Health Consultation

BOHN HEAT TRANSFER FACILITY

BEARDSTOWN, CASS COUNTY, ILLINOIS

EPA FACILITY ID: ILD065243172

SEPTEMBER 30, 2006

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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HEALTH CONSULTATION

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Prepared By:

Illinois Department of Public Health
Under Cooperative Agreement with the
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry

Purpose

In November 2005, the Illinois Environmental Protection Agency (Illinois EPA) requested that the Illinois Department of Public Health (IDPH) evaluate recent public water well data, groundwater sampling data, and continued remediation efforts at the Bohn Heat Transfer site. In response to this request, IDPH evaluated the information available to determine if the site currently poses a public health hazard. This document also serves as an update health consultation for the site.

Background and Statement of Issues

Site Location and Description

The former Bohn Heat Transfer site is in Cass County on 13 acres of land about 1 mile southeast of Beardstown, Illinois (NW 1/4, Section 24, T.18N, R.12W). Industrial, agricultural, and residential properties surround the site. The facility is bordered by Illinois Route 125 on the northeast, farmland on the northwest, the former Pennington Crossarms and Kent Feed facility on the southwest, and residential property on the east. Kent Feed Road (also known as Industrial Drive) parallels the northwest boundary, and an abandoned B & O railroad track parallels the southwestern boundary (Attachment 1).

Past practices at the Bohn Heat Transfer facility led to the contamination of site soil and groundwater with chlorinated solvents. Regional groundwater flows in a northwesterly direction through the site. Contaminated soil has been remediated; however, groundwater contamination migrated off the site to the northwest. A groundwater recovery and treatment system was installed and began operating in September 1997 (ATSDR 2000).

Four deep public water supply wells are about 2,000 feet northwest of the site and provide drinking water to Beardstown and surrounding areas. Source water from these wells is blended and treated before delivery to customers through the municipal water system. The public wells are screened from 60 to 80 feet below the ground surface. Pumping stresses created by the Beardstown public supply well field may have altered groundwater flow direction in the area. No private wells are known to be downgradient of the site.

IDPH completed a public health assessment for the Bohn Heat Transfer site, which was published by the Agency for Toxic Substances and Disease Registry (ATSDR) on June 2, 2000. IDPH concluded that the Bohn site posed no apparent public health hazard because no one was exposed to site-related contaminants in the on-site and off-site groundwater. IDPH recommended continued operation of the groundwater recovery and treatment system to further reduce on-site and off-site contamination, monitoring of the Beardstown public water supply wells, and monitoring of groundwater in the area. The remedial alternative that was selected for the site provided for these recommendations (ATSDR 2000).

Since the release of the 2000 public health assessment, the groundwater recovery and treatment system has continued to operate, and the monitoring wells have been sampled per Illinois EPA

requirements. The building and grounds of the facility now house Midwest Pallet, Evergreen Farms Inc. Landscape Supplies, and a U-Haul rental dealership.

In August 2005, the Illinois EPA detected cis-1,2-dichloroethylene in source water from Beardstown city well #1 at a level of 29.5 micrograms per liter (µg/L). No other city wells northwest of the site were affected. Though city well #1, which is northwest of the site, is affected, the primary plume of contamination is about 1,000 feet east of the municipal well field. In September 2005, a Remedial Alternatives Report recognized that the existing pump and treat system "does not successfully capture either the horizontal or vertical extent of the plume from the site." Environmental consultants have recommended a modification and expansion of the existing pump and treat system (Haley & Aldrich 2005). This information and a review of the latest groundwater monitoring data led Illinois EPA to request this health consultation from IDPH.

Casswood Treated Products

Casswood Treated Products, another hazardous waste site, is southeast of the Bohn site across the abandoned B & O railroad tracks. Casswood operated for about 30 years as a wood-treatment plant, which contaminated soil and groundwater with pentachlorophenol, metals, and polycyclic aromatic hydrocarbons (PAHs). Remediation and groundwater treatment at Casswood has reduced the levels of contaminants. IDPH completed a public health assessment for Casswood, which was published by ATSDR on April 22, 1998, that concluded the Casswood site posed no apparent public health hazard and recommended continued groundwater monitoring in the area. Since that time, groundwater treatment has continued and another 15,500 tons of wood preserving byproducts and contaminated soil have been removed (Staats 2005). The chemicals detected in groundwater northwest of the Bohn Heat Transfer site are not thought to originate from the former Casswood facility.

Site Visit

IDPH staff visited the Bohn Heat Transfer Facility on December 28, 2005, and easily accessed the parking lot of the property from the highway. Several U-Haul trucks and trailers were parked on the north side of the parking lot along Illinois Route 125. The former manufacturing building and areas to the east and south were enclosed by a 6-foot-high, chain-link fence. Stacks of new and reconditioned pallets were along the east side of the building. Large piles of broken pallets and various types of mulch were south of the building within the property's fence. Piles of masonry and various types of landscape rock are also stored on the property. IDPH observed monitoring wells on and off the site.

A used car dealership, a gas station, a motel, and homes north of the site across Illinois Route 125 use city water. Beardstown High School is about 0.7 miles northwest of the site. The city of Beardstown is along the Illinois River and is about 1 mile northwest of the site. Beardstown has a population of 5,770 persons, according to 2000 census data. About 20% of the population of Beardstown is Hispanic and speaks a language other than English in the home (U.S. Census 2000).

Discussion

Chemicals of Interest

IDPH compared the results of each environmental sample with the appropriate comparison values used to select chemicals for further evaluation for carcinogenic and noncarcinogenic health effects. Chemicals found at levels greater than comparison values or those for which no comparison values exist were selected for further evaluation (Attachment 2).

The chemicals of interest are cis-1,2-dichloroethylene, trichloroethylene, and vinyl chloride. The most concentrated area of off-site groundwater contamination extends about 2,000 feet north-northwest of the site. Within this plume, monitoring well samples taken in 2005 show the maximum levels of each chemical of interest are 1,400 µg/L for cis-1,2-dichloroethylene (maximum contaminant level or MCL = 70 µg/L), 110 µg/L for trichloroethylene (MCL = 5 µg/L), and 4.9 µg/L for vinyl chloride (MCL = 2 µg/L).

In the vicinity of the Beardstown public water wells, which are about 2,000 feet northwest of the site, the highest level of cis-1,2-dichloroethylene was 29.5 µg/L. Trichloroethylene and vinyl chloride have not been detected in the vicinity of the Beardstown municipal well field. However, pumping stresses created by the Beardstown public supply well field may pull contamination in that direction.

Exposure Evaluation

A chemical can cause an adverse effect only if people contact it at a sufficient level for a sufficient time. That requires a source of exposure, an environmental transport medium, a point of exposure, a route of exposure, and a receptor population. An exposure pathway is complete if all of the components are present, and people were exposed in the past, are currently exposed, or will be exposed in the future. If parts of a pathway are absent or if data are insufficient to decide whether the pathway is complete or whether exposure could occur at some time (past, present, future), then a potential exposure pathway exists. If part of an exposure pathway is not present and will never exist, the pathway is incomplete and can be eliminated from further consideration.

Currently, persons who use public water drawn from city well #1 are exposed to levels of cis-1,2-dichloroethylene less than the maximum contaminant level drinking water standard of 70 µg/L. No adverse public health effects would be expected from exposure to cis-1,2-dichloroethylene at levels less than the MCL. In addition, raw water from city well #1 is blended with water from unaffected wells before delivery to customers. Though detected at levels greater than the MCL, no one is exposed to the chlorinated solvents in the north-northwest contaminant plume, approximately 1,000 feet east of the municipal well field. Still, this contamination poses a potential hazard should it be drawn into the Beardstown municipal well field.

Community Health Concerns

City leaders are concerned about the quality of the water used for their public water system. Continued testing of the public water wells and nearby monitoring wells should give the community sufficient warning of any increased levels of contamination.

Child Health Considerations

IDPH recognizes that children are especially sensitive to some contaminants. Though children may be exposed to low levels of cis-1,2-dichloroethylene through the Beardstown public water system, no adverse health effects would be expected from this level of exposure. A greater hazard is the potential for other chemicals to affect the Beardstown public water system in the future.

Conclusions

IDPH concludes that exposure to contaminated groundwater related to the Bohn Heat Transfer site poses no apparent public health hazard at this time. The level of cis-1,2-dichloroethylene detected in raw well water used by the Beardstown municipal water system does not exceed health-based guidelines. Source water from this well is blended with water from unaffected wells before delivery to customers through the municipal water system. Levels of contamination greater than health-based guidelines exist in groundwater approximately 1,000 feet east of the municipal well field, and this may pose a future threat to the Beardstown municipal well field and persons who use that water.

Recommendations

IDPH recommends that

- Illinois EPA continues to enforce testing of municipal wells and area monitoring wells to ensure the safety of the Beardstown municipal water system.
- the pump and treat system be modified and expanded to reduce the potential for contamination to migrate off the site.
- the Beardstown Public Water Utility communicate future sample results to their customers in both English and Spanish.

Public Health Actions

The Cass County Health Department is aware of the location of the groundwater contamination and will decide on a case-by-case basis permitting future wells in these areas.

Preparers of Report

Ken Runkle and Kathleen Marshall
Environmental Health Specialists
Illinois Department of Public Health

References

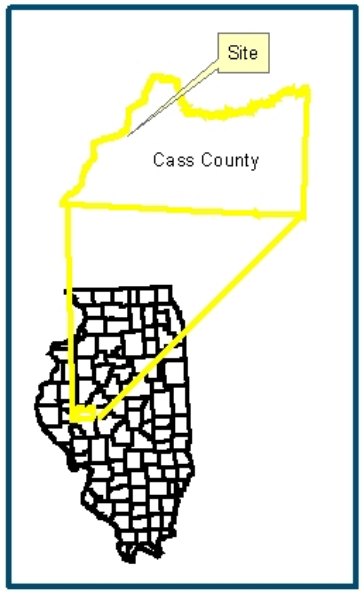
Agency for Toxic Substances and Disease Registry. Public health assessment for Bohn Heat Transfer. Atlanta: U.S. Department of Health & Human Services, 2000.

Bureau of the Census. 2000 census population. Available from URL: http://www.census.gov.

Haley & Aldrich. Former Bohn Heating Facility Remedial Alternatives Report. Chicago, Illinois. September 2005.

Staats, Gus. Casswood Treated Products editorial. Cass County Star-Gazette. 2005 November 10.

Attachment 1. Bohn Heat Transfer Facility Site Location Map



Attachment 2

Comparison Values Used In Screening Contaminants for Further Evaluation

Environmental media evaluation guides (EMEGs) are developed for chemicals on the basis of their toxicity, frequency of occurrence at National Priorities List (NPL) sites, and potential for human exposure. They are derived to protect the most sensitive populations and are not action levels, but rather comparison values. They do not consider carcinogenic effects, chemical interactions, multiple route exposure, or other media-specific routes of exposure, and are very conservative concentration values designed to protect sensitive members of the population.

Reference dose media evaluation guides (RMEGs) are another type of comparison value derived to protect the most sensitive populations. They do not consider carcinogenic effects, chemical interactions, multiple route exposure, or other media-specific routes of exposure, and are very conservative concentration values designed to protect sensitive members of the population.

Cancer risk evaluation guides (CREGs) are estimated contaminant concentrations that are based on a probability of 1 excess cancer in 1 million persons exposed to a chemical over a lifetime. These are also very conservative values designed to protect sensitive members of the population.

Maximum contaminant levels (MCLs) have been established by USEPA for public water supplies to reduce the chances of adverse health effects from contaminated drinking water. These standards are well below levels for which health effects have been observed and take into account the financial feasibility of achieving specific contaminant levels. These are enforceable limits that public water supplies must meet.

Lifetime health advisories for drinking water (LTHAs) have been established by USEPA for drinking water and are the concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects over a lifetime of exposure. These are conservative values that incorporate a margin of safety.

Certification

This Bohn Heat Transfer public health consultation was prepared by the Illinois Department of Public Health under a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR). It was completed in accordance with approved methodologies and procedures existing at the time the health consultation was initiated. Editorial review was completed by the Cooperative Agreement partner.

Charisse J. Walcott
Technical Project Officer, CAT, CAPEB, DHAC

The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this health consultation and concurs with its findings.

Alan Yarbrough
Team Lead, CAT, CAPEB, DHAC, ATSDR