

## Project Quick Facts

**Started:** April 22, 2010

### Monitors:

Three monitors were placed along the perimeter of the landfill.

### Results:

- Identified the major source of H<sub>2</sub>S emissions as pulverized gypsum fines disposed of in the southeast corner of the landfill.

- Decreased H<sub>2</sub>S levels and odor complaints after landfill installs new flare system in October.

**End Date:** April 19, 2011

## Odor Complaints

Please contact the Lake County Health Department at **847-377-8096** with odor complaints and be prepared to provide the following information:

- Your Name
- Location of odor
- Date & time odor encountered
- Odor intensity (see scale below)

## ODOR INTENSITY SCALE

- 1 Slight odor, barely detectable
- 2 Some odor, clearly detectable
- 3 Strong odor, enough to attempt to avoid it
- 4 Very strong odor, overpowering and intolerable for any amount of time

## Additional Information

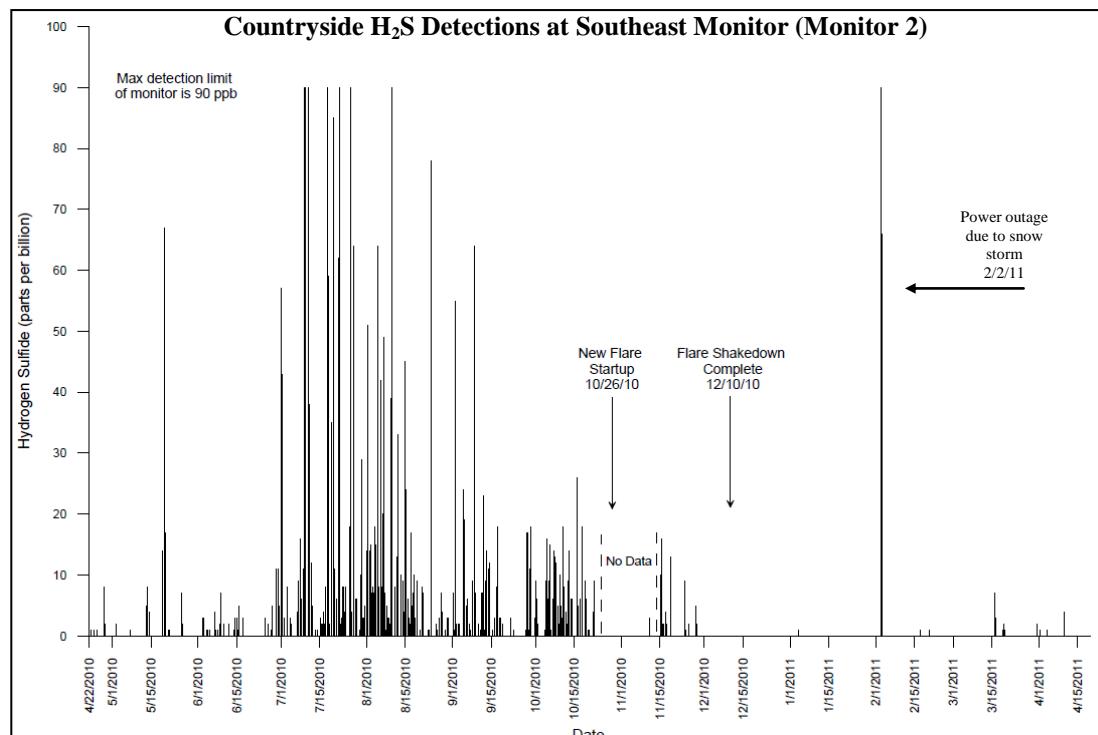
If you are interested in learning more about this project, please contact **Mike Kuhn at 847-377-8016 or by email at [mkuhn@lakecountylil.gov](mailto:mkuhn@lakecountylil.gov)**

The Lake County Health Department (LCHD), U.S. Environmental Protection Agency (EPA), Illinois Environmental Protection Agency (IEPA) and Waste Management Inc. recently completed a year long monitoring effort at Countryside Landfill to address hydrogen sulfide odors. Hydrogen sulfide (H<sub>2</sub>S) gas has a strong rotten egg odor, which is produced by sulfur-reducing bacteria that consume sulfur related compounds.

The monitoring effort, which began in April 2010, was designed to establish a baseline of ambient H<sub>2</sub>S concentrations around the landfill perimeter, define fluctuations in ambient H<sub>2</sub>S concentrations related to operations, weather, season and time, and determine if gas collection system improvements were effective. The monitoring network consisted of three air monitors installed around the perimeter of the landfill. These monitors are extremely sensitive and are capable of measuring very low levels of hydrogen sulfide. Most people can smell hydrogen sulfide at levels as low as 1 to 5 parts per billion (ppb) which are much lower than the levels that may cause health impacts. For example, the OSHA Permissible Exposure Limit and the NIOSH Recommended Exposure Limit for hydrogen sulfide is 10,000 ppb.

During the 12 month monitoring effort, LCHD, IEPA and EPA collected and analyzed H<sub>2</sub>S and meteorological data from the monitors. This information was compared with the landfill operation log to assist in diagnosing the source of H<sub>2</sub>S and evaluate the improvements made to the gas collection system. The monitors indicated that H<sub>2</sub>S levels exceeded the upper limit of the monitors, 90 parts per billion (ppb), a total of 289 minutes during the 12 month project. The majority of the H<sub>2</sub>S detections occurred at the southeast monitor (Monitor 2) between July and October 2010 (see graph). These detections primarily occurred late in the evening to early morning hours when there was little wind. At the end of October, a new blower and flare system had been installed and became operational. As a result of the new blower and flare system, in conjunction with an expanded gas collection system, the frequency, duration and levels of H<sub>2</sub>S at the perimeter were reduced. From December 2010 to April 2011, when H<sub>2</sub>S was detected, the levels never exceeded 10 ppb except for a power outage during the February snow storm. A backup generator will be installed to power the flare during future power outages.

Overall, the H<sub>2</sub>S gas detections and odor complaints have decreased as a result of gas collection system improvements and operational changes. Waste Management will continue their H<sub>2</sub>S surface scans and perimeter monitoring program to identify and mitigate any potential odors.



*This is a graph illustrating the H<sub>2</sub>S detections for air monitor 2 located on the southeast corner of the landfill. This is the air monitor that had most of the H<sub>2</sub>S detections during the project.*

## Contact Information

**Jacob Hassan**

Environmental Scientist  
Land and Chemicals Division (L-8J)  
EPA Region 5  
77 W. Jackson Blvd.  
Chicago, IL 60604-3590  
Phone: 312-886-6864 or  
800-621-8431, Ext. 66864  
E-mail: hassan.jacob@epa.gov

**Bill Franek**

Environmental Engineer  
Field Operations Section, Bureau of Air  
Illinois EPA  
Des Plaines Field Office  
9511 W. Harrison Street  
Des Plaines, IL 60016-6735  
Phone: 847-294-4020  
E-mail: bill.franek@illinois.gov

**Mike Kuhn**

Solid Waste Unit Coordinator  
Lake County Health Department  
500 W. Winchester Road, Suite 102  
Libertyville, IL 60048  
Phone: 847-377-8016  
E-mail: mkuhn@lakecountyil.gov

**For more information on Hydrogen Sulfide:**  
<http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=38&tid=67>



500 W. Winchester Rd., Suite 102  
Libertyville, IL 60048