

New York State Department of Environmental Conservation

Division of Air Resources

625 Broadway, Albany, New York 12233-3256

Phone: (518) 402-8508 • **Fax:** (518) 402-9035

Website: www.dec.ny.gov



Joe Martens
Commissioner

Albany South End Community Air Quality Screening

April 2014

Table of Contents

Introduction

Selection of Air Toxics

Sampling Locations

Sampling and Analysis

Interpretation of Sample Results

Limitations and Uncertainties

Appendix A: Volatile Organic Compounds Measured in the NYSDEC Community Air Screen Program

Appendix B: Comparisons with NYSDEC's Air Toxics Monitoring Network Data

Introduction

Residents living near the Port of Albany, in the Albany South End Community have voiced concern about potential air quality impacts due to the movement and storage of crude oil in the area. The production of crude oil from the Bakken formation in North Dakota and Saskatchewan has created a need for rail transportation of oil to seaports where it can be transported to refineries on the east coast. The Global and Buckeye terminals in the Port of Albany have been using their facilities to unload, store and load crude oil onto barges for shipment down the Hudson River. The Global facility plans to install boilers to heat the viscous oil in the rail tank cars to facilitate the unloading operation.

The New York State Department of Environmental Conservation (NYSDEC) issues permits for the operations at the Global facility which stipulate the necessary regulations to ensure the potential emissions of air contaminants do not materially impact the area. The NYSDEC has no jurisdiction over transportation to and from the facility, including the trains, trucks and barges. The U.S. Department of Transportation (the Federal Railroad Administration and the Pipeline and Hazardous Materials Safety Administration) implements regulations targeting locomotive emissions and the safe movement of rail cars. The New York State Department of Transportation also regulates track safety in New York.

Concerned residents have asked the NYSDEC to perform a survey of air quality in the area to determine if the regulations and control programs are working effectively. Depending on the results of the screening, additional air sampling may be considered.

Selection of Air Toxics

The NYSDEC has met with residents from the Albany South End Community on several occasions to get their input as we developed the Community Air Quality Screening plan. Residents in the area have specifically asked that sampling efforts focus on the crude oil handling operations. The NYSDEC will sample for specific air toxics that are known as Volatile Organic Compounds (VOCs). These types of air toxics volatilize readily into the atmosphere and are part of the composition of crude oil. VOCs are commonly found in air throughout the State because they are released from many sources such as industrial sources, motor vehicles and residential space heating. Since there are many sources of VOCs, it is expected that these compounds will be detected in all samples collected.

In addition to VOCs, the NYSDEC considered air monitoring for fine particulate matter (PM_{2.5}) but determined it was unwarranted as the NYSDEC currently monitors for PM_{2.5} in the neighborhood at the Albany County Health Department (175 Green Street). This monitor shows that the PM_{2.5} concentrations in the area are below health-based National Ambient Air Quality Standards and among the lowest in comparison to other urban areas in the State. The 1-hour and the 24-hour PM_{2.5} data have further indicated that there are no nearby large sources. The current crude oil operations also may emit less PM emissions than the container operation that previously was located in this area because the container operation relied on heavy-duty diesel trucks to move containers to and from the rail yard.

Sampling Locations

The NYSDEC worked with community residents to find suitable sampling locations. Some factors that should be considered include proximity of residents to the facility operations, location of other sources (such as Interstate-787), local meteorological conditions and publicly accessible locations (such as parks, playgrounds). Wind data show the predominant wind direction is from the south. Additionally, historical data show calm conditions are common. The NYSDEC has reviewed this information and offers three locations as potentially suitable. These locations are shown in Figure 1 and described below.

- | | |
|--|--|
| A- Ezra Prentice Housing Complex Playground | Closest Residents |
| B - Krank Park – Cherry Hill (Krank Street) | Near a local school: Children are considered to be a sensitive group |
| C - Gansevoort and Franklin Streets (open lot) | Downwind Residents |

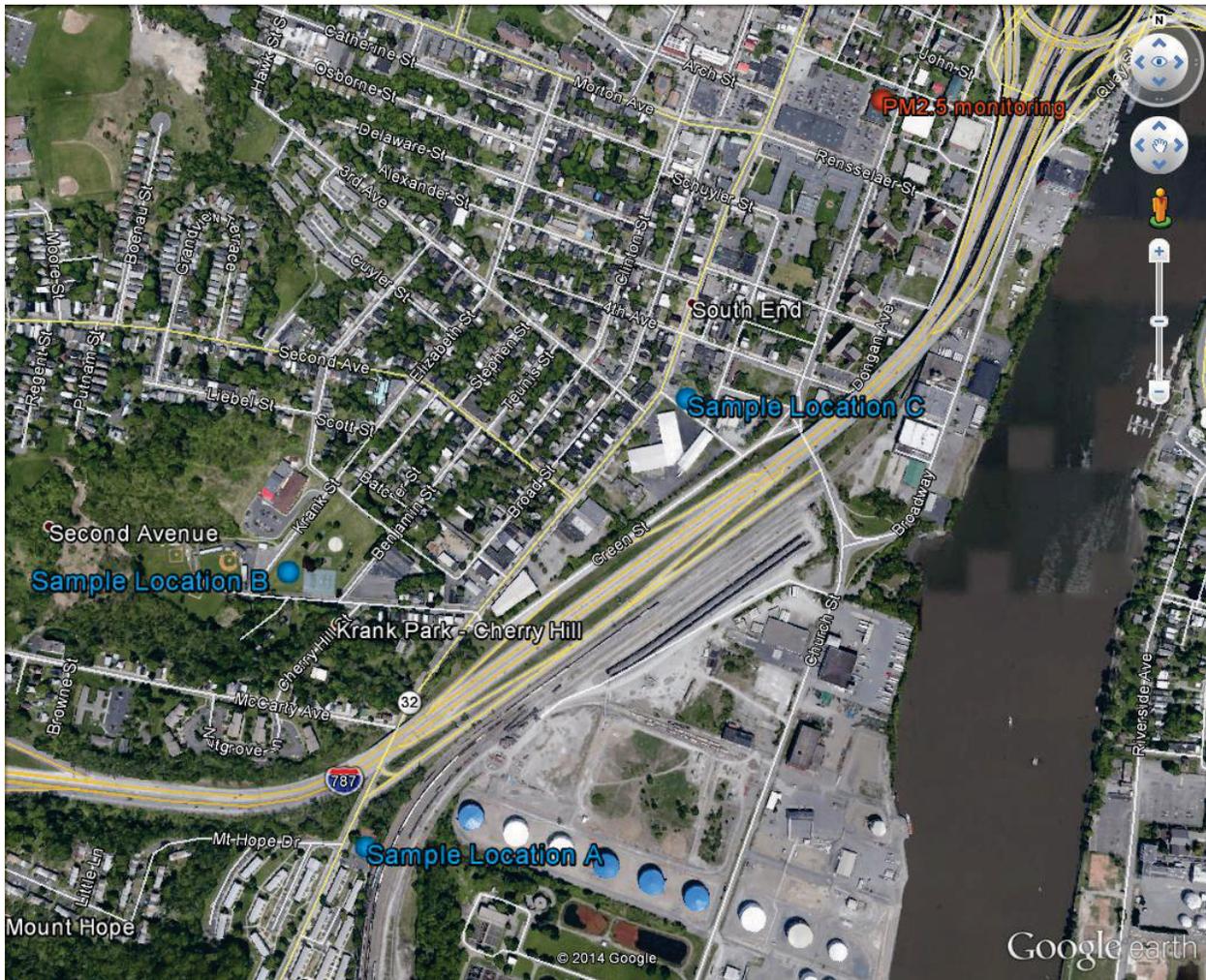


Figure 1. Map showing potential sample locations and current PM_{2.5} monitoring

Sampling and Analysis

This proposed air toxics sampling is a screening of current local air quality from existing sources. Three samples will be simultaneously collected over a 1-hour time period at each of the locations once a week for a month.¹ The three samples are taken simultaneously to distinguish between sources close to the sampler versus area-wide sources. The NYSDEC will partner with the community in the collection of the samples. In doing so, the NYSDEC staff and residents will gain a better understanding of the local source activities taking place during sampling in relation to the current meteorological conditions. A fourth sample will be obtained by a member of the community each week during the month. The sample will be collected during a period of concern such as an odor episode.

All sampling will begin in May, because in warmer weather the air toxics associated with crude oil volatilize more readily. The specific sample day each week will be selected based on forecasts for warm dry weather. Samples will be collected in the morning when winds are calm and morning temperatures are cool. These two conditions can create surface-based temperature inversions. During an inversion, a shallow layer of cool air at the surface underlies warmer air aloft. This causes trapping of local emissions and can result in a rise in concentrations of pollutants released from localized, dispersed sources.

Interpretation of Sample Results

The proposed air sampling provides for an initial screening of air quality in the Albany South End Community to look for results that might indicate the possibility of increased air concentrations of VOCs that would need to be further investigated. The NYSDEC's recent experience with community screenings is illustrated in the Community Air Screen (CAS) Program. One of the primary components of that Program is a comparison of the screening results with monitoring results from the NYSDEC's Air Toxics network. This approach allows the NYSDEC to determine if concentrations at the sampled locations are similar to other locations in the State with the same land use characteristics (e.g., urban, suburban, rural). The types of VOCs measured in this screening assessment have been found in all areas of the State, even the most rural location in the Adirondacks. A written interpretation and discussion of the sampling results, including information on local sources and meteorological conditions during sampling, will be given to the community. An example of this type of comparison is available online on the CAS Program webpage: <http://www.dec.ny.gov/public/81629.html>.

The short-term sampling results also will be evaluated to assess whether any measured air concentrations are of immediate public health concern by comparison to short-term health-based air concentration values derived by the NYSDEC. Additionally, these data will be used to determine if further sampling or additional facility assessments need to be conducted. In other

¹ Each sample will be collected with an evacuated 6-liter SUMMA canister which pulls ambient air through a calibrated orifice over a 1-hour period. After each sample is collected, the canisters will be returned to the NYSDEC's Bureau of Air Quality Surveillance laboratory to be analyzed using gas chromatography/mass spectrometry (GC/MS). The canisters will be analyzed for 43 air toxics consistent with those reported in the NYSDEC's statewide Toxics Air Monitoring Network. The canisters will be analyzed using U.S. Environmental Protection Agency's (EPA's) method TO-15. The analytical process is summarized as follows: a portion of the air sample is taken from the canister at a controlled flow and temperature by an Entech Model 7100A preconcentrator, a device designed to take a dilute trace of a sample and concentrate it. This concentrated sample is subsequently injected into a Varian Saturn GC/MS.

screening assessments conducted by the NYSDEC, a comparison of short-term sample results to long-term health-based air concentrations values is done to provide a screening of potential health risks.² In general, it is not conventional to compare short-term measured results with long-term air concentration values. The NYSDEC does this comparison with the understanding that the sampled results may not reflect longer-term exposures. The comparison of short-term samples to long-term health-based air concentrations is part of the screening process. It should be noted that concentrations in excess of the long-term health-based air concentration values for some of the VOCs are expected and are routinely observed throughout the State even in rural locations and are expected in this community.

Limitations and Uncertainties

Sampling will be performed to provide an understanding of the concentrations of air toxics in the Albany South End Community. It is unlikely that these data will provide enough information to determine specific source attribution. Determining the contribution of specific sources in an area with as many sources as exist in this area, including a major highway, is difficult to conduct in community surveys. Since only a limited number of samples are collected over a relatively short period of time, the information obtained cannot be used for enforcement or compliance purposes. The NYSDEC may, however, take follow-up action at specific facilities.

This air quality screening is limited to air toxics evaluated by EPA's TO-15 method. Some of the facilities and operations in the area release pollutants not captured by this method such as sulfur dioxide, oxides of nitrogen and fine particulate matter, but these pollutants are regulated as part of the Clean Air Act and facilities must meet specific emission limits to minimize their release.

The results from this air screening cannot be assessed with confidence for long-term health risks from exposure because of the different averaging period. The 1-hour samples, while effective at providing a general understanding, still represent a snap-shot of information and are not representative of the entire year. Short-term sampling provides a brief assessment of current conditions and many factors affect concentrations of pollutants in an area. Factors include, but are not limited to time of day, wind, traffic and activities going on in the area. For example, facility releases may be cyclical depending on production schedules. Because of the limits of 1-hour sampling, a 1-hour sample at another time could be lower or higher in comparison to the results from this screening assessment.

It should not be assumed that the results from this screening represent an individual's exposure. Results from any single location, whether short-term or long-term sampling, do not account for the fact that people spend time in many locations during the day as well as at locations that are indoors and outdoors. Other factors such as smoking, pumping gasoline, hobbies and occupations using solvents can lead to increases in toxic air pollutant exposures and contribute to the overall uncertainty in characterizing risk from the short-term sampling obtained in this

² For more information about how toxic air pollutants are controlled and how NYSDEC's short-term and long-term health-based concentration values are derived, see Appendix A of the Community Air Screen Program: <http://www.dec.ny.gov/chemical/89934.html>

program. It should be noted that the results from this screening approach cannot be used to provide a complete understanding of risk attributable to air toxics in the community.

Next Steps

The samples will be analyzed by the laboratory shortly after collection. Within a few weeks after the final collection, all results will be collectively interpreted. A report summarizing the findings will be developed and the results and interpretation will be presented at a community meeting and provided to the community in a report. If the sampling schedule is maintained as expected, we anticipate releasing the report towards the end of July.

Appendix A: Volatile Organic Compounds^a Proposed for the Port of Albany Community Air Quality Screening

Chemical	CAS#^b	Priority Hazardous Air Pollutants^c
1,1,1-Trichloroethane	71-55-6	
1,1,2,2-Tetrachloroethane	79-34-5	X
1,1,2-Trichloroethane	79-00-5	
1,1-Dichloroethane	75-34-3	
1,1-Dichloroethylene	75-35-4	
1,2,4-Trichlorobenzene	120-82-1	
1,2,4-Trimethylbenzene	95-63-6	
1,2-Dibromoethane	06-93-4	
1,2-Dichlorobenzene	95-50-1	
1,2-Dichloroethane	107-06-2	X
1,2-Dichloropropane	78-87-5	X
1,3,5-Trimethylbenzene	108-67-8	
1,3-Butadiene	106-99-0	X
1,3-Dichlorobenzene	541-73-1	
1,4-Dichlorobenzene	106-46-7	
a-Chlorotoluene (Benzylchloride)	100-44-7	
Benzene	71-43-2	X
Bromodichloromethane	75-27-4	
Bromomethane	74-83-9	
Carbon disulfide	75-15-0	
Carbon tetrachloride	56-23-5	X
Chlorobenzene	08-90-7	
Chloroethane	75-00-3	
Chloroform	67-66-3	X
Chloromethane	74-87-3	
cis1,3-Dichloropropene	542-75-6	
cis1,2-Dichloroethylene	156-59-2	
Dichlorodifluoromethane	75-71-8	
Dichlorotetrafluoroethane	76-14-2	
Ethylbenzene	100-41-4	
Hexachloro-1,3-butadiene	87-68-3	
<i>m,p</i> -Xylene	1330-20-7	
Methyl <i>tert</i> butyl ether	1634-04-4	
Methylene chloride (dichloromethane)	75-09-2	X
<i>o</i> -Xylene	95-47-6	
Styrene	100-42-5	
Tetrachloroethylene (perchloroethylene)	127-18-4	X
Toluene	108-88-3	
trans1,3-Dichloropropene	542-75-6	
Trichloroethylene	79-01-6	X
Trichlorofluoromethane	75-69-4	

Trichlorotrifluoroethane	76-13-1	
Vinyl chloride	75-01-4	X

^a Volatile Organic Compounds measured by the U.S. Environmental Protection Agency's TO-15 method. These compounds are also measured in the NYSDEC's Community Air Screen Program.

^b CAS# - chemical abstract number is a unique registry number assigned to each chemical.

^c These are among the 33 priority hazardous air pollutants listed in Section 112(k) of the Clean Air Act. These pollutants are deemed to be most toxic and/or most prevalent in urban areas across the nation.

Appendix B: Comparison with NYSDEC's Air Toxics Monitoring Network Data

A comparison will be made to data from the NYSDEC's Air Toxic Monitoring Program to determine if concentrations at these locations are comparable with other locations that have similar land use characteristics. The NYSDEC has operated an air toxics monitoring network across the State since 1990. The purpose of the ambient air toxics monitoring network is to support the NYSDEC's efforts to assess human exposure and health risks from air toxics. The network is intended to support four major objectives:

- Establish trends and evaluate the effectiveness of air toxics emissions reduction strategies.
- Characterize ambient concentrations in local areas. Air toxics often originate from local sources and can concentrate in relatively small geographical areas, producing the greatest risks to human health.
- Provide data to support, evaluate and improve air quality models. Air quality models are used to develop emission control strategies, perform exposure assessments and assess program effectiveness.
- Provide data to support scientific studies to better understand the relationship between ambient air toxics concentrations, human exposure and health effects from these exposures.

The NYSDEC's air toxics monitoring network is designed to measure an average exposure over the course of a year. Samples are collected over a 24-hour period, on a one-in-six day schedule at about 10 locations in the State and are evaluated for the presence of air toxics using U.S. Environmental Protection Agency's TO-15 method. Typically, areas with higher population densities have more sources of air toxics such as cars, trucks, gas stations and dry cleaners. Therefore, to compare data, the monitors are grouped by land-use classification into urban, suburban and rural locations. More information on the State's monitoring network can be found on DEC's website at: <http://www.dec.ny.gov/chemical/8406.html>.