

# Health Consultation

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FORMER CHAMPAIGN MANUFACTURED GAS PLANT

CHAMPAIGN, CHAMPAIGN COUNTY, ILLINOIS

EPA FACILITY ID: ILN000510264

SEPTEMBER 11, 2008

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

FORMER CHAMPAIGN MANUFACTURED GAS PLANT SITE

CHAMPAIGN, CHAMPAIGN COUNTY, ILLINOIS

EPA FACILITY ID: ILN000510264

Prepared By:

Illinois Department of Health Services  
Office of Environmental and Occupational Toxicology  
Under Cooperative Agreement with the  
The U.S. Department of Health and Human Services  
Agency for Toxic Substances and Disease Registry

## **Purpose**

The Illinois Department of Public Health (IDPH) has prepared this health consultation under cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). The purpose of the health consultation is to evaluate any known or potential adverse human health effects from exposure to off-site contaminants from the former Champaign Manufactured Gas Plant (MGP) in the surface soil of nearby residential areas.

## **Background and Statement of Issues**

### **Site History**

The former Champaign MGP site is in the city of Champaign, Champaign County, Illinois. It is located at 308 North Fifth Street, at the intersection of Hill and Fifth Streets. The site is situated on approximately 2.6 acres in a mixed residential and commercial neighborhood. The site is bounded on the north by the Norfolk and Western Railway, on the east by an abandoned section of North Sixth Street right-of-way (used by foot traffic), on the west by North Fifth Street, and on the south by an alley adjacent to a residential area (Figures 1 and 2).

The former Champaign and Urbana Gas Light Company operated the MGP at this site from about 1869 through the early 1930s. The site remained vacant and unused from the 1950s until the property was sold to American Legion Post 559 in 1979. The “Booster House” was maintained and used intermittently by the American Legion from 1979 until 1991. Illinois Power repurchased the property from the American Legion in 1991 and the site has since remained vacant [1].

As part of a voluntary cleanup program, Illinois Power and subsequently Ameren, conducted studies of the soil and groundwater conditions at the property and surrounding property in 1986, 1990, 1992, 1997, and 2004. The groundwater monitoring wells are sampled quarterly. Although there is groundwater contamination, no one is using this water because the surrounding area is being served by Illinois American Water Company public water supply wells that are more than a mile from the site. In addition, IDPH reviewed site data in 1990 and found no significant human exposure to contaminants from the site at that time.

### **Community Concerns**

The Champaign-Urbana Citizens for Peace and Justice, the Champaign County Health Care Consumers and the University of Illinois Department of Urban and Regional Planning held an informational meeting for the community on December 7, 2007. The primary concern of these groups was the lack of communication between Ameren and the residents.

On January 14, 2008, Ameren and the Illinois Environmental Protection Agency (Illinois EPA) went door to door in the neighborhood to communicate with residents living near the site. Also, a public availability session for the community was held that afternoon and evening at the Salem

Baptist Church on Park Street East. A Site Information Repository has been established with a collection of documents at the Douglass Branch of the Champaign Public Library. Although some community groups have raised concerns regarding a potential connection between the MGP site and cases of neighborhood cancers, IDPH is not aware of any specific health concerns among residents.

On June 5, 2008, the City of Champaign, Ameren and the Illinois EPA held a public meeting at the Douglass Branch of the Champaign Public Library. A presentation was given by Nicholas Schneider of Rapps Engineering and Applied Science, Inc., a consultant hired by the City of Champaign, to explain the planned site cleanup activities.

### **Site Visit**

IDPH staff visited the site on January 14, 2008 and again on June 5, 2008. A 6-foot high chain-link fence topped by rusty barbed wire surrounded the site. New “warning” signs are posted on the fence informing the public to call an 800 telephone number prior to digging. Access to the site is through a locked gate on its western side, off North Fifth Street. The site was vacant, except for one remaining building called the Booster House.

Residential properties exist south of the site along Church Street, west of the site along Hill Street, and north of the site along Washington Street (Figure 2). A hospital parking lot is east of the site.

## **Discussion**

### **Chemicals of Interest**

IDPH compared the results of each off-site surface soil sample with the appropriate screening comparison values to select chemicals for further evaluation for cancer and non-cancer adverse health effects. Chemicals at levels exceeding comparison values or those for which no comparison values exist were selected for further evaluation. The listing of a chemical of interest does not necessarily mean it will cause adverse health effects if exposure occurs. A description of each of the comparison values is found in Attachment 1. Table 1 lists the chemicals of interest and the maximum values detected in off-site residential soil samples. Samples were analyzed for polycyclic aromatic hydrocarbons (PAHs), metals and volatile organic chemicals.

PAHs are the chemicals of interest in the off-site surface soils. PAHs are a group of chemicals found in fossil fuels, products made from fossil fuels, and the combustion products of fossil fuels. The main health concern from exposure to PAHs is cancer. Benzo(a)pyrene (BaP) is one of the PAHs classified as a probable human carcinogen. The U.S. Environmental Protection Agency has developed a relative potency factor approach, where the cancer potency of the other carcinogenic PAHs can be estimated based on their relative potency to BaP. These “BaP equivalents” can then be used to estimate the potential for adverse health effects [2].

## **Residential and Garden Soil**

IDPH reviewed the 0 to 12 inch depth soil sample results from 2004 and 2007 in residential yards and one soil sample from a garden vegetable plot to determine if the levels of contaminants in the soil could cause adverse health effects in exposed individuals. IDPH prefers to have surface soil samples collected from 0 to 3 inches, because people are typically only exposed to the top 3 inches of soil [3].

We estimated exposure to PAHs in residential surface soil based on two exposure scenarios. One was a child contacting and ingesting 150 milligrams (mg) of soil daily while playing in their yard or garden six days per week, 9 months per year for 16 years. The second was for an adult contacting and ingesting 100 mg of soil daily while working in their yard or garden six days a week, 9 months per year, for 40 years. Based on the mixed composition of the garden soil, the elevated levels of PAHs were likely due to the presence of coal and debris rather than the operations of the former MGP [4].

Based on the exposure scenarios used, IDPH found no apparent increased cancer risk for children or adults exposed to the surface soil in any of the residential samples. No other adverse health effects would be expected.

## **Site Fence Line and Public Alley Soil**

During the Comprehensive Site Investigation in 2004, soil samples were collected from the site fence line and the public alley [1]. Samples were collected from 0 to 3 feet in depth. IDPH reviewed the 0 to 1 foot soil sample results to determine if levels of contaminants in the soil could cause adverse health effects in exposed individuals.

The locations of these samples were along the northwestern side of the site. IDPH does not expect children to be frequently playing along the fence line and abandoned public alley north of the railroad tracks because the area is so close to train traffic.

We estimated exposure to PAHs in surface soil from these locations based on two scenarios. One was for a child contacting and ingesting 150 mg of soil daily while playing along the fence line or public alley 1 day per week, 9 months per year for 16 years. The second was for an adult contacting and ingesting 100 mg of soil daily while walking around the fence line and public alley 1 day per week, 9 months per year, for 40 years. Since exposure to this area would be minimal, no apparent increased cancer risk or other adverse health effects would be expected from exposure to the surface soil in these areas around the site. Sources of elevated PAHs in these areas could be site related, from vehicular traffic, or other unknown sources.

Based on the exposure scenarios used, IDPH found no apparent increased cancer risk for children or adults exposed to the surface soil at the site fence line or public alley. No other adverse health effects would be expected.

## **Child Health Considerations**

IDPH recognizes that children are especially sensitive to some contaminants. For that reason, IDPH considered children when evaluating exposures to contaminants in the surface soil of the neighborhood around the site. Children are the most sensitive population considered in this health consultation.

## **Conclusions**

Based on the off-site soil sampling data, IDPH concludes that no apparent health hazard exists for exposure to surface soil in the residential yards, garden plot, site fence line and the public alley that were sampled around the former MGP.

## **Recommendations and Public Health Action Plan**

- ▶ Ameren will conduct further soil and water sampling to determine the extent of PAH contamination.
- ▶ Ameren will conduct, if necessary, soil gas sampling around off-site buildings.
- ▶ IDPH will review the results of additional sampling.
- ▶ IDPH has answered questions about cancer risks and chemical exposure at public availability sessions and will continue to work with the Illinois EPA to respond to any health concerns of the community near the former MGP.

## **Preparer of Report**

Cary Ware  
Environmental Health Specialist  
Illinois Department of Public Health

## **References**

1. Comprehensive Site Investigation Report for Ameren IP. Champaign former MGP, Champaign, Illinois. Philip Environmental Service Corporation, Columbia, Illinois. June 2007.
2. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Polycyclic Aromatic Hydrocarbons. September 1997.
3. Agency for Toxic Substances and Disease Health Assessment Guidance Manual, Lewis Publishers. 1992.
4. Cravens, S. Letter to Brian Martin, Ameren. Kelron Environmental. December 11, 2007.

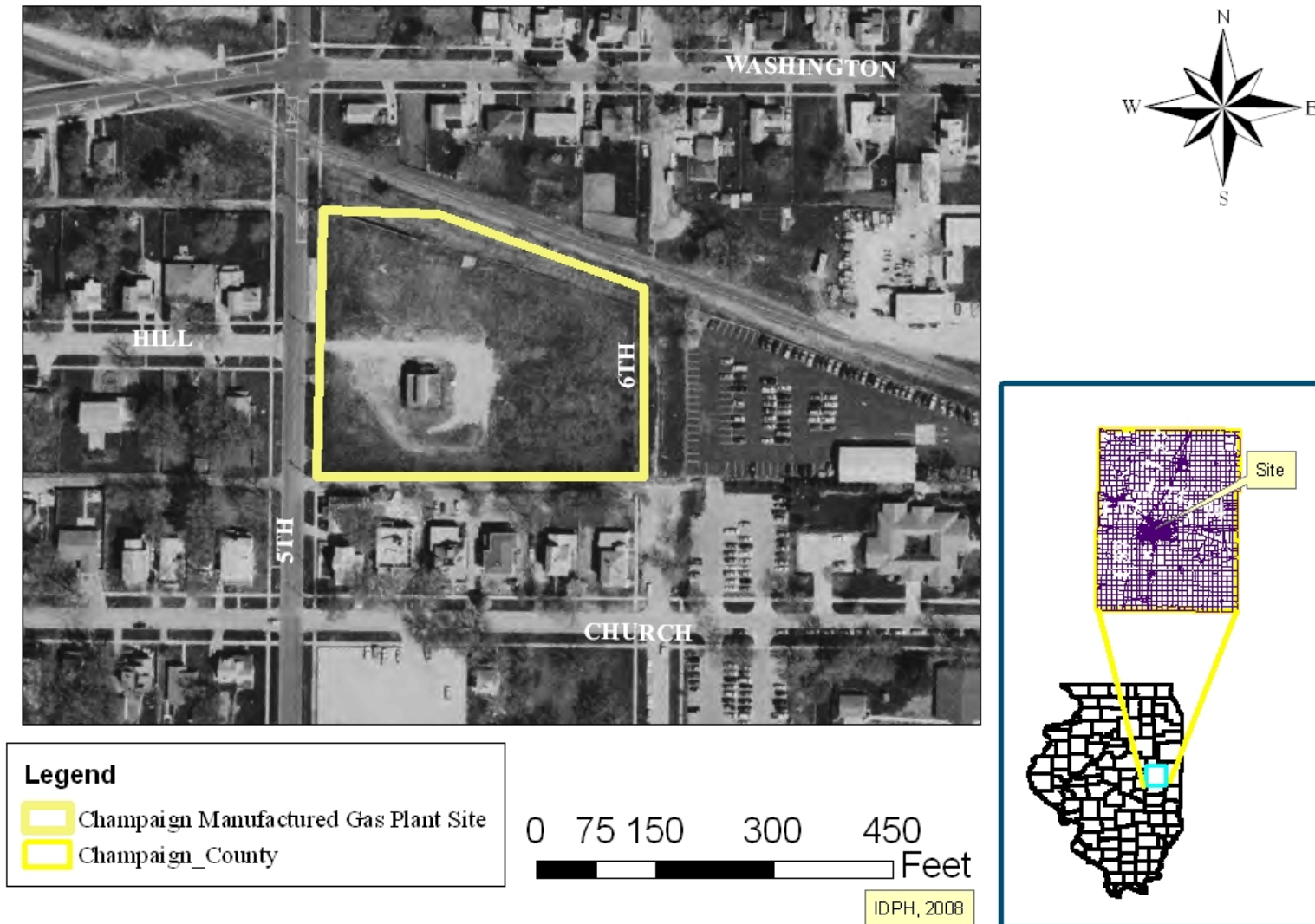
**Table 1. Levels of Contaminants of Interest in Off-site Soil Samples.**

	BaP equivalents Maximum level (in ppm)	Location	Comparison Value (in ppm)
Surface Soil Sample (0-1')	8.5	Residential Yard	0.1
Surface Soil Sample (0-1')	3.8	Garden Plot	0.1
Surface Soil Sample (0-1')	9.7	Site Fence Line	0.1
Surface Soil Sample (0-1')	3.7	Abandoned Public Alley	0.1

ppm – parts per million



Figure 1. Champaign Manufactured Gas Plant Area Site Location Map



**Figure 2. Champaign Manufactured Gas Plant Site Map**



**Comparison Values Used In Screening Contaminants for Further Evaluation**

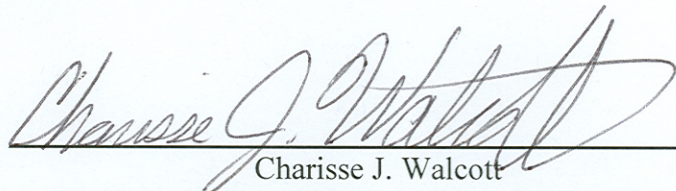
Environmental Media Evaluation Guides (EMEGs) are developed for chemicals based on their toxicity, frequency of occurrence at National Priority List (NPL) sites, and potential for human exposure. They are derived to protect the most sensitive populations and are not action levels, but rather comparison 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 based on a probability of one excess cancer in a million persons exposed to a chemical over a lifetime. These are also very conservative values designed to protect sensitive members of the population.

## Certification

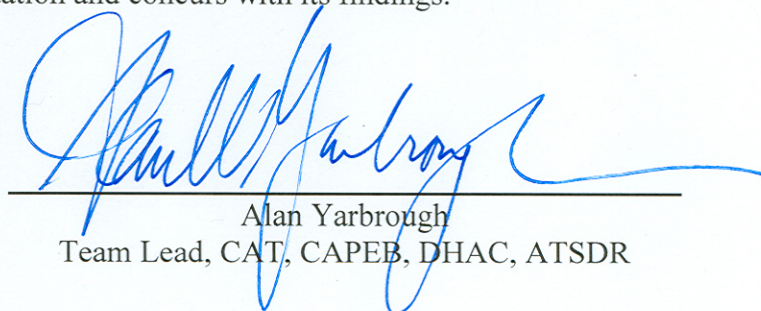
This Former Champaign Manufactured Gas Plant Site health consultation was prepared by the Illinois Department of Public Health under a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR). It was completed in accordance with approved methodologies and procedures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



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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.



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