DHSS Follow-Up Review of Air Monitoring Data from the Bridgeton Landfill Area, September 23 – September 26, 2013

The Department of Health and Senior Services (DHSS) has reviewed air quality screening data collected by the Department of Natural Resources (DNR) at Bridgeton Landfill from the afternoon of September 23 to the afternoon of September 26, 2013. On June 7, DHSS began issuing follow-up reviews of the daily air quality screening data on a twice-weekly basis.

On April 23, DNR began routine, twice daily, surveillance of hydrogen sulfide, benzene, and odor levels around the entire periphery of the landfill. In addition, DNR has provided continuous monitoring of reduced sulfur compounds (reported as hydrogen sulfide), sulfur dioxide, carbon monoxide, and total volatile organic compounds (VOCs) at three fixed locations. DHSS has reviewed both sets of data to identify potential public health concerns for short-term health effects. Generally, samples are collected near the property boundary and dispersion is expected to reduce exposure downwind of the sample locations.

Odors

DNR reported light and moderate odors during this time period at locations west, south, and southwest of the landfill.

- Winds were predominantly from the south and southeast on September 23; south and southwest on September 24; and south and southeast on September 25 and 26.
- DNR detected light odors west and southwest of the landfill on September 23; west and southwest of the landfill on September 24; and south, west, and southwest of the landfill on September 25. DNR detected moderate odors approximately 2 miles southwest of the landfill on September 25 that upon investigation were determined not to be associated with the Bridgeton landfill. Odors were monitored using a Nasal Ranger olfactometer.
- DHSS continues to recommend that during periods of objectionable odor, sensitive individuals should stay indoors as much as possible, avoid outdoor exercise, and seek medical advice for any acute symptoms. Symptoms associated with exposure to strong odors include headache, nausea, and fatigue. Symptoms generally associated with strong odors typically disappear once the odors dissipate.

Hydrogen Sulfide and Other Reduced Sulfur Compounds

Average hydrogen sulfide concentrations were well below levels of public health concern.

- The maximum concentration of hydrogen sulfide detected was 45.5 parts per billion (ppb) during routine monitoring. This concentration was detected by DNR on September 25, approximately two miles southwest of the landfill, and upon investigation was determined not to be associated with the Bridgeton landfill. Although winds were calm at the time, the high values originally detected could not be repeated. Hydrogen sulfide concentrations at that location were below 6 ppb with repeated measurements taken within the hour. The maximum hydrogen sulfide concentration detected at the perimeter of the landfill

was 7.7 ppb. Hydrogen sulfide concentrations were detected by the Jerome meter, which is highly sensitive and specific to hydrogen sulfide.

- For seven hours on September 25 at the monitoring location west of the landfill, three hours on September 26 at the monitoring location west of the landfill, and five hours on September 26 at the monitoring location east of the landfill, average concentrations of reduced sulfur compounds exceeded a health-based guideline for acute exposure to hydrogen sulfide. However, these compounds detected by AreaRAE monitors are not just hydrogen sulfide but primarily another reduced sulfur compound with lower toxicity.

Sulfur Dioxide

Average sulfur dioxide concentrations were below levels of public health concern, except for several hours at one monitoring location.

- For seven hours on September 25 and eleven hours on September 26 at the monitoring location west of the landfill, the average sulfur dioxide concentration exceeded a health-based guideline for acute exposure. While exposure to this concentration of sulfur dioxide may cause irritation or other short-term symptoms, considerable dispersion is expected to reduce potential exposure levels in nearby residential areas.

Benzene and Total VOCs

Benzene was not detected in ambient air, except for limited time periods at locations approximately two miles from the landfill.

- Previous sampling has shown that, while several VOCs are present in the landfill source gas, benzene may be a primary VOC of public health concern. However, benzene was not detected during routine monitoring around the perimeter of the landfill.
- The maximum concentration of benzene detected was 500 ppb, exceeding a health-based guideline. This concentration was detected by DNR approximately two miles southwest of the landfill on September 25 during routine monitoring, and upon investigation was determined not to be associated with the Bridgeton landfill. Although winds were calm at the time, the high values originally detected could not be repeated. When measurements were repeated within the hour at that location, benzene concentrations were below detection.
- A benzene concentration of 100 ppb was detected during routine monitoring on September 26, approximately two miles southwest of the landfill. Based on the reported wind direction at that time, this concentration may have been attributed to nearby construction activity and was unlikely to be attributable to the Bridgeton landfill. Benzene concentrations at that location were below detection once the construction activity had stopped.
- For three hours on September 26 at the monitoring location west of the landfill, the average total VOC concentration exceeded a level that indicates the need for compound-specific sampling.
- Average total VOC concentrations periodically exceeded levels that indicate a need for compound-specific sampling at the monitoring locations south and east of the landfill. However, these elevated concentrations were not verified by other AreaRAE monitors stationed in the same location.

- DNR is performing VOC compound-specific sampling in locations upwind and downwind of the landfill on a routine basis. The laboratory results are submitted for DHSS review of public health concerns.

Carbon Monoxide

Average carbon monoxide concentrations were well below levels of public health concern.

Radiation Rates

Gamma radiation rates were well below levels of public health concern.

- Gamma radiation rates continue to be at levels that are at or near natural background levels.