

Findings

Gases generated from the waste at the Barrie Landfill do not pose a human health concern to the nearby community. Ambient air concentrations next to the operations area and the property boundary of the landfill are below the Ontario Ministry of the Environment's criteria and screening levels. These criteria have been developed to protect human health and the environment. The ambient air concentrations for most of the landfill gases were also below their corresponding odour threshold limits. Therefore, these compounds are not expected to cause odours. If odours are detected by the community, they are primarily from sulphur-containing compounds and odour control mechanisms are in place to minimize these as much as possible.

Background

The City of Barrie retained Golder Associates Ltd. (Golder) to complete an air quality, odour and health assessment at the Barrie Landfill to address concerns of neighbouring residents related to odour originating from the landfill. The study evaluated air quality data from samples collected by Golder in August and September 2010. The air samples were tested for a comprehensive list of compounds, which were considered to be potentially present in gases generated within the waste. Samples were collected from point sources within the waste, as well as from ambient air within the area of the reclamation and waste compaction operations, and at the property boundary. These samples are considered to be representative of the sources and air quality during regular operations. The health study evaluated the compounds reported in the ambient air samples to determine if they posed a health concern for the nearby community.

Odour Assessment

The concentrations of compounds in the ambient air adjacent to the operations area and the property boundary of the Barrie Landfill were compared to odour threshold limits at which the average person will detect odour. The ambient air concentrations for most of the landfill gases were below their corresponding odour threshold limits and, as a result, these compounds would not be expected to cause odours. Whereas concentrations of ammonia in ambient air are below its corresponding odour threshold limit, the concentrations measured in the point sources within the landfill were elevated. It is considered possible that, at certain times, ammonia may be contributing to odour sensed downwind of the landfill.

Sulphur-containing compounds were not detected in the ambient air samples, although it is expected that these are the compounds causing some of the odours from the landfill. This is because the level at which laboratories are capable of analyzing these sulphur-containing compounds in air samples are 1,000 to 10,000 times higher than their corresponding odour threshold limits (that is, the average person can detect sulphur-containing compounds at concentrations well below what the laboratory can analyze). Sulphur-containing compounds can cause nuisance odours such as rotten cabbage smell (ethyl or methyl mercaptan) or rotten egg smell (hydrogen sulphide). These compounds are considered to be one of the primary sources of odour from the landfill.

The odour control products used at the landfill are considered to be safe for use on the basis that they have been applied according to manufacturer's recommendations and the key ingredients are approved for use in cosmetics and food products.

Air Quality Health Assessment

Ambient air concentrations were compared to environmental guidelines and health-based benchmarks to provide an indication of which of the detected compounds are most likely to pose a health concern to the local community.

Ambient air concentrations are below the air criteria and screening levels developed by the Ontario Ministry of the Environment to protect human health and the environment. The health assessment was completed assuming that nearby residents are exposed on a daily basis for a prolonged period of time. The health assessment followed methods approved by the Ontario Ministry of the Environment and Health Canada. The findings of our assessment indicated that the gases generated within the waste do not pose a human health concern to the nearby community.

Who Do I Contact With Questions?

The City of Barrie is planning to host an open house in 2011 to provide an opportunity for further discussion of these results. Until then, the City welcomes any questions or comments you may have. If you would like to arrange a tour of the landfill site, or a one-on-one meeting, please contact Sandy Coulter at (705) 739-4220 ext. 5826, or by email at scoulter@barrie.ca. More information about the project is also available on our website www.barrie.ca.