NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE OF OPPORTUNITY. | Department of Health

Air Quality Monitoring at the Bethlehem Steel Plant Fire in Lackawanna, NY

November 16, 2016

Air Quality Sampling

Coordinating with local emergency responders:

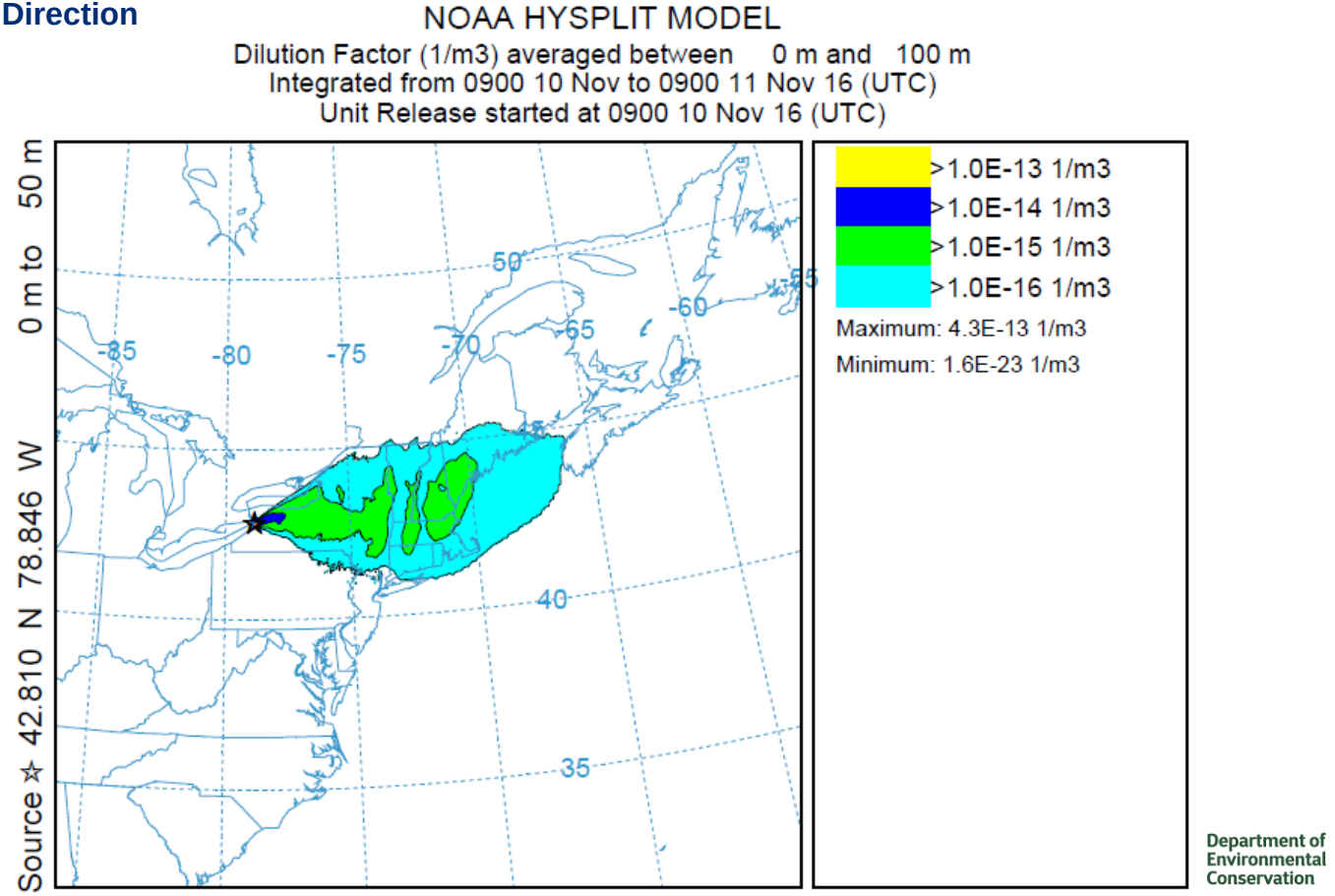
DEC Sampled for:

- Particulate Matter from November 9th to present.
- Volatile Organic Compounds November 10 – 11 and confirmatory samples collected on November 15.

Environmental Protection Agency Sampled for:

- Particulates, Metals, PaH's, inorganic Acids from November 9 -11.

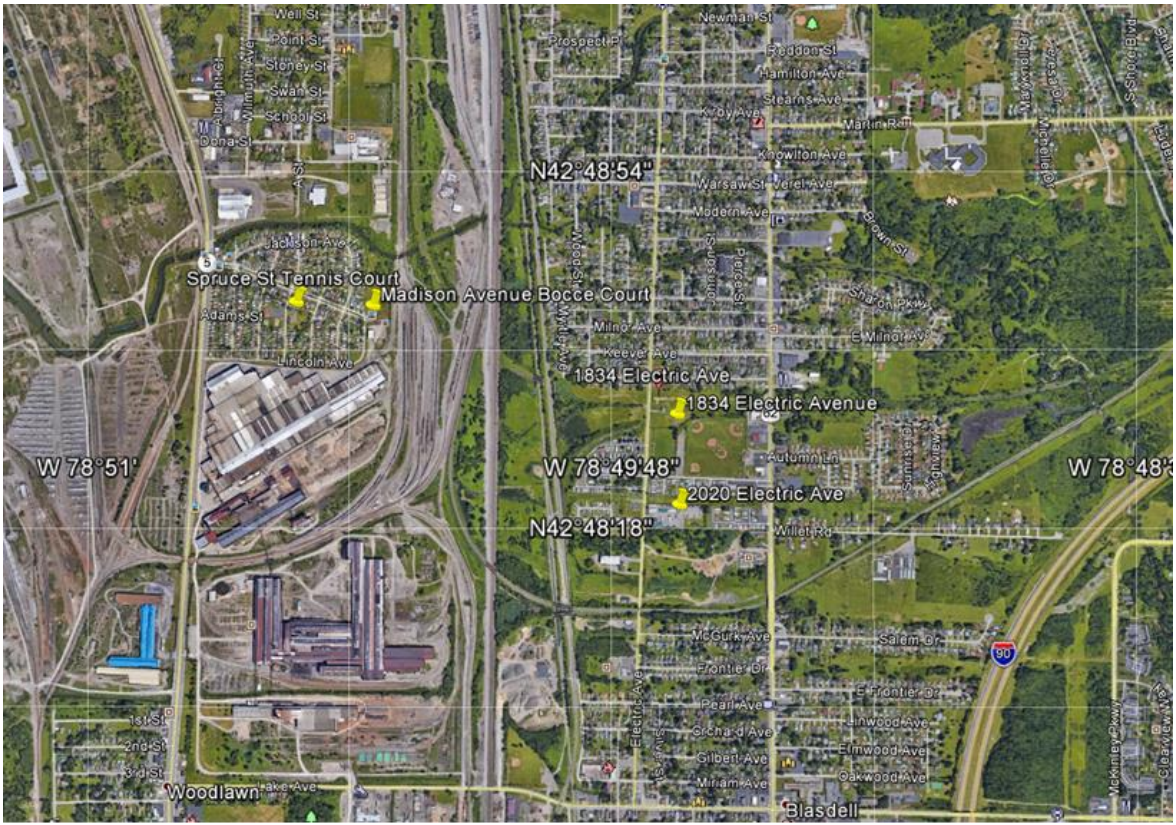
Forecast Wind Direction



Department of Environmental Conservation

Initial NYCDEC PM Monitor Locations

Day 2: The Plume was further North than anticipated



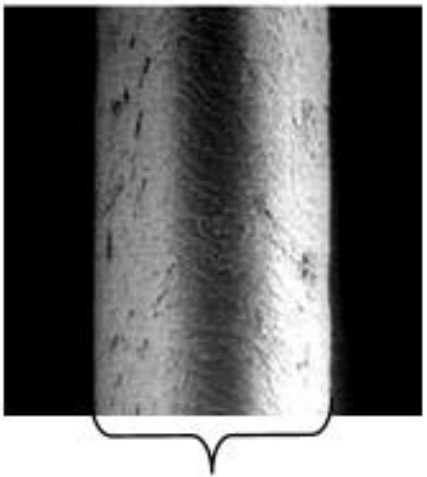
Deployed NYSDEC PM Samplers

Cleveland Ave and Electric Ave

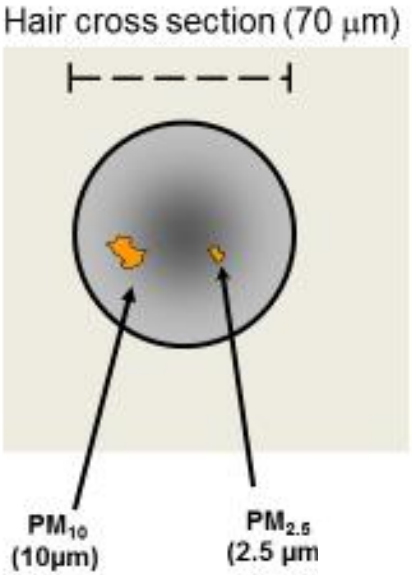
Lisa Lane and Electric Ave

Particulate Matter: What is It?

A complex mixture of extremely small particles and liquid droplets

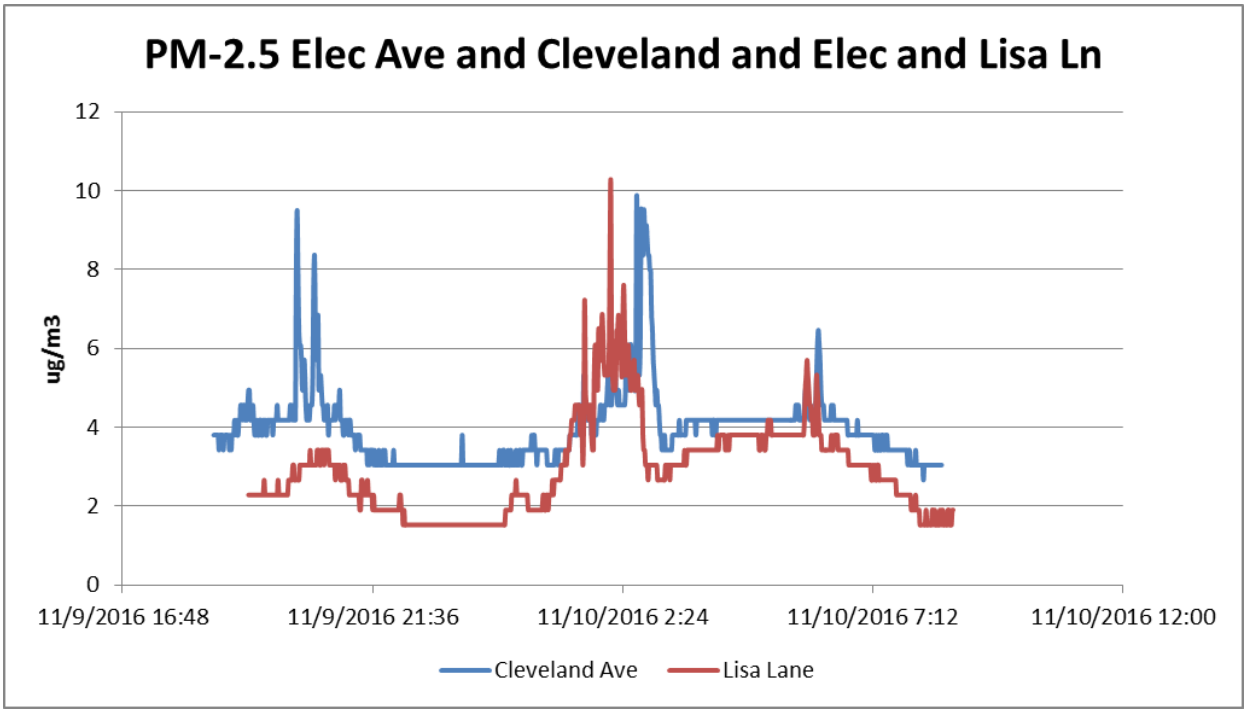


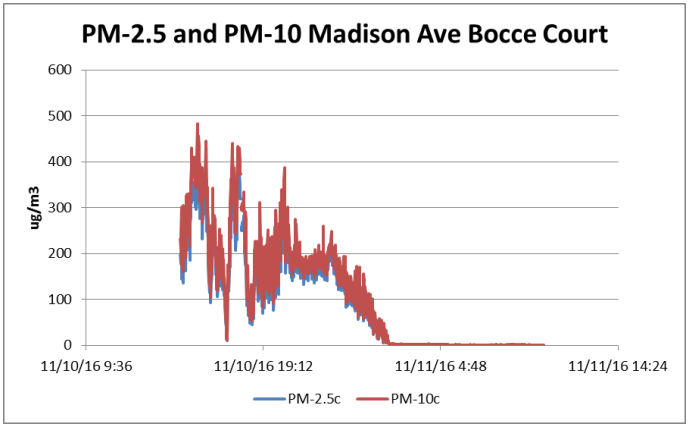
Human Hair (70 µm diameter)

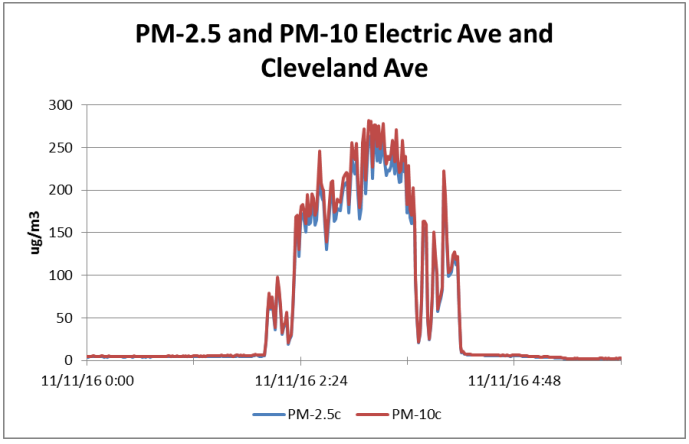


M. Lipsett, California Office of Environmental Health Haz

Data from the initial locations







DEC PM Data

On the 10th, the site on Madison Ave was impacted by the plume

On the 11th, the site on Electric Ave was impacted by the plume

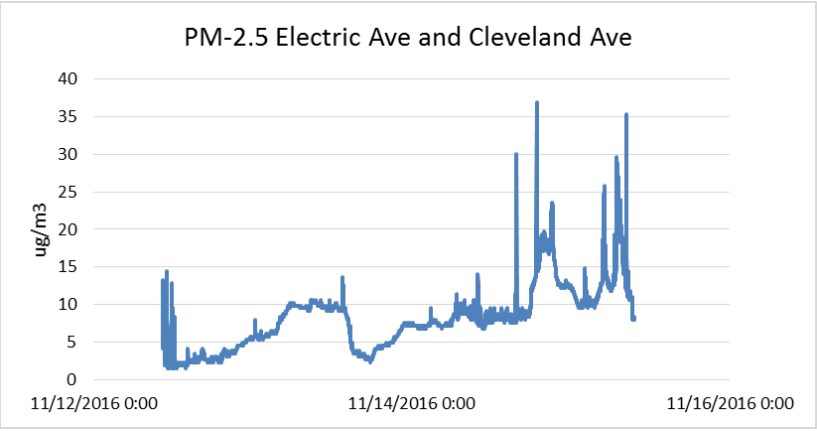
The data during these impacts show that the air quality was in the hazardous AQI index category

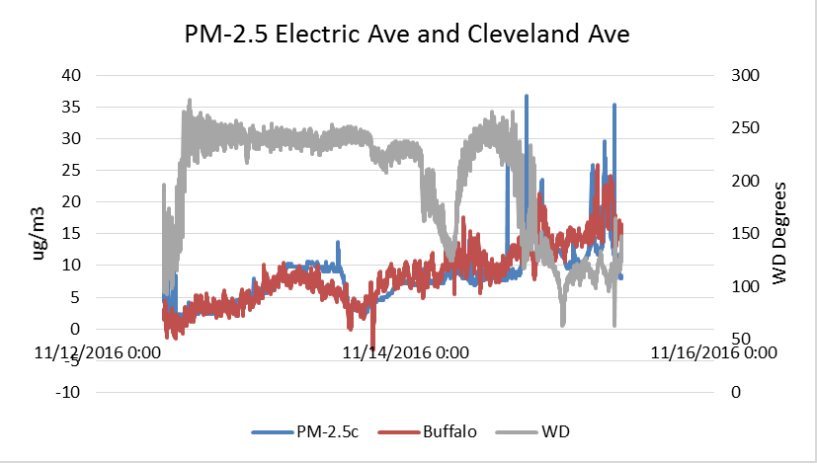
NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

EPA Samplers, DEC VOC Canisters

Madison Ave and Birch - Bocce Court

Spruce St Tennis Court





Day 3-5

1 – Minute Data

The PM monitor operated over the weekend and did not capture any large events

The higher levels on the 15th correlated with east winds as well as the regional PM monitor in Buffalo

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Volatile Organic Compounds (VOCs)

Organic chemical compounds are everywhere in both indoor and outdoor environments because they have become essential ingredients in many products and materials.

- Outdoors, VOCs are volatized or released into the air mostly during manufacture or use of everyday products and materials. VOCs are also formed in combustion/fire.
- Indoors, VOCs are mostly released into the air from the use of products and materials containing VOCs.

Targeted VOCs (EPA Method TO-15)

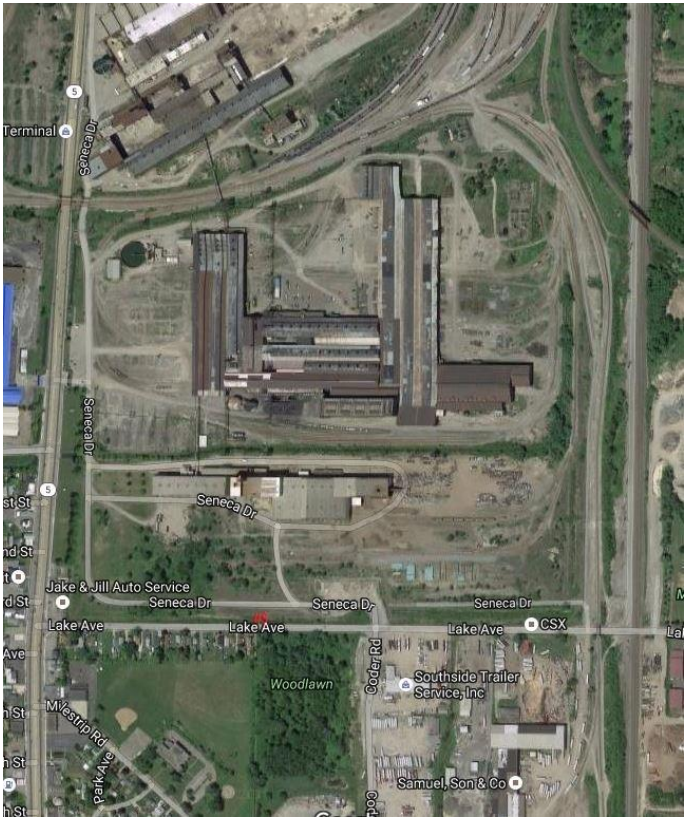
Dichlorodifluoromethane	1,2Dichloroethane	m,p-Xylene
Chloromethane	1,1,1Trichloroethane	Styrene
Dichlorotetrafluoroethane	Benzene	1,1,2,2Tetrachloroethane
Vinyl Chloride	Carbon Tetrachloride	o-Xylene
1,3Butadiene	1,2Dichloropropane	1,3,5Trimethylbenzene
Bromomethane	Bromodichloromethane	1,2,4Trimethylbenzene
Chloroethane	Trichloroethylene	aChlorotoluene
Trichlorofluoromethane	cis1,3Dichloropropylene	1,3Dichlorobenzene
1,1Dichloroethylene	trans1,3Dichloropropylene	1,4Dichlorobenzene
Dichloromethane	1,1,2Trichloroethane	1,2Dichlorobenzene
Trichlorotrifluoroethane	Toluene	1,2,4Trichlorobenzene
1,1Dichloroethane	1,2Dibromoethane	Hexachloro1,3Butadiene
Methyl Tert Butyl Ether	Tetrachloroethylene	Acrolein
trans 1,2Dichloroethylene	Chlorobenzene	Carbon Disulfide
Chloroform	Ethylbenzene	Naphthalene

Lackawanna Canister Sampling

Sample #	Date	Time	Location	Lat.	Long.
1	11/10/16	11:08 – 12:02	Spruce St. Tennis Court	42.81097739	-78.842227
2	11/10/16	11:13 – 12:10	Madison Ave Bocce Court	42.81103847	-78.83925812
3	11/10/16	17:30 grab	Seal Place	42.81379096	-78.83224023
4	11/11/16	11:07 grab	3711 Lake Ave	42.79781415	-78.84230393

11/10 Canister Sampling Locations

11/11 Sampling Location



Toxics VOC Laboratory – GCMS Systems

GCMS Analysis Results – in ppb

Compound Name	Spruce St Tennis Court	Madison Ave Bocce Field	Seal Place	Lake Ave	Buffalo Monitor 11/2
Dichlorodifluoromethane	0.483	0.472	0.473	0.504	0.519
Chloromethane	0.556	1.301	1.014	0.458	0.465
Dichlorotetrafluoroethane	0	0	0	0.02	0.016
Vinyl Chloride	0.133	0.062	0.075	0.004	0.006
1,3Butadiene	1.576	4.628	2.587	0.081	0.018
Bromomethane	0.298	0.565	0.349	0.009	0.012
Chloroethane	0	0.068	0.04	0	0
Trichlorofluoromethane	0.227	0.261	0.226	0.308	0.235
1,1Dichloroethylene	0	0	0	0	0
Dichloromethane	0.033	0.046	0.038	0.041	0.046
Trichlorotrifluoroethane	0.063	0.061	0.061	0.068	0.076
1,1Dichloroethane	0.003	0	0	0.001	0.002
Methyl Tert Butyl Ether	0	0	0	0.001	0.002
trans 1,2Dichloroethylene	0	0	0	0	0
Chloroform	0.026	0.029	0.025	0.02	0.025
1,2Dichloroethane	0.016	0.017	0.018	0.013	0.015
1,1,1Trichloroethane	0.005	0.002	0.003	0.003	0.004
Benzene	10.811	36.545	15.938	0.839	0.203
Carbon Tetrachloride	0.072	0.072	0.075	0.077	0.08
1,2Dichloropropane	0.007	0.006	0.005	0.005	0.003
Bromodichloromethane	0.004	0	0	0.001	0.001
Trichloroethylene	0.007	0.008	0.005	0.053	0.023

GCMS Analysis Results (cont'd)

Compound Name	Spruce St Tennis Court	Madison Ave Bocce Field	Seal Place	Lake Ave	Buffalo Monitor 11/2
cis1,3Dichloropropylene	0.004	0.005	0.003	0.001	0.001
trans1,3Dichloropropylene	0.005	0.005	0.003	0.001	0
1,1,2Trichloroethane	0	0	0	0	0
Toluene	2.388	5.443	3.326	0.272	0.429
1,2Dibromoethane	0.003	0	0	0	0.001
Tetrachloroethylene	0.01	0.016	0.011	0.012	0.022
Chlorobenzene	0.04	0.184	0.099	0.006	0.002
Ethylbenzene	0.826	1.699	1.543	0.089	0.06
m,pXylene	0.338	0.729	0.364	0.152	0.202
Styrene	2.335	4.709	3.209	0.105	0.3
1,1,2,2Tetrachloroethane	0.012	0	0	0	0.001
oXylene	0.103	0.23	0.143	0.058	0.083
1,3,5Trimethylbenzene	0.042	0.084	0.074	0.013	0.017
1,2,4Trimethylbenzene	0.046	0.062	0.043	0.044	0.06
aChlorotoluene	0.029	0.03	0.027	0.005	0.003
1,3Dichlorobenzene	0.012	0.011	0.005	0.001	0.001
1,4Dichlorobenzene	0.019	0.012	0.006	0.002	0.005
1,2Dichlorobenzene	0.024	0.066	0.034	0.002	0.002
1,2,4Trichlorobenzene	0.069	0.03	0.013	0.003	0.006
Hexachloro1,3Butadiene	0	0	0	0	0
Acrolein	0.65	1.568	0.852	0.063	0.144
Carbon Disulfide	0.027	0.041	0.018	0.004	0.018
Naphthalene	1.43	3.312	1.468	0.056	0.045

Health Effects from Exposure to Smoke

Exposure to smoke can cause eye, nose and throat irritation.

Smoke can also worsen cardiovascular and respiratory conditions like asthma.

Health effects generally resolve quickly after exposure ends.

To prevent and/or reduce exposures, recommendations include:

- Ensure that windows and doors are closed;
- If ventilation systems are in use, set these to recirculate the indoor air
- Avoid or limit outdoor activities

Health Effects from Exposure to Smoke

- Results of DEC's sampling found typical constituents of fires.
- Actions to reduce the public's exposure to the smoke included evacuation and limiting outdoor activities.
- Any possible exposure would have been a short term concern.
- DOH advises people with continuing symptoms to contact their health care provider.

Additional information

- Odors are expected to continue
- Strong odors can cause irritation, headaches and nausea
- Most odors will be noticeable below a level at which health effects may occur
- When conditions permit, open windows and doors to ventilate to reduce any indoor odors
- Clean hard surfaces with water and detergent

Resources:

Call the NYS Department of Health at 518-402-7820 or 800-458-1158.

Fact Sheets:

Smoke from Fires

http://www.health.ny.gov/environmental/outdoors/air/smoke_from_fire.htm

What you should know about fires

http://www.health.ny.gov/environmental/outdoors/air/what_to_know.htm

Particulate Matter

http://www.health.ny.gov/environmental/indoors/air/pmq_a.htm

Odors and Health

http://www.health.ny.gov/publications/6500/index.htm

The Center for Occupational and Environmental Medicine at the Erie County Medical Center can be reached at 716-898-5858.

NEW YORK STATE OF OPPORTUNITY. Department of Health

Next Steps

- Analysis of Confirmatory VOC Sampling and data evaluation
- Scheduling a Community Meeting to discuss present data.
- Data Available: http://www.dec.ny.gov/chemical/108370.html

Thank You

- Sean Mahar
- Sean.Mahar@dec.ny.gov
- 518-402-8000

Connect with us:
Facebook: www.facebook.com/NYSDEC
Twitter: twitter.com/NYSDEC
Flickr: www.flickr.com/photos/nysdec