SoPo / Po VOC Air Quality Monitoring Project Update

June 17, 2020

Andrew Johnson, Director
Division of Air Quality Assessment

April 16, 2019 SoPo City Council Workshop

- Citizen concerns over air emissions and/or odors from the petroleum product storage facilities
- Repeated requests for air quality monitoring done within City boundaries
- DEP promised it would work with the City on accomplishing that goal

VOC Ambient Air Monitoring Project Goals

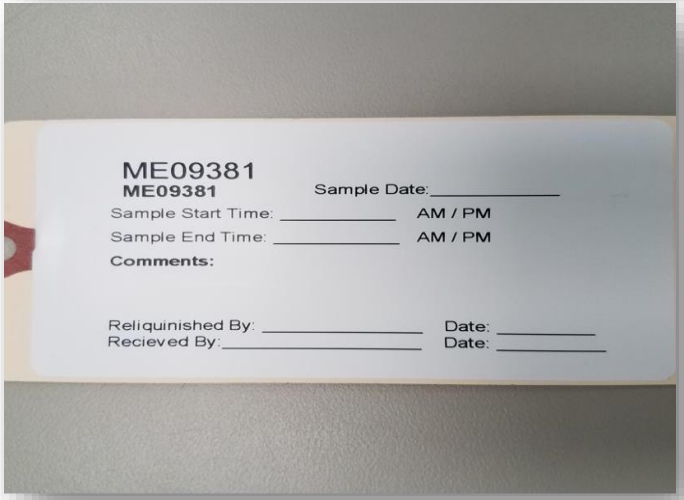
- To measure VOC air quality across the cities generally to gain an in-depth understanding of them, recognizing there are a variety of VOC sources present in both cities.
- To report findings to the public and to work with the State Toxicologist to interpret those findings.
- To identify potential sources of VOC emissions that may require further controls or scrutiny.
- To correlate odor incidents as observed by the public with VOC data

Timeline of Significant Events

- Aug. 28, 2019: Meeting with Portland city officials
- Oct. 16-24: DEP website updated with latest data and Portland monitoring sites
- Oct. 31: 1st meeting of DEP & Maine CDC staff
- Nov. 5: 1st VOC samples taken at new Portland sites
- Nov. 26: SoPo City Council public workshop presentation with Maine CDC
- Apr. 30, 2020: Update to SoPo Clean Air Advisory Committee (CAAC)
- Jun. 17: Update to Portland Sustainability & Transportation Committee

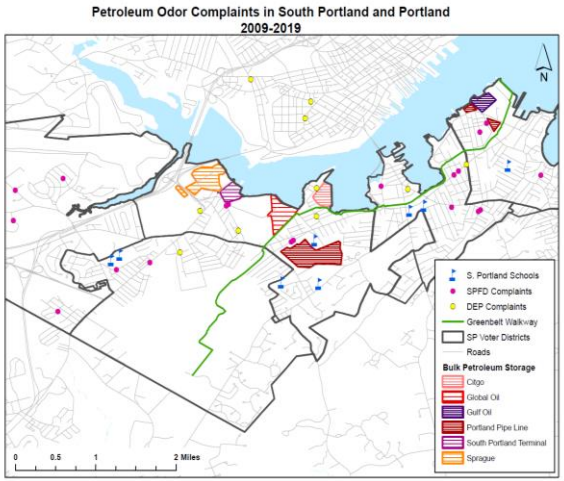
Phase 1: Grab Sampling Completed

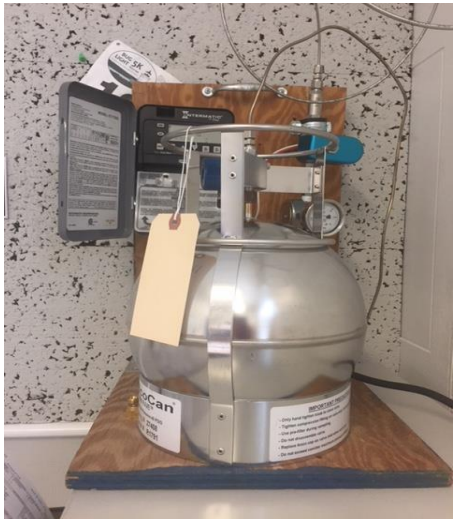
- Citizen training session on June 10
- 6 canisters made available each week for 12 weeks (June 10 – September 9)
  - 5 assigned to citizen volunteers
  - 1 assigned to S.P. Fire Department
  - 72 canisters in total
- 56 valid samples analyzed by DEP Air Lab
- 12 samples were invalid
- 4 canisters have not been returned
- Data has been shared with Maine CDC



Phase 2: Fixed 24-Hour Sampling

- 5 sites established and operating in South Portland (one per district)
- 2 sites established and operating in Portland (along with existing long-term Deering Oaks site)
- Sites are collecting samples every 6 days (SIP calendar schedule)
- DEP will operate this 8-site network for one full year (to November 2020)
- Samples analyzed by DEP Air Lab
- Data is being shared with Maine CDC on a monthly basis

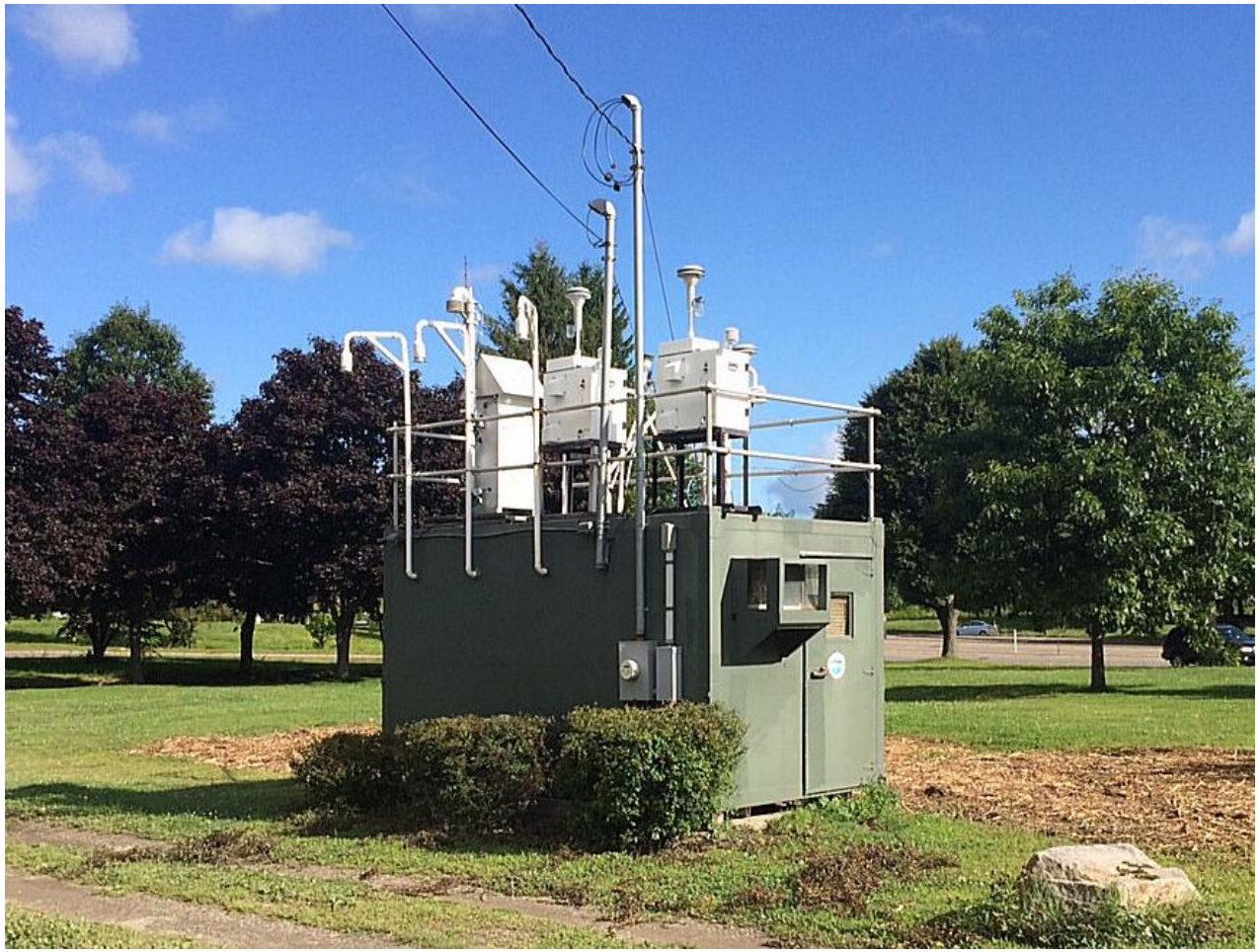




Portland: Ocean Gateway

Portland: West Commercial Street

Portland: Deering Oaks



SoPo / Po Project VOC 24-Hour Canister Ambient Air Monitoring Network Status

(as of June 13, 2020 through May 27, 2020 SIP date)

South Portland:	Installation Date / Date of 1st Sample						No. of scheduled samples	Data Completeness
Assessor's Office	JUN 25 JUN 26						58	52/58 **90.0%**
High School		JUL 1 JUL 2		SEP 23 SEP 24			57 43	37/57 = **65.0%** 37/43 = **86.0%**
Bug Light Park			AUG 9 AUG 13				50	45/50 **90.0%**
School Administration Central Receiving Building				SEP 27 SEP 30			42	35/42 **83.3%**
Redbank Community Center					OCT 3 OCT 6		41	36/41 **87.8%**
Portland:								
Ocean Gateway						OCT 31 NOV 5	36	31/36 **86.1%**
West Commercial Street						OCT 31 NOV 5	36	27/36 **75.0%**
Deering Oaks	(MAR 14 2009)						58	54/58 **93.1%**

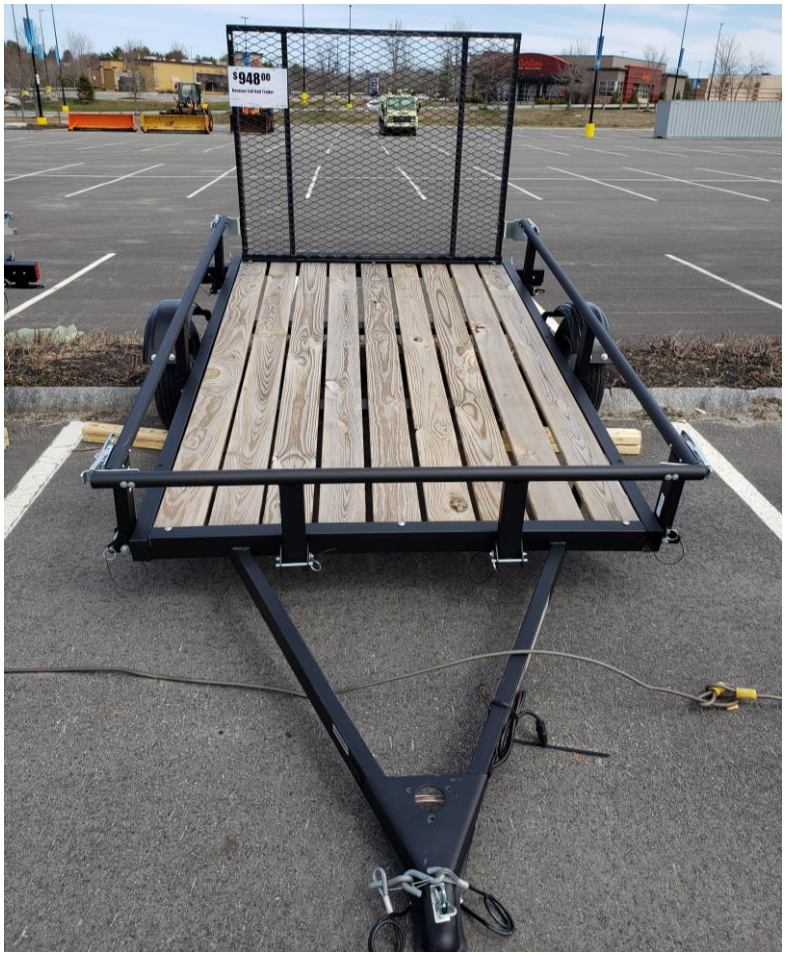
Going Forward

- Install and operate meteorological sensors units at all 24-hour canister sampling sites
- Deploy “floater” sampling system to confirm “interesting” results and/or locations (i.e. “hot spots”), and explore other project objectives as needed (e.g. Greenbelt Walkway)
- Explore other pollutant categories to measure (e.g. hydrogen sulfides, particulate matter, PAHs)
- Re-establish canister sampling at Two Lights State Park
- Apply for federal air toxics monitoring grant funding
- Continue to share findings and provide periodic updates and reports to the City, and upon request.
- Continue to do further assessments of all sample data and work with the State Toxicologist on interpreting findings

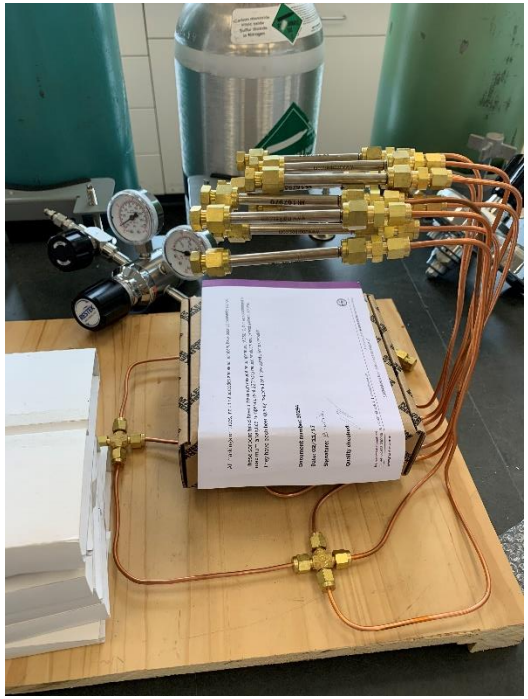
RainWise Meteorological Sensors Unit

RainWise Meteorological Sensors Unit

“Floater” Canister Sampling Platform



PAH Sampling System



Resuming Canister Sampling at Cape Elizabeth Site

Considerations for Continuous VOC & Other Monitoring Approaches

- One-time capital costs per site:
  - HVAC controlled equipment shelter: ~$4,500.00 to $12,000.00 (depending on size)
  - Meteorological equipment: ~$2,000.00 to $3,000.00 (depending on communications needs)
  - Data logger: ~$8,000.00
  - BTEX sampler: ~$25,000 or Auto-GC: ~$65,000
  - Hydrogen sulfide analyzer: ~25,000
  - Calibration equipment: ~$20,000

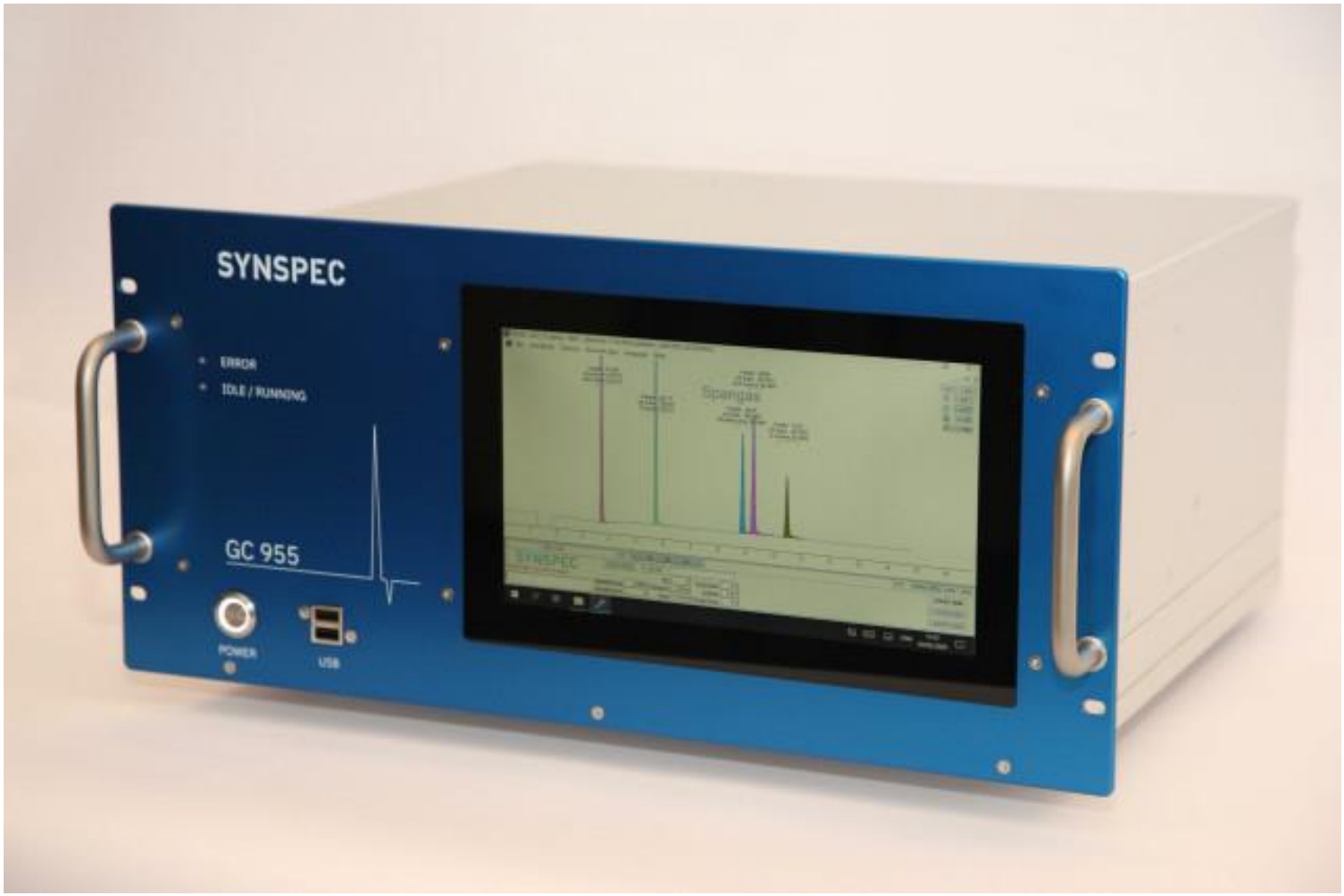
  - Total: ~ $84,500 to $133,000

- Operational and maintenance costs:
  - Personnel
  - Electricity
  - Operational gases
  - Equipment supplies & spare parts
  - Calibration standards
  - Travel to and from monitoring stations

- Data collection, validation, assembling, assessment and reporting costs.
  - Personnel costs
  - Telemetry costs (Internet or mobile data services)

Auto-GC

BTEX Analyzer



Hydrogen Sulfide (H_2S) Analyzer

Lower Detectable Limit: <0.4 ppb
Ambient Air Guideline: 1.4 ppb

Data Storage & Handling Systems

EPA Community Air Toxics Monitoring Grant Application for $278,000

EPA United States Environmental Protection Agency

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Community-Scale Air Toxics Ambient Monitoring

Request for Applications
Community-Scale Air Toxics Ambient Monitoring
RFA #: EPA-OAR-OAQPS-20-05, Closing Date: May 1, 2020

Back to Air Grants and Funding

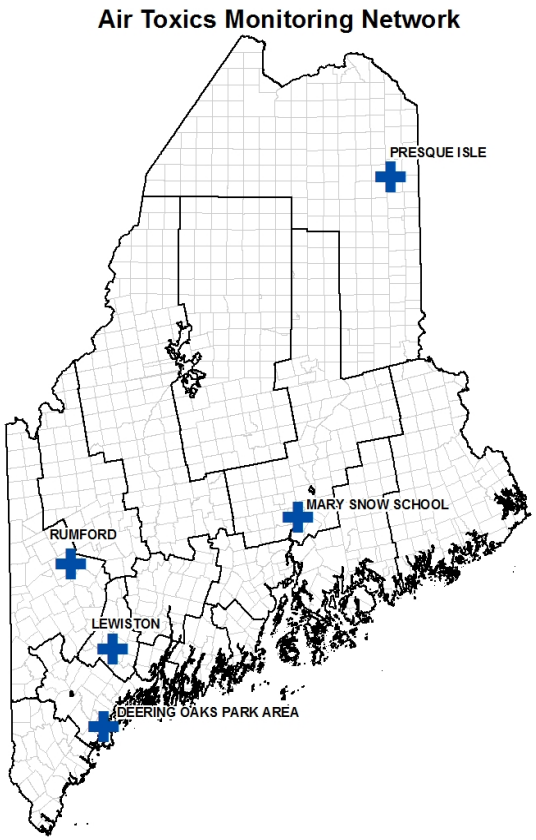
Summary: EPA's Office of Air and Radiation (OAR) is soliciting applications from eligible entities for projects designed to assist state, local, and tribal air agencies in identifying and characterizing air toxics, also known as hazardous air pollutants (HAPs), through work that falls into one of four categories. Those categories are: 1) characterizing the impacts of air toxics in a community (community-scale monitoring); 2) assessing impacts of toxics emissions from specific sources (near-source monitoring); 3) evaluating new and emerging testing methods for air toxics; and, 4) analyzing existing air toxics data and developing or enhancing analytical, modeling, and/or implementation tools. Air toxics of particular interest to EPA in this solicitation include ethylene oxide, chloroprene, benzene, 1,3-butadiene, and metals such as hexavalent chromium, nickel, and arsenic. The total estimated funding for this competitive opportunity is approximately $5,000,000. EPA anticipates awarding approximately 10 to 20 assistance agreements from this announcement, subject to the availability of funds, the quality of applications received, and other applicable considerations.

EPA will hold two information sessions on the 2020 competition February 19 and 20, 2020. Information about the sessions is available on the Community-Scale Air Toxics Ambient Monitoring website.

You may need a PDF reader to view some of the files on this page. See EPA's About PDF page to learn more.

Quantifying the Effort to Date

- The 7 new VOC air monitoring sites in South Portland/Portland exceed the number of other VOC sites (5) operating across the State
- 9 canister sampling systems = ~$20,000
  - Includes “floater” and backup/spare systems
- 48 canisters = ~$31,200
- 8 meteorological sensors units = ~$16,000
- Analytical costs = ~$159,500
- Total to date: ~$226,700
- In-kind staff time to plan and implement project – priceless!



Collaborating with Our Maine CDC Colleagues

South Portland / Portland 24 Hour Volatile Organic Compounds Air Monitoring Results Analysis and Summary Report

Analysis and Summary for Sampling Period
November 2019 – January 2020

March 20, 2020

Prepared by the Maine Center for Disease Control and Prevention

April 2020 VOC analytical data was delivered to Maine CDC on May 26, 2020

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