



City of Evanston

Air Quality Monitoring Study Overview

Church Street Waste Transfer Station

The City of Evanston has hired RHP Risk Management to design and implement a six-month air quality study centered on the Church Street Waste Transfer Station, located at 1711 Church St., in Evanston. The study will include a 30-day traffic evaluation to better understand how traffic patterns may be impacting air quality in the area.

Up-to-date information about the study can found at cityofevanston.org/transferstation. Data analysis completed by RHP on collected air quality data can be found at evanstonair.info.

Study Purpose

The purpose of the study is to evaluate the air quality around the waste transfer station and to identify the sources of potential contaminants.

Background

The City is pursuing this study following input from residents who have called for environmental monitoring to better understand the impact of the waste transfer station on environmental and human health. In March 2016, the City settled a lawsuit with transfer station operator Advanced Disposal and was awarded \$1.2 million and the ability to impose a per-ton fee on all waste transferred at the station. The settlement also outlined specific improvements Advanced Disposal would make to their operations and the facility to reduce its impact. Funding for this air quality study comes from the settlement.

The City does not currently have localized data on air quality. As a result, this study will be the first attempt to categorize and understand the air quality within a specific area of Evanston and to identify the sources of potential contaminants.

Thriving Earth Exchange (TEX) Project

In December 2016, the City was invited to participate in the Thriving Earth Exchange (TEX), an American Geophysical Union (AGU) project that works to provide technical assistance to local communities on science-related challenges. The City created a task force made up of City Council members, residents, two local scientists and City staff to work on determining what type of environmental monitoring and study would be appropriate to respond to resident concerns.

The TEX project, which concluded in September 2018, made four recommendations:

- Evaluate the soil quality in the area surrounding the waste transfer station through soil tests
- Identify appropriate equipment to capture and evaluate the chemical compound of odors in the area surrounding the waste transfer station
- Conduct an air quality monitoring study to understand the ambient air quality around the waste transfer station and identify any sources of potential pollutants
- Deploy hand-held air quality monitors to residents who live in the immediate vicinity around the waste transfer station to facilitate better understanding of the air quality

Study Timeline

Equipment received by RHP:	April 23, 2019
Equipment preparation:	April 29–May 7, 2019
Community Meeting 1:	May 2, 2019
Equipment deployed and tested:	May 8–15, 2019
Data collection begins:	May 16, 2019
Community Meeting 2:	TBD, June 16–August 16, 2019
Community Meeting 3:	TBD, after September 16, 2019
Data collection period:	May 16–November 16, 2019
Data collection ends:	November 13, 2019
Community Meeting 4:	TBD, after November 30, 2019
Study end date:	December 4, 2019



Target Area

The target area of the study is from Darrow to Ashland Avenues and Church to Emerson Streets. There will be four monitoring stations placed around the transfer station and one control monitoring station placed outside of the target area. Exact station locations will be finalized in early or mid-May. Exact locations will be provided once available at EvanstonAir.info.

Equipment

All five air quality monitoring stations will have one AQMesh Air Quality Monitor and one MultiRAE Pro sensor. Two stations will be equipped with sensors to measure metrological parameters including wind direction and speed.

AQMesh Air Quality Monitor

AQMesh is an air quality monitor that measures pollutants in ambient air using small sensor technology combined with data processing and reference data. The monitors were purchased from Ambilabs, the sole U.S. distributor of products manufactured by AQMesh Environmental Instruments Ltd., which is a UK-based company.

MultiRAE Pro (Model PGM-6248)

MultiRAE Pro is a wireless device for monitoring multiple chemical hazards with parts-per-billion precision. The monitors were purchased from AFC International Inc., a Women's Business Enterprise, located in DeMotte, Indiana.

Data Collected

The purpose of the study is to identify potential environmental contaminants originating from the waste transfer station. The data collected by the monitoring stations will be used to determine the presence of any contaminants and attribute their origin to a specific source or sources, such as the waste transfer station or vehicle traffic.

Contaminants Measured

AQMesh Air Quality Monitor

Parameter	Range	Units	Limit of Detection (LOD)
Nitric oxide (NO)	0 to 4000	ppb or $\mu\text{g}/\text{m}^3$	< 5 ppb
Nitrogen dioxide (NO ₂)	0 to 4000	ppb or $\mu\text{g}/\text{m}^3$	< 10 ppb
Ozone	0 to 1800	ppb or $\mu\text{g}/\text{m}^3$	< 5 ppb
Enclosure Temperature	-20 to 100	°C	0.1 °C
Atmospheric Pressure	500 to 1500	mb	1mb
Relative Humidity	0 to 100%	%RH	1%RH
Particle Count	0.3 to 30	$\mu\text{g}/\text{m}^3$	0.3 to 30 μm
PM2.5	0 to 500	$\mu\text{g}/\text{m}^3$	0 to 500 $\mu\text{g}/\text{m}^3$
PM10	0 to 1000	$\mu\text{g}/\text{m}^3$	0 to 1000 $\mu\text{g}/\text{m}^3$
Carbon monoxide (CO)	0 to 6000	ppb or $\mu\text{g}/\text{m}^3$	< 5 ppb
Sulfur dioxide (SO ₂)	0 to 10000	ppb or $\mu\text{g}/\text{m}^3$	<10 ppb

Noise

Frequency Response	Accuracy	Level	Weighting
20Hz-10kHz	±dB	35dB SPL to 100db SPL	Unweighted

MultiRAE Pro

Parameter	Range	Units	Limit of Detection (LOD)
Hydrogen sulfide (H ₂ S)	0 to 100	ppm	100 ppb
Methyl mercaptan (CH ₄ S)	0 to 10	ppm	100 ppb
Formaldehyde (CH ₂ O)	0 to 10	ppm	50 ppb
Organic Solvents (VOC)	0 to 2000	ppb	10 ppb

Definitions

AQMesh Air Quality Monitor

Parameter	Description
Nitric oxide (NO)	A colorless gas that is naturally occurring, but also generated by cars, trucks and buses, power plants, and off-road equipment.
Nitrogen dioxide (NO ₂)	A highly reactive red-brown gas that forms from emissions from cars, trucks and buses, power plants, and off-road equipment.
Ozone	A gas composed of three atoms of oxygen that can be found in the upper atmosphere or at ground level. Ground-level ozone is a harmful air pollutant created by a chemical reaction between oxides of nitrogen (NO _x) and volatile organic compounds (VOC).
Enclosure Temperature	The temperature difference between the air inside a non-ventilated or cooled enclosure and the ambient air outside the enclosure.
Atmospheric Pressure	The pressure in the atmosphere, or the force exerted on a surface by the air above it as gravity pulls it to Earth. It is typically measured with a barometer.
Relative Humidity	The amount of water vapor present in the air compared to the amount needed for saturation at the same temperature.
Particle Count	A measurement of the particle size and number of particles in the air.
PM2.5	Fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller that are made up of hundreds of different chemicals. Fine particles are produced from all types of combustion, including motor vehicles, power plants, forest fires, and agricultural burning.
PM10	Inhalable particles, with diameters that are generally 10 micrometers and smaller and can be made up of hundreds of different chemicals. These coarse dust particles are produced from crushing or grinding operations and dust stirred up by vehicles on roads.
Carbon monoxide (CO)	A colorless, odorless gas released when something is burned. Vehicles and machinery that burn fossil fuels release CO to outdoor air.
Sulfur dioxide (SO ₂)	Typically measured as an indicator for the larger group of gaseous sulfur oxides (SO _x). The largest source of SO ₂ in the atmosphere is the burning of fossil fuels by power plants and other industrial facilities.

MultiRAE Pro (Model PGM-6248)

Parameter	Description
Hydrogen sulfide (H ₂ S)	A flammable, colorless gas that smells like “rotten eggs.” It is naturally occurring in crude oil and natural gas, but industrial sources like food processing plants, natural gas plants, and tanneries release it.
Methyl mercaptan (CH ₄ S)	A colorless gas that has a putrid smell and is released from decaying organic matter and animal feces and occurs naturally in certain cheeses. Factories that manufacture plastic, pesticides, or wood may also release it.
Formaldehyde (CH ₂ O)	A colorless, flammable gas at room temperature that has a strong odor and is naturally produced as part of cell metabolism in all life forms. It can be found in resins in wood products, building materials and insulation, preservatives, fertilizers, or a byproduct of fuel burning appliances and cigarette smoke.
Organic Solvents (VOC)	Gases from certain solids or liquids that include a variety of chemicals. They are emitted by a wide array of products, including paints, aerosol sprays, glues, and copy machines.

Waste Transfer Station Details

Address

1711 Church St., Evanston, IL

Owner and operator

Advanced Disposal

Waste accepted

Household waste and construction and demolition debris

Vehicles onsite

Private vehicles, construction and demolition contractor vehicles, trash trucks and 18-wheelers

Hours of operation

Monday–Friday: 6:30am–3:30pm

Saturday: 7–10am

Sunday: closed

More Information

The City offers residents various ways to keep up to date and involved with the Church Street Waste Transfer Station Air Quality Monitoring Study:

- Visit cityofevanston.org/transferstation for updates on community conversations and decisions regarding the waste transfer station.
- Visit evanstonair.info for information regarding the study and the collected data.
- Subscribe to the City of Evanston “Waste Transfer Station Updates” newsletter at cityofevanston.org/newsletter to receive updates on the monitoring study and dates of important events.
- Contact **311** to issue a complaint about negative impacts from the waste transfer station or questions and concerns about the study.