

Health Consultation

SMITH-DOUGLASS

STREATOR, LIVINGSTON COUNTY, ILLINOIS

EPA FACILITY ID: ILD003178175

JULY 6, 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

SMITH-DOUGLASS

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EPA FACILITY ID: ILD003178175

Prepared By:

Illinois Department of Public Health
Under Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

Purpose

The Illinois Environmental Protection Agency (Illinois EPA) requested that the Illinois Department of Public Health (IDPH) complete a health consultation for the Smith-Douglass site. In December 1990, IDPH issued a preliminary public health assessment. The purpose of this health consultation is to update the status of the site and to evaluate, based on information currently available, any known or potential adverse health hazards related to the site.

Background and Statement of Issues

Site History

The Smith-Douglass site is located approximately 1 mile east of Highway 23 and 1 mile from South Streator near the Vermilion River in Livingston County (Attachment 1). The 124 acre site includes:

- a 30 acre area containing semi-demolished buildings, tanks, and other equipment used for fertilizer manufacturing,
- a 6 acre landfill,
- a gypsum pile that covers 40 acres, and
- three large ponds and two small ponds.

Phillips Creek, a tributary of the Vermilion River, encircles the plant's former manufacturing settling ponds and lagoons. It discharges into the Vermilion River approximately 700 feet west of Fresh Pond.

Some of the site was used to manufacture tile and brick from the early 1900s until 1945. In the fall of 1945, the Smith-Douglass Company purchased the property and began manufacturing a variety of fertilizer products made by using phosphate ore mined in Florida, minor feedstocks from other areas of the country, and sulfuric and phosphoric acid produced at the site. The process used acid to free the phosphates to use in fertilizer production, and it resulted in a 25 to 40 acre pile of acidic gypsum waste. The gypsum waste was piled into a strip mine pond that currently rises more than 60 feet above the pond surface.

In 1964, the site was purchased by the Borden Chemical Company and subsequently expanded to its current size. The facility continued to manufacture fertilizer. Borden sold the fertilizer facility to Garrett Acquisition Corporation in October 1981. Garrett continued manufacturing fertilizer until bankruptcy, ceasing operations in June 1983. In December 1983, the facility was leased to Sullivan Engineering Company Inc. (SECO), which operated an acid plant at the facility. Subsequently, SECO's lease was terminated in August 1985 and since then the site has remained abandoned.

In September 1988, the site was sealed by the Illinois EPA after their investigation revealed the presence of a large quantity of unsecured hazardous material on the site. The hazardous material included blasting caps, Polychlorinated biphenyls (PCBs), solvents, caustics, and vanadium pentoxide. Between April and December 1989, the Illinois EPA conducted an Immediate

Removal Action and thousands of gallons of hazardous materials were inventoried, overpacked, and removed for proper disposal. The Livingston County Board contracted a private firm to demolish all the buildings on the site in 1993. The contractor did not complete the job as agreed and left many partially demolished structures and piles of debris.

In 1997, one of the potentially responsible parties (PRPs), Borden Chemical, signed an Agreed Order with Illinois EPA to fund field work for a Preliminary Facility Assessment (PFA). The PFA report was finalized in 1999. The assessment documented several problems remaining at the site including that the Fresh Pond was separated from Phillips Creek by a poorly constructed, narrow, 0.25 mile long berm. Fresh Pond was estimated to contain approximately 70 million gallons of acidic (pH=3) water. The Army Corps and the Illinois Department of Natural Resources agreed that a breach of the berm was impending, and it could cause an environmental disaster potentially killing fish for 10 miles down the Vermillion River. Borden completed repair on the berm in September 1999. In 2003 and 2004 Borden Chemical had the water in Fresh Pond neutralized and the pH was raised to 10.8.

The 1990 preliminary health assessment concluded that site-related contaminants posed no public health hazard, because human exposure was not occurring at levels that would cause adverse health effects. The preliminary health assessment recommendations included:

- ▶ further environmental characterization and sampling of the site and potentially impacted off-site areas, and
- ▶ restricting site access [1].

A Feasibility Study (FS) was completed in March 2000 and provided preliminary cost estimates for placing demolition debris in the ponds, backfilling the ponds with gypsum, and treating and discharging the acidic water. In June 2000, the berm was partially washed away by record rain storms. Prior to repairing the berm for a second time, Borden pumped 12 million gallons of water to depressions on the top of the gypsum stack and lowered the level of Fresh Pond by 8 feet. In 2001, Borden pumped water to the top of the gypsum stack and stabilized the berm for a third time. A more detailed FS report focusing on the ponds and gypsum stacks was completed in November 2001.

Since 2002, a series of meetings have been held with representatives of Borden, Allied Waste Company, several units of government, state agencies, and the State Representative's office to develop remediation strategies and possible funding sources to clean up the site. Also, a FS report was completed in December 2003 concerning the landfill area located north of the gypsum stack. The landfill was the repository for wastes produced by various industrial processes at the site. The area included numerous mounds of gray and brown granular material, piles of empty drums and discarded equipment. Levels of radioactivity, exceeding the limit for disposal in a standard commercial landfill, were present in most of the mounds. Other contaminants included metals, pesticides and semi-volatiles. Numerous remedial options were evaluated. To date no permanent remedial options have been implemented.

Site Visit

On April 13, 2005, IDPH staff visited the site. The northwestern area of the site still contains semi-demolished buildings, tanks, and other equipment used for fertilizer manufacturing. Phillips Creek was flowing briskly into the Vermilion River. The large boulders used to reinforce the creek side of the berm in 2000 appeared to be securely in place. No breach of the berm was observed along the Smith-Douglass Road and the western edge of Fresh Pond. Garbage was observed scattered throughout the southern part of the site, but it was not clear whether it had been dumped or blown from nearby residences. Although signs are posted not to trespass on the site, fresh vehicle tracks were observed along the southeastern area of the site off of Smith-Douglass Road. Historically, the site has been used regularly by the local population for riding dirt bikes and all-terrain vehicles. Also, open dumping of trash continues to be a problem. A six foot chain link fence installed around the entire site continues to deteriorate allowing easy access to the site.

Discussion

Chemicals of Interest

IDPH compared the results of each environmental sample with the appropriate screening comparison values to select chemicals for further evaluation for carcinogenic and non-carcinogenic health effects (Attachment 2). 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, however, that if exposure occurs the chemical will cause adverse health effects.

On-site Groundwater Monitoring

In November 1999, three groundwater monitoring wells were re-sampled at three locations on the site. The locations sampled were near the former Main Plant area, southwest of the Main Plant, and in the former landfill area. Water samples were analyzed for volatile organic chemicals, semivolatile organic chemicals, pesticides, and polychlorinated biphenyls, and inorganic chemicals. The Main Plant groundwater monitoring well had elevated levels of 2,6-dinitrotoluene and 2,4-dinitrotoluene. Groundwater monitoring samples collected near the landfill area also had elevated levels of 2,4-dinitrotoluene. No other chemicals were detected at levels greater than comparison values. Generally, groundwater flows toward Phillips Creek and provides base flow to the creek [2].

In May 2001, a groundwater monitoring well sample was analyzed for gross alpha and beta activity, total uranium, radium-226 and radium-228 activity. The sample results did not exceed drinking water comparison values [3].

Off-site Private Wells

In September 1998, eight private water wells were sampled near the site. No organic chemicals, pesticides, polychlorinated biphenyls, or inorganic chemicals related to the site exceeding drinking water comparison values were detected in the private water well samples. Additionally, no radionuclides exceeded drinking water comparison values [4].

On-site Sediment

As part of the STEP investigation, sediment samples were collected from Phillips Creek, Fresh Pond, and Coles Pond. Some sediment samples contained levels of 2,4-dinitrotoluene, phenanthrene, chrysene, dieldrin, pyrene, benzaldehyde and di-n-butylphthalate at levels less than soil comparison values. However, arsenic was detected greater than comparison values at a maximum of 27.4 parts per billion (ppb) in the Fresh Pond sediments. Naturally occurring radionuclides and one man-made radionuclide, Cs-137, a product of nuclear weapons fallout, were detected in Phillips Creek; however, levels of all radionuclides in this sample were typical of levels seen in sediment and soils [3].

On-site Surface Water

The main hazard associated with exposure to surface water is the very low pH of the ponds. Fresh Pond and Coles Pond receive acidic runoff from the gypsum stack and as a result, Fresh Pond's surface water pH has been detected as low as 3.0. As of October 2005 the both ponds had a pH of approximately 6.0. Phillips Creek upstream of the site has water pH levels greater than 8.0. As the creek flows past the site, low pH surface water contributions from the north and south side of the creek lower the creek water pH by approximately two units to 6.0 [2].

In May 2001, several surface water and leachate seep samples were collected from Fresh Pond, Coles Pond, and Industrial Area and analyzed for radionuclides of interest. No sample results exceeded comparison values [3].

On-site Soil

As part of a 1999 PFA, soil samples collected from the chemical area, landfill area, and the transformer area indicated the presence of aldrin and dieldrin greater than background levels, but not greater than soil comparison values. The relative immobility of these pesticides has limited their migration to shallow soil depths [2].

Air Sampling

No documented air releases are known and none were observed during any of the environmental investigations.

Exposure Assessment

The potential for exposed persons to experience adverse health effects depends on several factors, including:

- ▶ how much of each chemical a person is exposed to,
- ▶ how long a person is exposed, and
- ▶ the health condition of the exposed person.

An exposure pathway consists of a source of contamination, environmental media and transport mechanisms, a point of exposure, and a receptor population. Exposure to a contaminant may have occurred in the past, may be occurring now, or may occur in the future. When all these elements linking the contaminant source to an exposed population are known, a completed exposure pathway exists. When one of these elements is missing, a potential exposure pathway exists.

Although groundwater is contaminated on the site, this water is not available for human consumption. Off-site residential groundwater samples have not shown any site contaminants at levels greater than comparison values. Surface water contamination has resulted in the ponds becoming very acidic, which could be a physical hazard if a trespasser falls in them. This could result in irritation to the skin, eyes, and lungs. While trespassing has been a frequent problem at this site, swimming has not been one of the activities historically mentioned. Other physical hazards involve trespassing in and around partially demolished buildings, unstable walls or overhead conveyer systems.

Child Health Considerations

Children are a sensitive sub-population for exposure to some chemical contaminants. For that reason, IDPH included children when evaluating this site. At this time, conditions at the site indicate that children would not be exposed to on-site chemicals.

Conclusions

Based on the most recent sampling data, IDPH concludes that current conditions pose no apparent public health hazard from site-related contamination. Although deteriorating buildings could pose a physical hazard for those trespassing on the site, trespassers are not being exposed to chemicals at levels that would cause adverse health effects.

Recommendations

IDPH recommends that the Illinois EPA continue to restrict site access. This will reduce the likelihood of trespassers – especially teenagers – playing around partially demolished buildings and abandoned equipment, which might present physical hazards.

Public Health Action Plan

In May 1999, IDPH mailed letters to seven residences where water well sampling was conducted to inform residents that the results did not indicate a public health hazard.

Preparer of Report

Cary Ware
Environmental Health Specialist
Illinois Department of Public Health

References

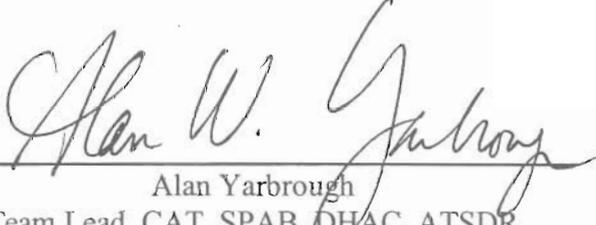
1. Illinois Department of Public Health. Preliminary health assessment for Smith – Douglass site, Streator, Illinois. Springfield, Illinois: Illinois Department of Public Health; December 1999.
2. Illinois Environmental Protection Agency. Site Team Evaluation Prioritization (STEP) for Smith – Douglass Streator, Illinois. June 2001.
3. Haskell L. August 2001 office memorandum to Illinois EPA regarding the analysis of samples from the Smith – Douglass site. Springfield, Illinois Department of Nuclear Safety, Division of Environmental Monitoring.
4. Illinois Environmental Protection Agency. Residential water well sample results for the Smith – Douglass site. Springfield, Illinois: September 1999.

Certification

This Smith-Douglass 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.

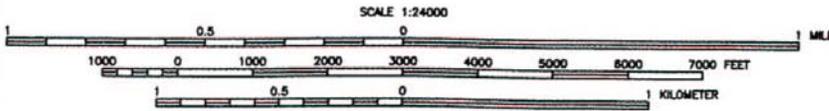

Charisse J. Walcott
Technical Project Officer, CAT, SPAB, DHAC

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


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



 = APPROXIMATE SITE BOUNDARY FOR OVERALL SMITH-DOUGLASS FACILITY SITE (120 ACRES)



CONTOUR INTERVAL 1.5 METERS
 NATIONAL GEODETIC VERTICAL DATUM OF 1929
 REFERENCE: U.S.G.S. 7.5 MINUTE SERIES, PHOTO REVISED 1983
 THE SITE IS LOCATED IN SECTIONS 6 & 7, TOWNSHIP 30 NORTH, RANGE 4 EAST



MACTEC
 Engineering and Consulting, Inc.

Site Vicinity Map
 IEPA - Smith-Douglass Site
 Smith Douglass Road
 South Streator, Illinois 61364

FIGURE
100

DRAWN EWS	PROJECT NUMBER 551379	APPROVED BDS	DATE 02/25/03	REVISED DATE GSDGS
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ATSDR 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 Priorities List (NPL) sites, and potential for human exposure. They are not action levels but are comparison values. They are developed without consideration for carcinogenic effects, chemical interactions, multiple route exposure, or exposure through other environmental media. They 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. They are developed without consideration for carcinogenic effects, chemical interactions, multiple route exposure, or exposure through other environmental media. They 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.

Maximum Contaminant Levels (MCLs) have been established by the U.S. Environmental Protection Agency (USEPA) for public water supplies to reduce the chances of occurrence of adverse health effects from use of 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. MCLs are limits that public water supplies must meet, and they are enforceable by USEPA.

Lifetime Health Advisories (LTHAs) USEPA has established LTHAs for drinking water. LTHAs are concentrations of specific chemicals in drinking water that are not expected to cause any adverse, noncarcinogenic health effects over a lifetime (70 years) of exposure. These are conservative values that incorporate a margin of safety.