DHSS Review of Air Sample Data from the
April 16, May 7, and May 8 Comprehensive Air Sampling at Bridgeton Landfill

The Missouri Department of Health and Senior Services (DHSS) has reviewed the air sample data from the April 16, May 7, and May 8 comprehensive sampling event at Bridgeton Landfill. DHSS evaluated air samples collected from two on-site locations and from three locations upwind and three locations downwind from the site. DHSS reviewed the data for evaluation of potential public health concerns of short-term health effects.

Samples were collected for aldehydes, amines, ammonia, carboxylic acids, hydrogen chloride, hydrogen cyanide, mercury (elemental), sulfur dioxide, dioxins/furans, polynuclear aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), and reduced sulfur compounds. Of these, only aldehydes, carboxylic acids, dioxins/furans, PAHs, and VOCs were detected in the samples.

Aldehydes

Aldehydes were detected on-site, upwind, and downwind of the landfill; however, all concentrations were below levels of public health concern.

- Of the 12 aldehydes sampled for, 11 were detected in the downwind sampling locations; however, these concentrations were low and did not exceed available health-based screening levels for acute exposure.

Carboxylic Acids

Carboxylic acids were detected in one on-site sample; however, concentrations were below levels of public health concern and were not detected in ambient air downwind of the landfill.

Dioxins/Furans

Dioxins and furans were detected on-site, upwind, and downwind of the landfill; however, all concentrations were below levels of public health concern.

- Due to the absence of health-based screening levels for acute exposures, data were compared to a chronic screening level for dioxins/furans using the standard approach for evaluating human health risks from dioxin like compounds. This provides a very health protective evaluation.
- Of the 17 dioxins and furans sampled for, 14 were detected in a downwind sampling location; however, these concentrations were low and did not exceed available health-based screening levels (for chronic exposure).
- Although laboratory quality assurance issues were identified, the data were evaluated as provided. However, additional dioxin/furan analysis is being conducted to ensure quality data.

PAHs

PAHs were detected on-site, upwind, and downwind of the landfill; however, the concentrations were low and are not expected to pose a public health risk.

- Of the 19 PAHs sampled for, 2 were detected in a downwind sampling location. The specific compounds detected do not have health-based screening levels available; however, only very low concentrations were detected and these detections are not expected to pose a public health risk.

VOCs

VOCs were detected on-site, upwind, and downwind of the landfill. All concentrations of VOCs were below acute screening levels except benzene, which was above an acute screening level, but is not expected to pose a public health risk.

- Of the 68 VOCs sampled for, 29 were detected in the downwind sampling locations. All of these detections were below available health-based screening levels for acute exposure except for one benzene detection.
- DHSS identified a benzene concentration of 21.8 ppb from one downwind air sample collected for a four-hour time period on May 7 southwest of the landfill that exceeded a health-based screening level for acute exposures lasting up to two weeks (9 ppb). Concentrations that exceed this screening level may cause eye/nose/throat irritation or immunological effects; however, it should be noted that concentrations above a screening level do not necessarily identify a public health risk is present, but that further investigation is warranted.
- The detected concentration did not exceed the acute screening level for benzene that is protective for exposures lasting up to six hours (400 ppb).
- Additionally, the sample was collected near the landfill property line and dispersion is expected to reduce exposure downwind of the sample location.
- It should also be noted that benzene is an important component of gasoline and this sample was collected near an automotive shop, which may have contributed to the detection of benzene. The other downwind air sample collected on that day did not show a concentration of benzene above an acute screening level.