

**PENNSYLVANIA
ANNUAL AIR MONITORING NETWORK
PLAN**

**Notice of Public Inspection
38 Pa. B. 2112 (May 12, 2008)**

Comment/Response Document

June 26, 2008

**Comment and Response Document concerning
Pennsylvania's 2009 Annual Air Monitoring Network Plan**

On May 3, 2008, the Pennsylvania Department of Environmental Protection's Bureau of Air Quality published a notice in the *Pennsylvania Bulletin* concerning the public inspection of Pennsylvania's 2009 Annual Air Monitoring Network Plan (including the plan to discontinue portions of the carbon monoxide, sulfur dioxide, nitrogen dioxide, and PM₁₀ particulate networks while installing Volatile Organic Compounds (VOC) air toxic sampling (38 Pa.B. 2112). The public comment period closed on June 2, 2008.

This document summarizes the written comments received during the public comment period from the two commentators set forth below.

Commentator Number	Commentator Name	Commentator Address
1	Mr. Gavin Biebuyck Liberty Environmental, Inc.	Reading, PA
2	Clean Air Board of Central Pennsylvania (CAB)	Carlisle, PA

COMMENTS FROM MR. BIEBUYCK, LIBERTY ENVIRONMENTAL

COMMENT: Removal of NO_x and SO₂ Samplers

The DEP's proposal to discontinue operation of NO_x and SO₂ monitors at certain monitoring locations is of concern to the extent these pollutants are PM_{2.5} precursors and the locations are PM_{2.5} nonattainment areas. In addition, the real-time concentrations of these pollutants are valuable for source apportionment studies related to PM_{2.5} and air toxic concentrations. For these reasons I request that DEP not discontinue operation of SO₂ and/or NO_x samplers at Norristown, Freemansburg, Harrisburg and Lancaster. (1)

RESPONSE: The Department believes that the use of PM_{2.5} speciation monitors is the best technology to support the development of State Implementation Plan (SIP) revisions for PM_{2.5} non-attainment areas and provide data for source apportionment studies. Ambient levels of NO_x and SO₂ cannot be used to identify specific source categories since they are sited so as not to be influenced by a specific source. The Department currently operates PM_{2.5} speciation monitors in Freemansburg, Harrisburg, and Lancaster and will continue their operation while these areas are in non-attainment of the PM_{2.5} standards. Norristown (Montgomery County), when compared to the PM_{2.5} National Ambient Air Quality Standards (NAAQS), is in compliance with both the

annual and 24-hour PM_{2.5} standards for the 3-year period of 2005-2007. Based on the current PM_{2.5} trend at Norristown and low NO_x point source emission levels within Montgomery County, the Department does not believe the need for an NO_x monitor exists. With regards to air toxics, there are no sulfur or nitrogen based air toxics that are currently being monitored by the Department. Should the need arise, “Special Purpose Monitors” (SPMs) would be the initial course of action.

COMMENT: PM_{2.5} Speciated Samplers

I believe it is becoming clear that the PM_{2.5} pollution problem is a complex one that would benefit from the deployment of additional PM_{2.5} samplers and, most importantly, the deployment of additional speciated PM_{2.5} samplers. The speciated samplers are critically important to understand the relative source contributions to PM_{2.5} pollution at different locations and to understand the seasonal differences in PM_{2.5} pollution chemistry. I therefore recommend that DEP deploy at least five (5) more PM_{2.5} speciated samplers instead of the planned relocation of the New Garden speciated sampler to Johnstown. I recommend that the New Garden sampler remain at its current location (because it provides valuable PM_{2.5} data downwind of the Philadelphia area during easterly/southeasterly winter PM_{2.5} episodes) and that additional speciated PM_{2.5} samplers be located at the following five locations: (1) Norristown, Montgomery County due to the relatively high real-time PM_{2.5} and ozone pollution concentrations routinely measured at this site compared to other southeastern PA sites; (2) Carlisle, Cumberland County due to citizen concerns about PM_{2.5} pollution and possible correlation with diesel truck and traffic sources in the area; (3) Johnstown, Cambria County due to the scarcity of PM_{2.5} monitors in western PA and the rationale provided by DEP in the plan; (4) State College, Centre County due to the proposed designation of this county as PM_{2.5} nonattainment with the new 24-hr PM_{2.5} standard of 35 ug/m³ and the relative lack of PM_{2.5} data for central and western PA; and, (5) Wilkes-Barre, Luzerne County or Scranton, Lackawanna County due to the lack of any PM_{2.5} speciated monitors in northeastern PA. (1)

RESPONSE: As indicated in the proposed network plan, the New Garden (Chester County) PM_{2.5} speciation monitor will remain operational, but the Chester (Delaware County) monitor will be relocated to Johnstown (Cambria County). The Department believes that PM_{2.5} speciation data coverage for Chester (Delaware County) and Norristown (Montgomery County) is provided within the area by existing monitors in Bucks, Chester, and Philadelphia Counties. Items 4 and 5 of the comment express a desire for PM_{2.5} speciation monitors in State College and Wilkes-Barre or Scranton. As indicated in the proposed network plan, speciation monitors are already operational in State College (Centre County) and Scranton (Lackawanna County).

At this time the Department would prefer not to expand monitoring for speciated PM_{2.5} for several reasons. In the case of the comment item 2 for Carlisle (Cumberland County), there is a known problem with the carbon channel in the Met One SASS speciation monitors which has caused EPA to try using the URG 3000 Carbon speciation monitor as a replacement. Unfortunately, the URG 3000 system will not operate correctly in temperatures below freezing. Since any correlation with diesel exhaust would require accurate elemental carbon data, the

Department is not ready to deploy additional speciation monitors. The Department will also need to consider an expansion of the monitoring network expansion requirements due to the changes in the ozone standard and the proposed revision of the ambient lead NAAQS. Until the monitoring implications of the standards and the impact on resources are known, the Department believes that it is premature to make any adjustments to the 2009 monitoring network that would overwhelm our ability to collect quality ambient data.

COMMENT: PM_{2.5} Continuous Samplers

I recommend that continuous PM_{2.5} samplers be deployed at four (4) new locations to provide the public with real-time PM_{2.5} data for Air Quality Index purposes and for air pollution episode and action day alerts. A review of the PM_{2.5} and ozone AQI real-time data that DEP provides to the public on the web shows a conspicuous lack of PM_{2.5} real-time data in northeastern PA (eight counties, no PM_{2.5} data), central PA (26 counties and a single PM_{2.5} monitor in Johnstown), and northwest PA (nine counties and no PM_{2.5} data). I recommend that new PM_{2.5} continuous samplers be located at the following four locations: (1) Carlisle, Cumberland County due to citizen concerns about traffic and diesel truck operations and due to the lack of continuous air monitoring data in this county; (2) State College, Centre County due to the proposed designation of this county as PM_{2.5} nonattainment and the relative lack of PM_{2.5} data for central PA; (3) Wilkes-Barre, Luzerne County or Scranton, Lackawanna County due to the lack of any PM_{2.5} continuous monitors in northeastern PA; and, (4) Erie, Erie County due to the lack of any PM_{2.5} continuous samplers in northwestern PA. (1)

RESPONSE: Federal regulations as stated in 40 CFR Part 58, Section 58.50 require the Department to provide Air Quality Index (AQI) reporting for all Metropolitan Statistical Areas (MSA) with a population exceeding 350,000. The State College and Erie MSA do not have sufficient population to mandate the addition of PM_{2.5} continuous monitors at those sites.

The Scranton-Wilkes-Barre MSA while having sufficient population is currently being recommended to be designated as attainment for both the annual and 24-hour PM_{2.5} NAAQS. The Department agrees with the recommendation that a continuous PM_{2.5} monitor should be installed in the Scranton-Wilkes-Barre MSA to provide support for the AQI. Once purchased, the FEM monitor will be installed at the Scranton site (Lackawanna County) so that it can be colocated with an existing manual FRM PM_{2.5} for at least one year. If after one year there is good correlation between the monitoring methods, the Department may be able to consider termination of the manual FRM sampler.

The Department agrees with the recommendation that a continuous PM_{2.5} monitor be installed at the Carlisle Imperial Court site (Cumberland County) to provide support for the AQI. The EPA-approved Carlisle Imperial Court PM_{2.5} site is also the design value site (highest annual and/or 24-hour mean) for the Harrisburg-Carlisle-Lebanon MSA. Once purchased, the FEM monitor will be colocated with the existing FRM PM_{2.5} monitor for at least one year. If after one year there is good correlation between the monitoring methods, the Department may be able to consider termination of the manual FRM sampler.

COMMENT: Ammonia Sampling

Because the EPA has identified ammonia as a PM_{2.5} precursor pollutant, and because the EPA has allowed states to determine whether ammonia should be regulated as a PM_{2.5} precursor for certain PM_{2.5} nonattainment areas, I think it is important to collect baseline ambient ammonia concentration data at several locations in PA. Because the accuracy of ammonia emissions estimates have been challenged in recent technical papers I believe it is all the more important to collect ambient ammonia concentration data. The ammonia emissions density has been estimated to be highest in Lancaster County, which also experiences some of the highest PM_{2.5} levels during episodes. I request that DEP deploy ammonia samplers at the Arendtsville, Lancaster, Harrisburg, Reading and Freemansburg sites to better understand ammonia concentration gradients and correlation with PM_{2.5} concentrations. Because PM_{2.5} ammonia chemistry and its role in nitrate and sulfate formation is complex, it may also be beneficial to sample for other nitrogen compounds like nitric acid in conjunction with ammonia sampling. (1)

RESPONSE: The Department agrees with the comments that ammonia monitoring is needed. With the current costs and state of technology for continuous ammonia monitors, the Department has not made any large-scale purchase of equipment. Ammonia monitors were purchased and installed in Lancaster (Lancaster County) and York (York County) in 2004 and 2006, respectively, to test the reliability of the equipment. During this time we have found the ammonia monitoring equipment to be troublesome and it required a return to the manufacturer for support and repair. The Department will continue to pursue a continuous ammonia monitoring strategy.

The Department is unaware of any continuous method for monitoring nitric acid and will not expand the network to include another manual method of data collection.

COMMENT: Air Toxic Samplers

I applaud the PA DEP for planning to deploy additional gaseous air toxic samplers but I also believe that the proposed new air toxic sampling locations should also be equipped with air toxic metals samplers (Hi-Vol samplers) to collect air toxics data that can be compared with the existing PA DEP air toxics sampling network which include both gaseous canister samplers and Hi-Vol filter-based metals samplers. This is particularly important in light of the EPA's proposed revisions to the lead NAAQS and the projections that three PA counties may be designated nonattainment with the new lead standard. I request that the DEP include the deployment of Hi-Vol metals samplers at the locations DEP proposes to install the gaseous air toxic samplers. I also request that DEP investigate the feasibility of conducting metals sampling that will distinguish between chromium metal valences to determine CrVI concentrations compared to other, less toxic chromium valences.

In addition, I believe it is important for the PA DEP to collect ambient air monitoring data for other air toxics that are currently not routinely monitored and that EPA has identified as presenting potentially high human health risks through programs including the Urban Air Toxics

framework. These air toxics include carbonyls (e.g., formaldehyde and acetaldehyde), various semi-volatile organic compounds (e.g., PAH, DEHP), and mercury in its several forms. Specifically, I request that DEP deploy samplers to measure carbonyl concentrations at several locations in southeastern PA where factors including population/traffic and EPA NATA estimates indicate potential elevated concentrations of aldehydes. We request that carbonyl samplers be located at the existing toxic monitoring systems at Chester, Lancaster, Collegeville, Reading, and Arendtsville. (1)

RESPONSE: The Department thanks the commenter for his support of the initiative to perform monitoring of Volatile Organic Compounds (VOC) air toxics across the Commonwealth. As indicated earlier in this document, the Department will not consider expanding air quality monitoring efforts until EPA finalizes lead and ozone monitoring regulations. Based on an assessment of the amended monitoring requirements, the Department will address the request to include air toxic metals at additional sites in the 2010 monitoring network plan.

As part of the routine air toxics sampling network, which was inadvertently omitted from the published network plan, the Department currently performs carbonyl monitoring at the Arendtsville, Lancaster and Lewisburg sites. Furthermore, EPA Region III in conjunction with the City of Philadelphia, Air Management Services conducts carbonyl sampling in southeast PA (five sites in 2006). With this coverage, additional carbonyl sampling has been limited due to the strict sample handling, delivery and analysis requirements.

The Department discontinued hexavalent chromium (CrVI) analysis on Hi-Vol air filters after conducting tests at the Department's lab in 2001. Analysis of Hi-Vol filters that were spiked with CrVI before sampling produced no results. This was most likely due to a reaction between CrVI and acidic compounds in Pennsylvania's atmosphere that reduce CrVI to CrIII. In an effort to overcome this, the Department experimented in 2004 using 47-mm filters impregnated with sodium bicarbonate, but was not successful. The experiment was based on procedures the California Air Resources Board was finding successful at the time in California. EPA has developed a method using a similar procedure, however the Department is not planning on implementing this method since it is not sufficiently different from our sodium bicarbonate trials and therefore not expected to have any greater chance of successfully capturing ambient CrIV levels. Furthermore, staff shortages at the Department's lab make it difficult to develop a workable method at this time.

Semi-volatiles have not been sampled by the Department since the late 1980's. Renewed sampling would require a sizable investment in lab personnel, analytical equipment, a solvent extraction lab, etc. Without requirements from EPA, the Department bases its limited resources for toxics monitoring on the needs of the Department's Regional offices for this information, which has not been requested.

Continuous elemental mercury sampling has been conducted at the Lancaster site since 1999. With speciated mercury sampling being both expensive and labor intensive, the Department finds it prudent to wait for the establishment of a national network (called the Mercury Trends Network) under development by the National Atmospheric Deposition Program. This would

allow the Department to use the protocols developed there and would allow data comparability to other sites in the country.

COMMENT: Mercury Rainfall Samplers

I request that DEP deploy additional mercury rainfall samplers in PA. I believe this is important to measure the expected reductions in mercury deposition anticipated by DEP and the EPA as a result of requiring mercury reductions from coal-fired power plants. In addition, the DEP has contended that the EPA's proposed mercury "cap-and-trade" program (which has been recently vacated by the Courts) may result in mercury "hot spots" in some locations in the vicinity of uncontrolled coal power plants. I therefore request that the DEP deploy additional mercury rainfall samplers at York and Reading (or Kutztown) that are upwind and downwind of the large Brunner Island coal power plant. (1)

RESPONSE: The Department is continually trying to improve spatial coverage across the Commonwealth to provide a better understanding of mercury deposition and balance that within the financial constraints of maintaining other monitoring efforts. In 2008, the Department has renewed its contract with the Pennsylvania State University Institutes of Energy and the Environment to coordinate the collection and data analysis from the acid rain and mercury deposition networks. Part of the contract renewal is the addition of a new mercury deposition site in the west central portion of the Commonwealth. In regards to concerns about the Brunner Island power plant, the Department believes the Millersville (Lancaster County) site provides the coverage needed.

COMMENT: I understand the resource commitments associated with the additional sampling I am requesting but it appears that DEP's monitoring plan will result in a significant reduction in the number of samplers for PM₁₀, NO_x, SO₂, and CO in the Commonwealth, and that DEP should therefore achieve resource savings that would offset some of the new resource commitments requested herein. I am also confident that PICEH would be willing to partner with the PA DEP to install and operate samplers in Berks County and adjacent counties. For example, PICEH could install and operate additional air toxic samplers and a mercury rainfall sampler and DEP could provide the laboratory analytical services for the samples. Likewise, I have been corresponding with the Clean Air Board of Cumberland County and understand that they would be willing to assist in the operation of air samplers in the Carlisle area (e.g., PM_{2.5} speciated monitor, air toxic samplers). (1)

RESPONSE: The Department appreciates the support for help in operating air monitoring samplers. The reductions in the proposed DEP monitoring plan will not result in a significant reduction in manpower utilization since we are not terminating entire air monitoring sites. The field staff will still have to travel to those sites to maintain operations for the remaining samplers. This reduction in sampling is being done to provide field staff with the time to comply with increasingly more demands for quality assurance activities and the increase in air toxics sampling. Additional reductions may be necessary in the future to support any increase in the number of new monitoring sites that may be required as a result of the ozone and lead NAAQS.

COMMENTS FROM THE CLEAN AIR BOARD OF CENTRAL PENNSYLVANIA

COMMENT: 40 CFR Part 58.10(a)(1), Appendix D, provides, in part, for state PM_{2.5} monitor locations: “Beginning July 1, 2007, the State ... shall adopt and submit to the Regional Administrator an annual monitoring network plan which shall provide for the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS monitoring stations...” The DEP provides for a network of state operated monitoring stations. Included in the proposed plan are PM_{2.5} monitors located at Imperial Court and Walnut Streets in Cumberland County. 40 CFR 58.10(c) states: “The annual monitoring network plan must document how States and local agencies provide for the review of changes to a PM_{2.5} monitoring network that impact the location of a violating PM_{2.5} monitor or the creation/change to a community monitoring zone, including a description of the proposed use of spatial averaging for purposes of making comparisons to the annual PM_{2.5} NAAQS as set forth in appendix N to part 50 of this chapter.” At present, Cumberland County is not attaining the PM_{2.5} air quality standard, both on a 24 hour basis and as an annual average. Last year, CAB requested that DEP install the Walnut Street station specifically to monitor air quality in a residential neighborhood. (2)

RESPONSE: The Carlisle FRM PM_{2.5} monitor located at Imperial Court is currently the design value site (highest annual and/or 24-hour mean) for the Harrisburg-Carlisle-Lebanon MSA. Design value sites are used to determine the attainment status for the area. Since the monitor at Imperial Court (Carlisle) is in violation of the PM_{2.5} 24-hour National Ambient Air Quality Standard (NAAQS) over the 3-year period of 2005-2007, the Department cannot make changes to the site location or designation. Therefore, no additional documentation was required that would be covered under 40 CFR 58.10. Since it is in violation of a NAAQS, the Department disagrees with the recommendation to classify the site as a background monitor.

COMMENT: 40 CFR 58.10(d) also requires States to perform an assessment of its network: “The network assessment must consider the ability of existing and proposed sites to support air quality characterization for areas with relatively high populations of susceptible individuals (e.g., children with asthma), and, for any sites that are being proposed for discontinuance, the effect on data users other than the agency itself. . . . For PM_{2.5}, the assessment also must identify needed changes to population-oriented sites.” Since its inception, CAB has been concerned with the association of pulmonary illnesses with poor air quality in the Cumberland Valley. A recent news article in the Carlisle Sentinel (2/4/08) focused attention on the increased reports of children with asthma in Cumberland County associated with poor air quality. The monitoring and reporting of PM_{2.5} in the Carlisle area helps people with pulmonary illness determine the activities in which they can safely engage. (2)

RESPONSE: Section 58.10(d) of 40 CFR Part 58 that was cited by the CAB is part of a more extensive 5-year network assessment that requires an agency to submit to the EPA Regional Administrator documentation that describes whether the network is meeting all of its monitoring

objectives. The first assessment of this kind is due July 1, 2010 for monitoring network changes that would be implemented in 2011.

COMMENT: At a minimum, states must locate monitors at sites which are intended to determine the highest concentrations expected, the typical concentrations in an area of high population density, and the general background concentrations. These are not identified by DEP for Cumberland County. Residents have long suspected that the area along U.S. 11 near Carlisle, called the Miracle Mile, would likely be qualified as a location of highest concentration. However, DEP does not monitor air quality in this area. CAB has submitted monitoring data from an area a mile east of the Miracle Mile in the 1900 block of Harrisburg Pike, using an EBAM monitor. Additionally, in August 2004 as part of the land use review of the Keystone/Prologis warehouses hearings, Middlesex Township hired an air quality expert to conduct 24-hr testing at both ends of the Miracle Mile. The samples collected were 56.4 and 63.2 mcg/m³, respectively. A meteorologist testified that weather-related phenomenon did not cause the pollution levels to be high. People familiar with the Miracle Mile suspect that pollution levels along it would be considerably higher than a mile east of it due to the concentration of stop-and-start truck traffic and constant idling along that stretch of U.S.11. A DEP monitor for PM_{2.5} needs to be placed along the Miracle Mile rather than some distance from it because over 1,000 people work in that area, several hundred people live there, and others exercise outdoors at the Carlisle Country Club. (2)

RESPONSE: At the time when the SPM site at Carlisle Walnut Street was installed, it was the Department's recommendation that the study for high levels of PM_{2.5} would be better served by a site near to the Route 11 (Miracle Mile) area. At the insistence of the Clean Air Board, the Walnut Street site was chosen for SPM monitoring. The Department is taking several regulatory steps to reduce the emissions from the truck traffic in this localized area and at this time has no plans to add another SPM monitoring site in the area.

COMMENT: DEP has stated that it does not wish to continue monitoring PM_{2.5} at the Walnut Street location. CAB believes the Walnut Street location is ideally suited for neighborhood scale monitoring. DEP has an obligation to state why the Walnut Street monitor cannot be compared to the NAAQS for PM_{2.5}. 40 CFR 58.10(b)(7) states that the plan must include: "The identification of any sites that are suitable and sites that are not suitable for comparison against the annual PM_{2.5} NAAQS as described in §58.30." (2)

RESPONSE: When the Department agreed to install the Carlisle Walnut Street monitor, the decision was made to designate it as a Special Purpose Monitor (SPM) with the objective of correlating the data with the Carlisle Imperial Court site for one year. When the Department met with CAB on April 21, 2008, to discuss the monitoring data to date, both parties agreed to extend monitoring at the Walnut Street monitor until the end of September 2008 at which time, the Department would re-evaluate the need to continue operation of a PM_{2.5} monitor at that site.

COMMENT: The Imperial Ct. site does not represent community-wide air quality for the residents of Carlisle Borough or the metropolitan area. The Imperial Ct. site is located near Carlisle Springs, a much sparser community. The Imperial Ct location may be better classified as a background monitor rather than an urban scale monitor. Background sites are located to determine upwind of pollution sources. Imperial Ct. is located on a hill generally upwind of the major population concentration and major air pollution sources (highways and stationary sources). Its location is not suited to measure population exposure. (2)

RESPONSE: The Department disagrees. The purpose of an urban scale monitor is to represent the pollution levels for an area from 4 to 50 kilometers. The combination of the Harrisburg (Dauphin County) and the Carlisle Imperial Court (Cumberland County) EPA-approved sites are considered to be representative for comparison to the PM_{2.5} NAAQS for the Harrisburg-Carlisle-Lebanon Metropolitan Statistical Area (MSA). These two sites were not meant to provide air quality data for specific boroughs or cities.

COMMENT: Cumberland County needs real-time reporting of PM_{2.5} levels. 40 CFR Part 58, Appendix D specifies network design criteria. Among other specifications, it specifies timely reporting of air pollution data to the public. "Data can be presented to the public in a number of ways, including through air quality maps, newspapers, Internet sites, and as part of weather forecasts and public advisories." (Section 1.1(a)) At present, the only PM_{2.5} monitor in the Harrisburg area that continuously reports readings to the public is in Harrisburg. DEP has installed no PM_{2.5} monitor in Cumberland County of the type necessary to support this requirement. Both the permanent (Imperial Ct) and temporary (Walnut St) PM_{2.5} monitors DEP has in the county are of the FRM type which require months to determine the amount of pollution sampled and as such cannot satisfy this timely reporting requirement. The EBAM monitor used by CAB is moved frequently, so it cannot satisfy this requirement because frequent location changes would confuse the public. DEP needs to install a continuous-reading monitor, such as the BAM 1020, in a location where people live, work and play to satisfy this requirement. DEP should report the real-time readings in a manner easily accessible to the public, such as on DEP's website, the AirNow website, or other local website.

RESPONSE: The Department agrees with the recommendation that a continuous PM_{2.5} monitor be installed at the Carlisle Imperial Court site (Cumberland County) to provide support for the AQI. The EPA-approved Carlisle Imperial Court PM_{2.5} site is also the design value site (highest annual and/or 24-hour mean) for the Harrisburg-Carlisle-Lebanon MSA. Once purchased, the FEM monitor will be colocated with the existing FRM PM_{2.5} monitor for at least one year. If after one year there is good correlation between the monitoring methods, the Department may be able to consider termination of the manual FRM sampler. Once installed the data from the continuous monitor will be available on the PA DEP external web site and the EPA AirNow web site.