DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Agency for Toxic Substances
and Disease Registry
Atlanta, GA 30333

May 14, 2012

Mr. Ryan Dunham, Site Assessment Manager
U. S. Environmental Protection Agency, Region 8
1595 Wynkoop Street
Denver, Colorado 80202

SUBJECT: East Side Springs site (EPA#: UTN000802825)

Dear Mr. Dunham:

In November, 2011, the U.S. Environmental Protection Agency (EPA) Region 8 requested the Agency for Toxic Substances and Disease Registry (ATSDR) regional office review site data for the East Side Springs Site to identify public health concerns that could inform future site investigations. ATSDR reviewed data from relevant environmental assessments conducted under Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) authorities (better known as "Superfund"), surface water data collected by Salt Lake City, as well as geospatial information available through the internet. Through its cooperative agreement with EPA, Utah Department of Environmental Quality (UDEQ) conducted the Superfund investigations.

Background

In July and August of 2010, the Salt Lake City Department of Public Utilities sampled several springs on the east side of Salt Lake City, Utah to assess impacts of the Red Butte Creek Oil Spill (June 12, 2010, from a Chevron pipeline). Although petroleum contamination was not identified in the springs, elevated levels of tetrachloroethylene (PCE) were detected in the springs at concentrations ranging from 2.5 ppb to 40.4 ppb. A total of 11 springs were identified within the site boundaries, and 6 had PCE contamination above laboratory reporting limits.

This recent detection of PCE by resulted in a reevaluation of a local groundwater plume, previously investigated under Superfund authority as the 700 South 1600 East PCE Plume Site (EPA Site ID# UTD981548985) (also referred to in documentation as the Mount Olivet Cemetery Plume Site). This plume was first identified in monitoring of the Mount Olivet Cemetery irrigation well conducted in 1990 by Salt Lake City Department of Public Utilities. The contaminated springs and the groundwater plume are presumed to be connected hydraulically.

Site Description

The site is located in a predominantly residential area on the east side of Salt Lake City, Salt Lake County, Utah. The approximate boundaries are formed by 800 South and Michigan Avenue and between 1100 East and 1300 East. Red Butte Creek is located to the south of the site and flows to the west towards Liberty Park Pond.

The groundwater plume is expansive, potentially covering several hundred acres (UDEQ 2004). Based on 2000 Census data, 838 residents were identified within ¼ mile of the site boundary. Water bearing subsurface zones of the Salt Lake valley consist of confined and the deep-unconfined aquifers. Investigations have reported that the direction of groundwater migration in the area is northwestern when adjacent wells are operational. When these wells are not operational, groundwater migration is thought to trend west, following general topography, before surfacing at springs along the Wasatch Fault (UDEQ 2011). Depth to the water table in this area is approximately 100 feet below ground surface (UDEQ 2011).

Environmental Data

Since the groundwater plume was identified in 1990, samples of groundwater from the Mount Olivet Cemetery irrigation well have been collected annually. The well is 470 feet deep and screened the majority of this length, through both confined and unconfined aquifers. PCE levels in samples collected from the well have ranged from 11 to 184 ppb.

From June 1998 to January 2000, UDEQ installed six groundwater monitoring wells east and southeast of the Mount Olivet Cemetery. The sampling of these wells from 1998 to 2000 detected PCE at 320 ppb, 290 ppb, and 190 ppb, in monitoring wells EPA-MW-01S, EPA-MW-02, and EPA-MW-04 respectively (UDEQ 2000). Previous investigation identified historical dry cleaning operations at the nearby VA Medical Center as a suspected source of the PCE plume.

On May 19 and 22, 1995, EPA collected 15 soil-gas samples from several locations near the site. Of the 15 soil gas samples, two contained volatile organic compounds (VOCs). A sample collected from Mount Olivet Cemetery measured 16 ppb of PCE, and a sample collected near one of the National Guard maintenance buildings measured 1 ppb of TCE. In November 1996, four soil gas samples were collected from potential contamination sources near the plume. EPA soil gas samples detected PCE at a maximum of 49 ppb for PCE and 3.4 ppb for TCE (UDEQ 2000). PCE concentrations in groundwater ranged from non-detect at the 10 ppb reporting limit to 320 ppb. TCE, chloroform, methylene chloride, and 1,2-dichloroethene were also detected, but at values below the 10 ppb laboratory reporting limit.

Data Analysis

The maximum PCE concentration (320 ppb) in monitoring wells exceeded EPA's 5 ppb Maximum Contaminant Level (MCL), and ATSDR cancer and chronic non-cancer screening values for drinking water. This monitoring well is not a drinking water source and not considered a point of human exposure.

Two drinking water wells owned by the University of Utah are located approximately 2,000 feet

northwest of the Mount Olivet Cemetery well at 1511 East 500 South. Site documentation indicates that PCE has not been detected (UDEQ 2000) in these wells; however, they are potentially impacted.

In 2004 sampling, PCE was detected at 2.33 ppb in the Salt Lake Municipal Well #18. The well was subsequently taken out of service. The Liberty Park drinking fountain, an artesian well located down gradient of PCE subsurface contamination, has been sampled for regulated VOCs. To date there have not been detections (UDEQ 2011) of PCE; nevertheless, plume migration potentially also threatens this well.

The plume boundaries have yet to be defined. Although investigations have indicated that all residents are supplied municipal water, ATSDR could not identify documentation that would definitively resolve whether there are private wells that are in use as drinking water sources.

The inhalation pathway through the process of vapor intrusion is a concern at sites with groundwater contamination near and under buildings. In particular, the dissolved phase VOCs at surface water springs raises the question if VOC vapors lay closer to the surface than previously suspected. The PCE found in soil gas highlights concerns about vapor intrusion.

Conclusions

Additional environmental data are necessary to evaluate the potential of community exposures and possible public health implications.

Recommendations

- Determine the potential for PCE vapor intrusion into occupied structures located above or near the contaminant plume or near the springs. Information describing nearby residential construction should be collected to facilitate a better evaluation of the vapor intrusion exposure pathway.
- Better define the groundwater contaminant plume and determine if existing drinking water wells have been impacted. Determine if any springs are used for drinking water.
- A technical evaluation of how surface water (i.e., surface springs) and the aquifers are hydro geologically connected and the implications for vapor intrusion would be beneficial to development of a site conceptual model.

ATSDR remains available to EPA for continued evaluation of data from the site as more information is collected through the site assessment process. Please do not hesitate to contact me at (303) 312-7011 or ddorian@cdc.gov, if you have questions or need further assistance.

Sincerely,

David Dorian

David Dorian, MS
ATSDR Regional Representative

References

(UDEQ) Utah Department of Environmental Quality, Division of Environmental Response and Remediation, 2000. Analytical Results Report: Mount Olivet Cemetery Plume.

(UDEQ) Utah Department of Environmental Quality, Division of Environmental Response and Remediation, 2004. Analytical Results Report Mount Olivet Cemetery Plume, Soil Sampling Event – June 2004 Groundwater Sampling Event.

(UDEQ) Utah Department of Environmental Quality, Division of Environmental Response and Remediation, 2011. Preliminary Assessment East Side Springs.

(UDEQ) Utah Department of Environmental Quality, Division of Environmental Response and Remediation, 2011. Site Investigation Work Plan East Side Springs.

ATSDR, 2007; Agency for Toxic Substances and Disease Registry, ToxFAQ for Tetrachloroethylene (PERC); available at http://www.atsdr.cdc.gov/toxfaqs/tfasp?id=264&tid=48, September 2007