). The EPA's Region 4 interim Removal Action Level (RAL) for TCE vapors is 23 ppb, which is based on the CalEPA potency factor. The range of TCE values measured in Summa Cannisters in residential crawls spaces ranged from non-detect to 3.78 ppb.

The ten residential sub-slab measurements were tested at the TAGA bus for TCE and PCE. Eight of the ten residential sub-slab measurements, eight showed no detections for either constituents. The TCE and the PCE detection (measured in separate samples) were both below RALs.

Soil gas (taken by filled air drawn into a Tedlar bag from a slam bar at a depth of 5 feet and measured by the TAGA bus) measurements were taken north of the plant and east of the plant along potential groundwater flow paths. Fifteen of the soil gas measurements were non-detect for TCE and PCE. TCE was detected in three soil gas TCE measurements taken between the former CTS plant and the eastern contaminated springs. The three soil gas TCE measurements ranged from 41 to 460 ppb. These values substantiate groundwater flow along an eastern flow path from the plant subsurface to the springs. Seep measurements were taken at four locations in the headspace of the springs. A fifth sample was a field duplicate for QA/QC. The seep values ranged from 2.3 to 70 ppb. Fencing (with warning signs posted) surrounding the area of seep and soil gas detection was completed in January 2008.

In addition to screening homes for other sources of TCE, the TAGA bus's real time measurement system collected ambient air measurements in two runs from Jasmine Lane southeast along Mills Gap road. The majority of the detections ranged between non-detect and 0.10 ppb, below levels of concern (based on the Superfund risk range). However, detections from 0.5 to 21 ppb were measured at certain points on the run. At 5:25 pm on December 10, 2009, the MGR002 TAGA run (mobile monitoring), maximum TCE values of 13 ppbv (Point F) and 21 ppbv (point H) were measured at Mills Gap Road and Surrey Run (Point L). The run was repeated two days later on December 12, 2009 at 12:11 PM. In this subsequent TAGA mobile monitoring, MGR021 TAGA run measured maximum TCE values of 0.36 (Point E) and 0.49 ppbv at Mills Gap Road and Surrey Run (Point L). The location of the maximum values coincides with the intersection of the stream emanating from the contaminated springs and Mills Gap Road.

Planned Removal Actions

An evaluation of technologies to mitigate surface water at the springs through the existing 2004 Administrative Order on Consent between EPA, CTS Corporation, and Mills Gap Road Associates is underway.

Next Steps

While measurements at points with public exposure are within EPA's acceptable risk range for TCE and below EPA Region 4 Removal Action Levels, some detections warrant follow up studies. In particular, vapor levels near and at the spring and the elevated instantaneous TAGA measurement on Surrey Run will be examined in follow up testing to confirm that exposures are within RALs. The general lack of detections in sub-slab measurements coupled with ambient and crawl space detections suggests that TCE vapors emanate from elevated surface water contamination and enter residences. A follow-up study would further examine this issue.

Key Issues

Although other ambient air values were within the acceptable risk range, at the January 21, 2008 public

meeting, citizens residing near the plant raised concerns that TCE was detected in air. In particular, one instantaneous sample taken near a school bus stop (Surrey Run) was higher than most of the other samples. The initial study presented some data gaps, most notably 24-hour ambient samples in the neighborhood. That data gap can be closed in a follow up study.

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