# MERCURY DEPOSITION IN PENNSYLVANIA: STATUS REPORT


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The work upon which this report is based was supported by funds from the Pennsylvania Department of Environmental Protection through Contract Number ME359494.

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February 2003

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# Introduction

Mercury (Hg) is a naturally occurring element in our environment. It enters the atmosphere as a result of natural events, such as volcanic eruptions, or anthropogenic activities, such as the combustion of fossil fuels, especially coal. Mercury is persistent, bioaccumulative, and toxic. Because of these properties, it poses potential human health risks, especially for pregnant women, developing fetuses, and young children. Mercury is also toxic to wildlife, especially fish, birds, and fur-bearing mammals, that consume organisms contaminated with mercury. Human exposure to mercury occurs almost exclusively through fish consumption (U.S. EPA, 1997). Because of potential health risks, 40 states in the United States and seven Canadian provinces currently have some form of mercury fish advisory for their water bodies (U.S. EPA, 1999a, 1999b).

Concerned over the toxicity of mercury and its potential impact on humans and the environment, The Environmental Protection Agency (EPA) conducted a detailed assessment of the magnitude of U.S. mercury emissions by source, the health and environmental implications of these emissions and depositions, and the availability and cost of control technologies. This assessment, entitled *Mercury Study Report to Congress* (U.S. EPA, 1997) was required under section 112(n)(1)(B) of the Clean Air Act Amendments of 1990, Public Law No. 101-549, 42 U.S.C. 7412 (U.S. Congress 1990). Information presented in the following paragraphs was obtained from the *Mercury Study Report to Congress* (U.S. EPA, 1997) and EPA's *Mercury Research Strategy* (U.S. EPA, 2000a). Information was also obtained from a report on the *Deposition of Air Pollutants to the Great Waters: Third Report to Congress* (EPA, 2000b), an Environmental Protection Agency web site on mercury: http://www.epa.gov/mercury/information.htm, and from the National Research Council's report on *Toxicological Effects of Methylmercury* (National Research Council, 2000). As the state-of-the-science for mercury is continuously and rapidly changing, these reports and the information presented in them, as well as in this report represents the current state-of-knowledge on the topic.

Mercury's toxicity level in the environment depends on its chemical form. Mercury exists in the atmosphere in primarily four forms: gaseous elemental mercury vapor (Hg°) or metallic or zero valent mercury; gaseous divalent mercury $Hg_2^{2+}$ (mercurous) or $Hg^{2+}$ (mercuric-Hg (II)); particulate-bound mercury ($Hg_p$), both Hg° and $Hg^{2+}$; and organic mercury (mainly methylmercury (MeHg). Elemental mercury is a heavy, silvery-white liquid metal at typical ambient temperatures and pressures. The vapor pressure of mercury is strongly dependent on temperature, and it vaporizes readily under ambient conditions. Consequently, elemental mercury (Hg°) is not found in nature as a pure, confined liquid, but instead exists as a vapor in the atmosphere. It is insoluble in water and is less chemically active than the other forms of mercury. As a result, its removal rate is slow and thus can be transported in the atmosphere thousand of miles from its emission source. Consequently, gaseous elemental mercury vapor (Hg°) is the major component of the global circulation of atmospheric mercury (Schroeder and Munthe, 1998).

Gaseous divalent mercury ($Hg_2^{2+}$ and $Hg^{2+}$), also called reactive gaseous mercury (RGM), can form many inorganic and organic chemical compounds; however, mercurous mercury ($Hg_2^{2+}$) is very unstable under ordinary environmental conditions and therefore is generally not found in the atmosphere. Mercuric mercury ($Hg^{2+}$) is less volatile than $Hg_2^{2+}$ and more water-soluble than Hg°. Mercuric mercury may be found in the gas phase or bound to airborne particles. Both gas-phase and particulate $Hg^{2+}$ are readily removed from the atmosphere by precipitation. Oxidation processes in the atmosphere and in cloud water can also convert elemental mercury to $Hg^{2+}$. Because of its high solubility, gas-phase $Hg^{2+}$ may be removed from the atmosphere within a few tens to a few hundred miles of its source. Particular-phase mercury may be deposited at intermediate distances from the source depending on the size of the aerosol (Schroeder and Munthe, 1998).

Methylmercury (MeHg) is the most toxic of the organic mercury species. While some MeHg is found in precipitation, most of the MeHg occurring in lakes and other surface waters as well as in soil, sediments, and biota is generated by microbially mediated transformations of $Hg^{2+}$ (Schroeder and Munthe, 1998). These processes seem to be accelerated under acidic conditions (Driscoll, et al., 1995). Methylmercury is a neurotoxin and teratogen, which bioaccumulates up the food chain by a factor of a million or more. Human and wildlife exposure to mercury is due primarily from the consumption of contaminated fish (U.S. EPA, 1997). Other organic mercury compounds that may be found under normal environmental conditions are: mercuric salts ($HgCl_2$, $Hg(OH)_2$, and HgS); methylmercury compounds, methylmercuric chloride ($CH_3HgCl$) and methylmercuric hydroxide ($CH_3HgOH$); and, in small fractions, other organomercurics, such as dimethylmercury and phenylmercury.

**Mercury Emissions and Depositions in the U.S.**

Since the 19th Century, the total amount of mercury in the environment has increased by a factor of two to five above pre-industrial levels (Mason et al., 1994). Over the years, some mercury compounds have been specifically developed as pesticides, fungicides, and germicides to be used on grains, in paints, and with vaccines. Because mercury is an excellent conductor of electricity, it has been widely used in products, such as batteries, electric switches, thermostats, thermometers, and barometers. Because mercury and its compounds are persistent, bioaccumulate in the environment, are toxic to humans, and pose ecosystem risks, the use of mercury in many products, such as paint and batteries, has decreased significantly the past several decades (U.S. EPA, 1997b).

The sources of mercury emissions to the atmosphere in the United States can be broadly classified as re-emitted mercury, natural mercury emissions, and anthropogenic mercury emissions. Re-emitted mercury is mercury that was previously deposited on the Earth's surface following either anthropogenic or natural releases and is re-emitted to the atmosphere by natural biologic or geologic processes. Natural mercury emissions occur when geologically-bound mercury is released during natural processes, such as volcanic activity. The mobilization and release of mercury by human activities is referred to as anthropogenic mercury emissions. Anthropogenic emissions can be classified as point or area sources. Based on EPA estimates of anthropogenic mercury emissions (U.S. EPA, 1997b), point sources accounted for all but 2.2% of the 158 tons emitted in 1994-95. The largest point sources of mercury emissions in the United States are combustion sources which accounted for 86.9% (137.9 tons/year) of the total 1994-95 anthropogenic emissions inventory. The largest single combustion source is coal-fired utility boilers which accounted for 32.8% (51.6 tons/year) of the 1994-95 inventory. Other major contributing point combustion sources include municipal waste incinerator (29.6 tons/year, 18.7%), medical waste incinerators (16.0 tons/year, 10.1%), and hazardous waste combustion (7 tons/year, 4.4%). Manufacturing sources accounted for approximately 10% of the 1994-95 mercury emissions with the majority of these point sources resulting from chlor-alkali production (7 tons/year, 4.5%), Portland cement production, excluding hazardous waste-fired (5 tons/year, 3.1%), and pulp and paper manufacturing (2 tons/year, 1.2%). On a global scale, the amount of mercury released annually from natural sources has been estimated to be between 2000 tons per year (Nriagu and Pacyna, 1988) and 3000 tons per year (Jackson, 1997). Global anthropogenic emissions have been estimated to be between 3560 tons per year (Nriagu and Pacyna, 1988) and 4000 tons per year (Jackson, 1997). The uncertainties associated with these estimates can be significant and are discussed by Schroeder and Munthe (1998).

The deposition of mercury from the atmosphere occurs by two mechanisms: wet deposition and dry deposition. Wet deposition occurs when reactive gaseous mercury (primarily$Hg^{2+}$) dissolved in precipitation is deposited on the surface of the Earth. Particulate-bound mercury is also deposited by this mechanism, but is a relatively minor component (in most areas) when compared to dissolved $Hg^{2+}$. Dry deposition occurs when both gaseous and particulate forms of mercury are deposition on the Earth's surface. The amount of mercury at any one location is comprised of mercury from the natural global cycle, the global cycle perturbed by anthropogenic activities, as well as regional and local anthropogenic sources. In addition to air emissions, mercury may also enter an ecosystem through direct water discharge or past uses of mercury, such as in paints or fungicide applications to crops. Current research indicates that natural sources, industrial sources, and recycled anthropogenic mercury each contribute to about one-third of the current mercury burden in the global atmosphere (Pirrone et al, 1996). However, more recent measurements suggest that natural mercury emissions may be larger than past estimates (Lindberg et al., 1998).

Routine monitoring for mercury deposition was not initiated in the United States until January 1996 when the National Atmospheric Deposition Program (NADP) initiated the Mercury Deposition Network (MDN). Connsequently, very limited data were available to describe spatial and temporal patterns in mercury deposition in the United States at the time EPA undertook the mercury study (U.S. EPA, 1997). As a result, in its assessment on the fate and transport of mercury in the environment (U.S. EPA, 1997b), EPA relied on computer simulation modeling to describe the environmental fate of emitted mercury. Two models were used in this analysis: The Regional Lagrangian Model of Air Pollution (RELMAP), for assessing regional scale atmospheric transport and the Industrial Source Code model (ISC3), for local scale analysis. EPA's ISC3 model was used to predict average annual concentrations as well as wet and dry deposition fluxes that result from emissions within 50 km of a single source. In contrast, RELMAP (Bullock et al., 1997; Eder et al., 1986) predicts average annual atmospheric mercury concentrations as well as wet and dry deposition fluxes for 40 $km^2$ grids across the continental United States. Model predictions were based on anthropogenic emissions from sources identified in EPA's 1994-95 inventory (U.S. EPA, 1997b). The predicted results from RELMAP were added to a uniform elemental mercury background concentration of 1.6 nanograms per cubic meter ($ng/m^3$) which represents natural and re-emitted anthropogenic sources of mercury worldwide (Fitzgerald and Mason, 1996). The results of these simulations are shown in Figure 1. The model simulations indicate that the highest deposition rates from anthropogenic and global sources of mercury are predicted to occur in the southern Great Lakes and Ohio River Valley, the Northeast (including Pennsylvania) and scattered areas of the

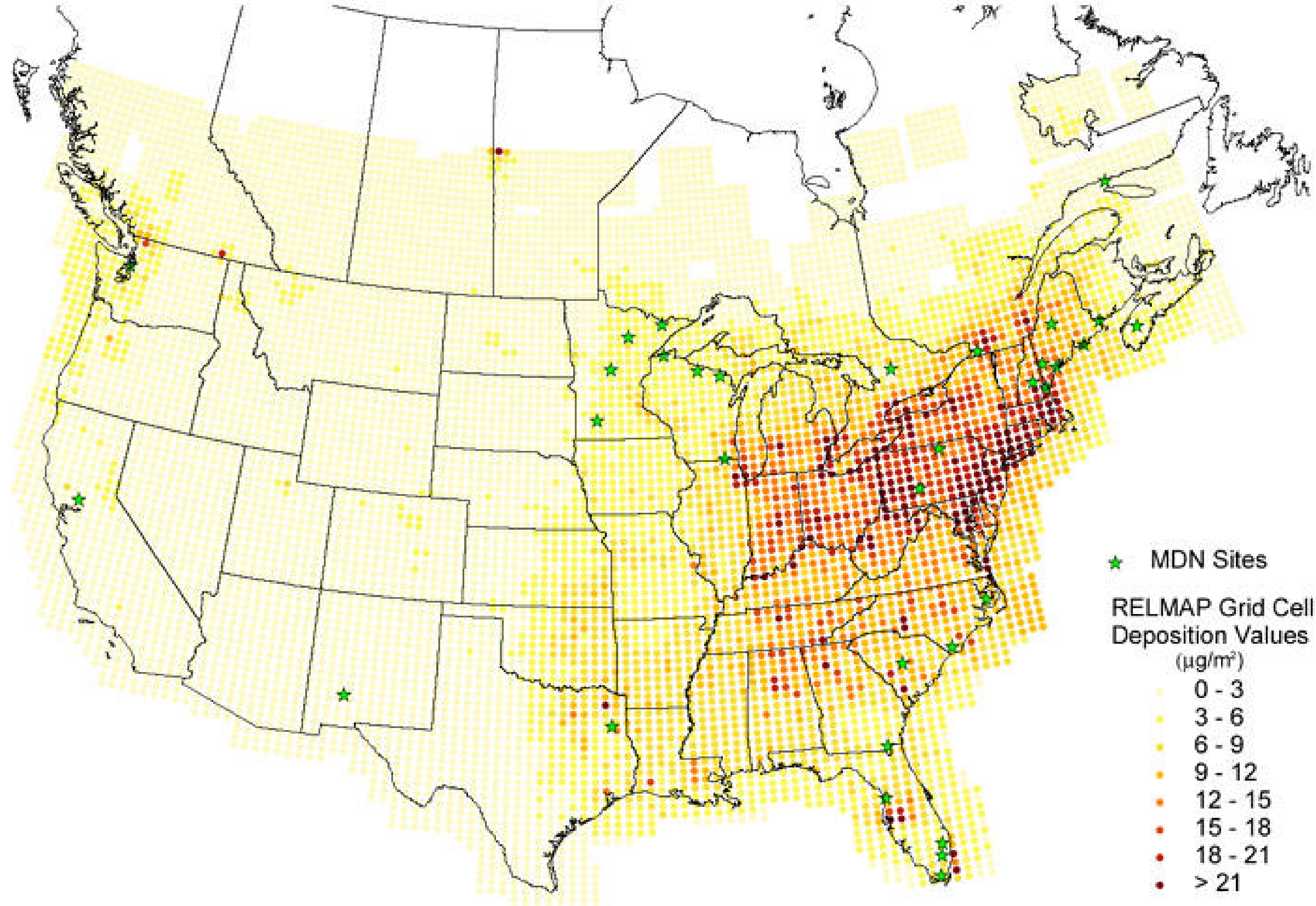



Figure 1. Total mercury deposition simulation for the United States using the Regional Lagrangian Model of Air Pollution (RELMAP)

south, with the most elevated deposition in central and south Florida (U.S. EPA, 1997c). The computer simulations also suggest that about one-third of the United States anthropogenic emissions (approximately 52 tons) are deposited on the lower 48 states; an additional 35 tons of mercury from the global reservoir is also deposited on the lower 48 states bringing the total mercury burden to approximately 87 tons annually. For a detailed description of the mercury deposition modeling effort by EPA, readers are referred to the *Mercury Study Report to Congress: Volume III, Fate and Transport of Mercury in the Environment* (U.S. EPA, 1997c).

When atmospheric mercury is deposited on aquatic and terrestrial ecosystems, biological transformations occur that produce methylmercury. The bioaccumulation of methylmercury by aquatic organisms, such as clams, crayfish, plankton, etc., and their consumption by fish and small mammals is the primary mechanism by which methylmercury enters the food web. Because of the bioaccumulation effects of methylmercury, the concentration of methylmercury in fish may be several orders of magnitude higher than the concentrations in the aquatic ecosystem inhabited by the fish. The consumption of contaminated fish by both humans and wildlife (e.g., loons, ducks, eagles, otters, mink, etc.) is the primarily means by which mercury enters organisms at the top of the food chain. For a detailed discussion on the fate and transport of mercury in the environment, readers are referred to the *Mercury Study Report to Congress, Volume III* (U.S. EPA, 1997c); for an assessment of the ecological and human health effects, refer to *Volume V* and *Volume VI* (U.S. EPA, 1997d and 1997e, respectively).

**Environmental Concerns**

Methylmercury is know to be toxic to humans causing permanent damage to the brain and kidneys. Developing nervous systems in both humans and animals are particularly volnerable to methyl-mercury exposure. Consequently, pregnant women and young children are particularly sensitive and are at greatest risk to exposure. Chronic, low-dose prenatal methylmercury exposure from maternal consumption of fish has been associated with subtle neurotoxicity problems, such as poor performance on neurobehavioral tests, particularly tests of attention, fine-motor function, language, visual-spatial abilities and verbal memory (National Research Council, 2000). The most severe effects of mercury contamination reported in adults from high dose exposure in Japan and Iraq include mental retardation, cerebral palsy, deafness, blindness, and dysarthria (National Research Council, 2000). Because of the potential risks to humans, particularly pregnant women and young children, forty states in the United States and seven Canadian Provinces have issued mercury fish advisories for some water bodies located in their boundaries including coastal waters in the Gulf of Mexico (Figure 2). Superimposed upon Figure 2 are the 1999 volume-weighted average mercury concentrations (upper figure) and estimated wet depositions (lower figure) for all MDN sites that met the network data completeness criteria. Despite the number of advisories, based on an analysis of dietary surveys reported in the *Mercury Study Report to Congress* (U.S. EPA, 1997d), typical fish consumers in the U.S. are not in danger of ingesting harmful levels of methylmercury as reflected by the relatively low amounts of fish consumed by the typical U.S. citizen.

The impacts on wildlife (fish, birds, and fur-bearing mammals) from exposure to methylmercury are described in detail in the *Mercury Study Report to Congress, Volume IV*: *An Assessment of Exposure*

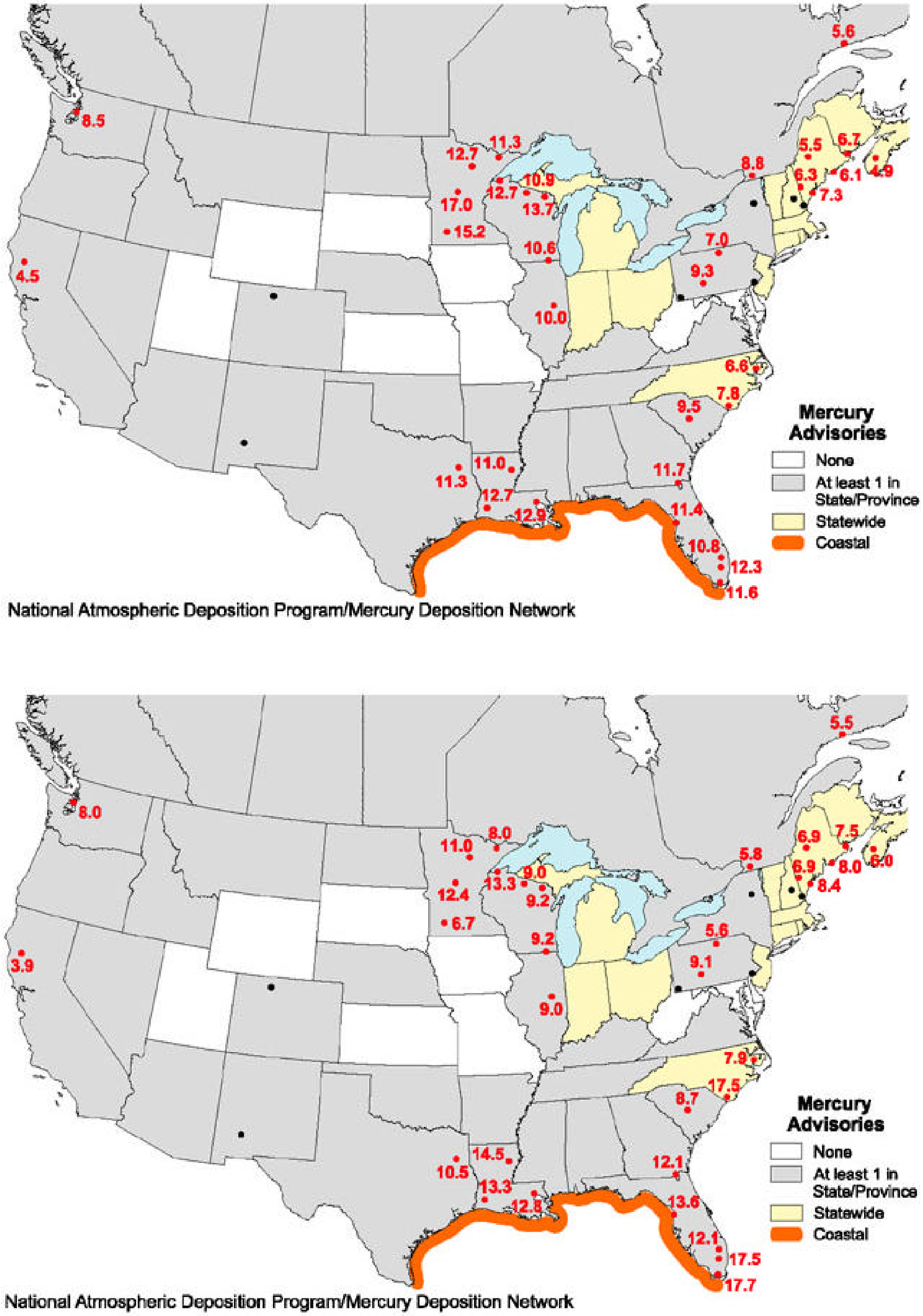



Figure 2. Mercury advisories for surface waters in the United States and southern Canada. Volume-weighted mean mercury concentrations (top) and estimated wet depositions (bottom) for 1999 are show for all Mercury Deposition Network sites that met data completeness criteria.

*to Mercury in the United States* (U.S. EPA, 1997d). Like human impacts, mercury toxicity in wildlife is related to the consumption of bioaccumulated mercury in less complex organisms within their food web. Overall, wildlife (e.g., fish, birds, and fur-bearing mammals) appear to be more susceptible to mercury effects when they are located in ecosystems that experience high levels of deposition, inhabit ecosystems already impacted by acidic deposition or have characteristics other than low pH that result in high levels of mercury bioaccumulation in aquatic biota, and are species that are likely to experience high levels of exposure because of their feeding preferences (U.S. EPA, 2000a). Fish toxicity is highly variable and dependent on species, size, life stage, and age along with a number of environmental factors. The effects of methylmercury may result in death, reduced reproduction, impaired growth and development, behavioral abnormalities, altered blood chemistry, reduced feeding rates and predatory success, and altered oxygen exchange. Some signs of acute mercury poisoning are represented by emaciation, brain lesions, cataracts, and an inability to capture food. Evidence suggests that effects can be detected in water concentrations between 0.1 and 1.0 microgram per liter (µg/L) for some species. Symptoms of mercury poisoning in birds include muscular in-coordination, falling, slowness, fluffed feathers, calmness, hyperactivity, hypoactivity, and drooping eyelids. Liver and kidney damage, neurobehavior effects, reduced food consumption, weight loss, spinal cord damage, reduced cardiovascular function, and impaired growth and development have also been reported. Impacts on fur-bearing mammals, such as mink and otter, are less well known due to the limited number of studies and confounding effects of other stressors, such as habitat fragmentation and inbreeding (U.S. EPA, 2000a).

In the *Mercury Study Report to Congress,* (U.S. EPA, 1997a) EPA found that "a plausible link exists between past and present, human-induced atmospheric emissions of mercury in the United States and increased concentrations of mercury that have been found in the environment and in freshwater fish". However, EPA goes on to say that an apportionment between mercury sources and mercury in environmental media and biota cannot be described in quantitative terms with the current scientific understanding of the environmental fate and transport of the pollutant. Based on modeled mercury deposition estimates (Figure 1) and the number and location of mercury fish advisories in the United States and Canada (Figure 2), the problem appears to be most severe in the Great Lakes and Northeast regions of the United States, in the Canadian Maritime Provinces, and in South Florida. Many lakes and streams in these areas contain fish with mercury levels above state (0.5 to 1.0 mg/L) and U.S. Food and Drug Administration (1.0 mg/L) action levels for human consumption (U.S. EPA, 1997).

## The Mercury Deposition Network

The Mercury Deposition Network (MDN), coordinated through the National Atmospheric Deposition Program (NADP), was designed to study and quantify spatial and temporal trends in the deposition and fate of mercury in the atmosphere. The NADP began monitoring trace chemicals in precipitation at 18 sites in 1978 in order to describe and study "acid rain" related problems. It has since grown to a network of more than 240 sites throughout the United States and Canada. (For more information on the NADP is available at http://nadp.sws.uiuc.edu ). In 1995, following a year of field testing (Vermette et al., 1995), the NADP began "transition phase" mercury monitoring at 17 sites in preparation for the acceptance of the MDN into NADP, which occurred in January1996. Between 1996 and January 2003 the MDN has grown to approximately 73 active sites in the USA and Canada; an additional 12 sites are proposed (Figure 3). Mercury deposition data from MDN will be an important input to atmospheric and multi-media models designed to assess the fate and consequences of mercury emissions and will provide feedback to better assess trends in mercury deposition. Plans are to continue operation of the MDN for at least ten years. Thus, the MDN database will be particularly useful in the evaluation of the effectiveness of EPA mandated controls on mercury emissions to the atmosphere (U.S. EPA, 2000a). This report summaries the results of mercury monitoring at seven MDN sites located in Pennsylvania through March 2002. The results are compared to similar data collected at selected MDN sites throughout the United States and southern Canada.

**Network Design and Operation**

Both wet and dry deposition are important processes for the movement of mercury from the atmosphere to land and water surfaces. The Mercury Deposition Network (MDN) is a wet deposition network and does not attempt to measure dry deposition of mercury. The main reason for this is that dry deposition methods are based on indirect measurements that are largely experimental and difficult to implement at isolated sites using personnel with a wide variety of backgrounds. Wet deposition measurements, on the other hand, are based on direct collection techniques that use standardized methods and equipment that are relatively easy to implement and operate at remote sites. Although dry deposition of mercury is very important in terrestrial systems (Lindberg et al., 1992) other studies have estimated that wet deposition is the most important atmospheric process for the movement of mercury to water bodies (Lamborg et al., 1995; Mason et al., 1997; Scherbatskoy et al., 1997). Since the primary environmental problems associated with mercury deposition are fish contamination and human health risks associated with consumption of contaminated fish (U.S. EPA 1997), wet deposition is probably the most important atmospheric deposition process for assessing mercury's environmental and human health impacts.

**Sampling Site Locations**

Sites in the MDN are designed to evaluate regional concentration and wet deposition patterns of total mercury in precipitation. They are selected using an established set of siting criteria (Bloom and Crecelius, 1983). Most of the sites are in rural areas at least 10 to 20 kilometers from major air pollution sources and at least 100 meters from local sources. Most sites are in open, grass-covered areas well away from overhanging vegetation and buildings. About half of the MDN sites are collocated with NADP acidic deposition collectors. The location of active and proposed (as of December 2002) MDN sites are shown in Figure 3. Site names and descriptions are available on the NADP web site: (http://nadp.sws.uiuc.edu). Eight sites were in operation in Pennsylvania as of January 2003 (Table 1). These sites are located in Tioga County (PA90) near Wellsboro, in Cambria County (PA13) near Cresson, in Erie County (PA30) near Erie, in Greene County (PA37) near Holbrook, in Adams County (PA00) near Arendtsville, in Montgomery County (PA60) near Valley Forge, in Pike County (PA72) near Milford and in Lancaster County (PA47) near Millersville

## National Atmospheric Deposition Program
## Mercury Deposition Network

**December 31, 2002**


Figure 3. Location of active and proposed Mercury Deposition Network sites in the United States and southern Canada as of January 2003.

Table 1. The location of Mercury Deposition Network (MDN) sites in Pennsylvania as of February 2003.

| Site | Latitude | Longitude | County | Elevation (meters) | Sampling Started |
|---|---|---|---|---|---|
| PA00 | 39° 55′ 23 | 77° 18′ 28″ | Adams | 269 | 11/16/20 |
| PA13 | 40° 27′ 00″ | 78° 33′ 00″ | Cambria | 739 | 01/07/97 |
| PA30 | 42° 09′ 21″ | 80° 06′ 48″ | Erie | 580 | 06/20/99 |
| PA37 | 39° 48′ 58″ | 80° 17′ 06″ | Greene | 1140 | 05/11/99 |
| PA47 | 39° 59' 40″ | 76° 23′ 11″ | Lancaster | 85 | 11/21/02 |
| PA60 | 40° 07′ 00″ | 75° 53′ 00″ | Montgomery | 49 | 11/23/99 |
| PA72 | 41° 19′ 00″ | 74° 50′ 00″ | Pike | 212 | 09/15/00 |
| PA90 | 41° 48′ 00″ | 77° 11′ 00″ | Tioga | 476 | 03/01/97 |

The latitude, longitude, elevation, and the date sampling was initiated at each of the Pennsylvania MDN sites are given in Table 1. Seven of the Pennsylvania sites are supported by The Pennsylvania Department of Environmental Protection, Bureau of Air Quality Control in cooperation with the Pennsylvania Bureau of State Parks (PA30 and PA90), The National Park Service (PA13 and PA60), The U.S. Forest Service, Northeast Forest Experiment Station (PA72), The Pennsylvania State University, Fruit Research and Extension Center (PA00) and Millersville University (PA47). The eighth Pennsylvania site (PA37) is supported by The U.S. Department of Energy/Federal Energy Technology Center and is operated by Advanced Technology Systems, Inc.

**Sampling Methods**

In establishing the MDN, The National Atmospheric Deposition Program (NADP) has sought to ensure uniformity in commitment, in sampling protocols, and in analytical techniques and procedures. These are the ingredients essential to a successful network design and operation. To this end the NADP/MDN monitoring program has designated specific precipitation collection equipment to be used throughout the network which allows precipitation to be recorded, collected and verified. A strict weekly sampling protocol and a clear definition of sample types further makes comparisons between sites possible.

A modified Aerochem Metrics Model 301 Automatic Sensing Wet/Dry Precipitation Collector used in the NADP/MDN was designed to sample precipitation for mercury and (potentially) other trace metals, simultaneously. Modifications include the downsizing of the original orifice to a 128 mm diameter and the addition of a second wet-side orifice of the same diameter. The two wet-side orifices (a glass sampling train for mercury collection and a Teflon or Polyethylene/Teflon sampling train for the collection of other metals) allows for the simultaneous sampling for total mercury and other metals. *If not needed, the precipitation collected in the second orifice drains out the bottom of the collector.* The mercury sampling train is designed so that the sample will contact only glass surfaces to minimize contamination. Precipitation is caught in a glass funnel and stored in a two-liter glass bottle, previously charged with 20 mL of dilute hydrochloric acid (0.12 M) used as a preservative. This is sufficient acid to maintain a pH of less than 2 in the sample bottle to prevent microbial action.  The two-liter bottle holds a maximum volume equivalent to 12.7 cm (five inches) of precipitation. The sampling train for total mercury consists of a 124 mm (inner diameter) borosilicate glass funnel, a thin (3 mm inner diameter) capillary tube, and a 2-liter borosilicate glass bottle. Even though connections between the funnel and the capillary tube and between the capillary tube and the sample bottle are not air tight, the sampling train effectively inhibits evaporation during the weekly sampling period.  Additional modifications include: Teflon-coated lid supports and Teflon-wrapped lid sealing foam pads; flexible sleeves at the base of the lid arms; an insulated enclosure around the collector base; and a thermostatically controlled heater and fan to maintain a given temperature range within the enclosure and to melt snow collected in the funnels.

**Sample Types**

Between precipitation events the mercury wet deposition sampling train is covered by a motor-activated lid. When precipitation occurs, a sensor activates the motor which moves the lid from the wet deposition side to a dry-side plastic bucket. In the discussion that follows, samples will be referred to as ***Wet-Side*** for the mercury deposition samples or ***Dry-Side*** for the dry-side bucket. Material collected in the dry-side bucket are not analyzed by MDN. Definitions of sample types are as follows:

> ***Wet-Deposition-Only Sample:*** A Wet-Side sample that has been exposed only to precipitation and that has been protected from dry-fall during rain-free periods. Dry deposition exposures of less than 6 hours in any sampling period and less than 30 minutes at the end of any single event are considered insignificant. This is the type of sample normally collected in MDN.
>
> ***Bulk Sample***: A Wet-Side sample that has been exposed continuously to both wet and dry deposition for the entire sampling period. This can occur when the sampler motor fails and the lid is "stuck" in the open position for the whole sampling period.
>
> ***Undefined Sample***: Any Wet-Side sample that does not meet one of the above definitions *(i.e.* part-week or unknown duration of exposure to dry deposition).

Field operators receive a pre-cleaned sampling train each week. Every Tuesday, the exposed sampling train is removed and returned to the Mercury Analytical Lab at Frontier Geosciences, Inc., Seattle, WA, along with the sample bottle containing any collected precipitation. All operators wear plastic gloves when handling the sampling train and follow special procedures to avoid contaminating the sample. Any overflow from the bottle is collected and measured but is not included with the sample sent to the lab. Each site is also equipped with a Belfort weighing-bucket rain gauge (Belfort Instruments, Baltimore, MD) that provides a weekly chart with rainfall amounts and distribution. MND sites in Pennsylvania that are supported by the Bureau of Air Quality Control are also equipped with standard non-recording funnel-type rain gauges. Rainfall increments as small as one mm can be measured. The recording rain gauge has an "event recorder" that marks the chart each time the lid on the Aerochem Metrics sampler opens and closes. This indicates whether the sampler was properly open during wet periods and closed during dry periods. The precipitation amount measured by the recording rain gauge is used to calculate wet deposition. If no rain gauge chart is available, the volume from the non-recording gage is used as a back-up. In the unlikely event that volume measurements from both rain gauges are not available, the "bottle catch" rainfall amount is used as a substitute.

## Glassware Preparation

Precipitation samples are collected and stored in 1-liter borosilicate glass bottles with Teflon-lined, phenolic resin caps. Initial cleaning is by heating to 70 °C for 48 hours in 4 M HCL, followed by a thorough rinsing in low-Hg (< 1 ng/L) distilled deionized water (DDW). The caps are cleaned by soaking for 48 hours in 0.1 M HCL at room temperature. Before use, bottles are filled with DDW containing 5 mL of BrCl in concentrated HCL, capped, and placed in a low-Hg (< 15 ng/$m^2$), Class-100 clean air station for 24 hours. Bottles are then emptied, thoroughly rinsed with DDW, and allowed to dry for several hours in the clean air station. Each bottle receives 20 ± 0.5 mL of 0.12 M HCL (Hg < 0.5 ng/L), and the lids are tightly fastened. While still at the clean air station, the bottles are enclosed in new polyethylene bags and packed into polyethylene foam-lined shipping containers.

The funnels and capillary tubes are cleaned by rinsing in nitric acid ($HNO_{3)}$ followed by rinsing in DDW. The openings to the funnel and tube are wrapped in aluminum foil and the glassware placed in a muffle furnace at 500 °C for 4 hours. After cooling, the aluminum foil is sealed around the openings. The funnel and capillary tube are placed in separate new polyethylene bags and packed in the shipping container.

## Laboratory Analysis

Every precipitation sample collected by the MDN is analyzed at a single laboratory, the Mercury Analytical Laboratory (HAL) operated by Frontier Geosciences, Inc., Seattle, WA, for total mercury and methylmercury if desired by a site sponsor. The analytical methods used are those given in U.S. EPA Method 1631 and are described in detail by Liang and Bloom (1993). Briefly, upon arrival at the laboratory, the bottles are unpacked in a clean air station and low-Hg (< 0.05 ng/mL), 0.2 N BrCl in HCL reagent is added to each bottle to give a final concentration of 1%. This reagent oxidizes all of the Hg present in the sample to Hg(ll). The caps are replaced, and the bottles are shaken for at least four hours to remove adsorbed Hg from the bottle walls and to fully oxidize any suspended particles. Weighed sample aliquots (50-100 mL) are poured into 125 mL Teflon bottles prior to analysis. Two-hundred mL of 20% hydroxylamine-hydrochloride is added to each aliquot to eliminate free halogens; the aliquot is then poured into a purge vessel. To reduce the Hg(ll) back to Hg°, 300 µL of 25% $SnCl_2$ are added, and the sample is purged with ultra-pure nitrogen onto a gold-coated, silica trap. The traps are then analyzed for Hg by thermal desorption, dual gold trap amalgamation, and cold vapor atomic fluorescence. Peaks are quantified by peak height. The method detection limit for a 100 mL sample is about 0.1 ng/L (3 standard deviations of the reagent blanks).

### The Standard Sampling Period

The sampling period is the interval between sampling train installation and sampling train removal. Typically, samples accumulate for one week. The sampling train is removed from the collector and replaced at or about 9 AM (0900 local time) each Tuesday. If it is raining or snowing at collection time the sampling train is changed after the precipitation stops, but in no case later than midnight on Tuesday. The wet-side sampling train is replaced weekly and sent to the HAL, even if no precipitation was collected during the sampling period. This standard sampling protocol results in 52 (53 some years) samples submitted for analysis per year.

### Quality Assurance Samples

Quality assurance samples include: ***travel blanks, field blanks, and system blanks***. The ***travel blanks*** are bottles, which are shipped with the regular sampling train and stored unopened in the enclosure during the sample period. They are returned to HAL unopened after the specified period. ***Field blanks*** are samples from dry weeks where all equipment has operated perfectly and there is no indication of precipitation. In other words, the sampler is operating properly on inspection, the enclosure temperature is in the proper range, and the rain gauge and event recorder worked properly and showed no indication of any precipitation. Even a single trace event disqualifies a sample from being a ***field blank***.

About once a year, site operators receive a 500 mL bottle labeled ***system blank*** containing pre-analyzed deionized water. This bottle is stored in the enclosure until a dry week occurs. At the end of the next sampling period with no precipitation, the operator opens the lid by wetting the sensor. The operator then pours half of the deionized water from the 500 mL bottle into the funnel in circular motions, wetting the sides of the funnel. The rinse water goes into the sample bottle. The sampling train and sample bottle are then collected according to the procedures for weekly sampling. The 500 mL bottle with the unused portion of the rinse water is capped and returned to HAL in the sample cooler with the sample bottle and sampling train.

### Data Completeness Criteria

NADP/MDN criteria for data completeness include the following: 1) at least 75% of the year (or other summary period) is represented by valid samples; 2) there must be information on precipitation amount for at least 90% of the year; 3) there must be valid samples representing at least 75% of the precipitation amount for the year; and, 4) total precipitation measured from the sample volume (bottle catch) must be at least 75% of the amount measured by the rain gage for the year. Data completeness criteria are used to assure uniformity in the comparison of data collected at all MDN sites.

**Summary Periods**

Total mercury concentrations and depositions are summarized into annual and seasonal periods. Annual summaries are presented for each calendar year (January-December) as well as each climatic year (December-November) since mercury monitoring began in Pennsylvania in 1997. Seasonal periods are defined as Winter (December-February), Spring (March-May), Summer (June-August) and Fall (September-November). These seasons were selected because they closely match seasonal climatic patterns observed in Pennsylvania. Although eight MDN sites were in operation in Pennsylvania as of January 2003 (Figure 3, Table 1), concentration and wet deposition estimates are included in this report for only seven sites (PA00, PA13, PA30, PA37, PA60, PA72 and PA90). As indicated in Table 1, sampling at PA47 was initiated November 21, 2002 and thus was not included in this report.

## RESULTS AND DISCUSSION

A maximum of 52 samples (some years 53) can be collected at each MDN site during the course of a year. In 2001, a maximum of 364 precipitation samples could have been collected at all MDN sites in Pennsylvania assuming each site collected 52 samples. The actual number of samples collected was 359 (Table 2). The five missing weekly samples were included in composite multiple-week sampling periods at PA00, PA30, and PA60. Of the 359 samples that were collected and shipped to the water quality lab at Frontier Geosciences in Seattle, WA, six samples were lost or destroyed in shipment. Twenty-four of the sampling periods contained no precipitation, while 10 weekly samples contained trace amounts of precipitation with insufficient volume to permit analysis. Thus, only 319 samples arrived at the lab with sufficient volume for analysis. Of these samples, 33 contained debris or other foreign matter that contaminated the samples. These samples were discarded. As a result, the number of valid wet samples analyzed for total mercury concentrations in Pennsylvania in 2001 was 286 (Table 2). The results of these weekly analyses as well as those from all MDN sites in Pennsylvania since the initiation of sampling through March 2002 are summarized in Appendix I. Mean annual volume-weighted concentrations and annual wet deposition estimates for 1997 through 2000 for all MDN sites in the United State and Canada are summarized in Appendix II. Weekly concentrations and wet deposition estimates for all MDN sites are available over the internet at http://nadp.sws.uiuc.edu/nadpdata/mdn.

The following discussion of mercury concentrations and wet deposition estimates in Pennsylvania has, for the most part, been limited to data collected in 2001, a period when seven sites were in

Table 2. Annual summary of weekly sampling periods indicating the number and distribution of sample types and quality at each Mercury Deposition Network site in Pennsylvania.

| Site/ Year | No. Samples Collected | No. Samples Without Precipitation | No. Trace Samples | | No. Samples Contaminated | No. Samples Missing | Total Number Valid Samples | Total Amount of Precipitation | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Analyzed | Not Analyzed | | | | Collected | With Analysis |
| | | | | | | | | ------------- mm------------- | |
| **PA00** | | | | | | | | | |
| 2001 | 51 | 6 | 0 | 4 | 2 | 0 | 39 | 591.3 | 564.7 |
| **PA13** | | | | | | | | | |
| 1997 | 51 | 4 | 0 | 0 | 0 | 0 | 47 | 1181.9 | 1181.9 |
| 1998 | 52 | 1 | 1 | 0 | 0 | 0 | 51 | 959.9 | 959.9 |
| 1999 | 52 | 5 | 1 | 1 | 1 | 0 | 45 | 981.5 | 977.2 |
| 2000 | 53 | 3 | 0 | 0 | 8 | 0 | 42 | 891.4 | 818.2 |
| 2001 | 52 | 2 | 1 | 1 | 6 | 1 | 42 | 817.7 | 779.3 |
| **PA30** | | | | | | | | | |
| 2000[1] | 28 | 1 | 0 | 0 | 0 | 1 | 26 | 539.7 | 539.7 |
| 2001 | 49 | 2 | 1 | 0 | 5 | 4 | 38 | 730.3 | 660.1 |
| **PA37** | | | | | | | | | |
| 1999[1] | 31 | 4 | 2 | 0 | 0 | 0 | 27 | 493.7 | 492.7 |
| 2000 | 53 | 3 | 1 | 2 | 1 | 0 | 47 | 812.6 | 803.2 |
| 2001 | 52 | 0 | 1 | 1 | 2 | 1 | 48 | 904.7 | 900.4 |
| **PA60** | | | | | | | | | |
| 2000 | 53 | 7 | 1 | 0 | 0 | 0 | 46 | 1178.5 | 1172.4 |
| 2001 | 51 | 7 | 3 | 2 | 5 | 0 | 37 | 752.0 | 728.2 |
| **PA72** | | | | | | | | | |
| 2000[1] | 16 | 0 | 1 | 0 | 2 | 0 | 14 | 288.7 | 263.4 |
| 2001 | 52 | 6 | 0 | 0 | 1 | 0 | 45 | 862.4 | 862.4 |
| **PA90** | | | | | | | | | |
| 1997 | 51 | 2 | 0 | 1 | 0 | 1 | 47 | 755.4 | 720.8 |
| 1998 | 52 | 1 | 0 | 0 | 1 | 0 | 50 | 820.3 | 773.8 |
| 1999 | 52 | 6 | 0 | 0 | 4 | 0 | 42 | 800.0 | 774.5 |
| 2000 | 53 | 3 | 0 | 1 | 12 | 0 | 37 | 763.0 | 623.8 |
| 2001 | 52 | 1 | 1 | 2 | 12 | 0 | 37 | 739.4 | 644.1 |
| **TOTAL** | | | | | | | | | |
| 2001 | 359 | 24 | 7 | 10 | 33 | 6 | 286 | ------ | ------ |

[1]Sampling conducted at this site for less than one year.

operation across Pennsylvania for the entire year thus providing the greatest opportunity to assess spatial patterns across the Commonwealth. Seasonal variations at these sites will also be discussed. Discussion of long-term temporal patterns will be limited to the Hills Creek (PA90) and Cressen Mountain (PA13) sites both of which have been in operation since 1997. At present insufficient data exist for any meaningful statistical analyses of spatial and temporal patterns in mercury concentrations and depositions in Pennsylvania.

**Total Mercury Concentrations**

Weekly concentrations of total mercury in precipitation in 2001 at seven Pennsylvania MDN sites ranged from 1.4 ng/L to 159.0 ng/L. Both the maximum and minimum mercury concentration were measured at the PA30 site near Erie (Table 3). In comparison to the historical record at all Pennsylvania sites, the maximum concentration in 2001 was the highest concentration recorded to date. The highest concentration measured in the United States and Canada in 2001 was 397.0 ng/L. The next highest weekly maximum concentration measured in Pennsylvania since monitoring began was 124.1 ng/L. This samples was also collected in 2001 at the Cresson Mountain site (PA13) in Cambria County. Maximum concentrations in other years ranged from 25.4 ng/L at the Cresson Mountain site in 2000 to 69.9 ng/L at the Hills Creek site (PA90) in Tioga County in 1997 (Table 3). Minimum weekly concentrations are generally in the 2 ng/L to 3 ng/L range at all sites for most years of observations (Table 3). Obviously total mercury concentrations in Pennsylvania are highly variable from one week to the next as well as from site to site.

Mean annual and seasonal volume-weighted concentrations of total mercury based on weekly precipitation samples collected at MDN sites in Pennsylvania from 1997 through March 2002 are shown in Table 4. Annual means are presented for each calendar year (January through December) as well as each climatic year (December through November). The calendar year volume-weighted mean annul concentrations for all MDN sites in the United States and Canada that met the 75% data completeness criterion for 2001 are shown in Figure 4. The 2001 calendar year mean concentrations in Pennsylvania varied from 6.6 ng/L at the Hills Creek site (PA90) in Tioga County to 14.3 ng/L at the Cresson Mountain site (PA13) in Cambria County (Table 4). The mean annual concentration at Hills Creek is one of only 10 sites in the United States and Canada with an annual concentration mean below 7 ng/L. Most of these sites are located in New England and Eastern Canada (Figure 4). In contrast, the volume-weighted mean annual concentration at PA13 was the second high annual mean reported in the United States and Canada in 2001. The highest mean annual concentration was recorded at a New Mexico site (NM10). The New Mexico site is a high elevation site in the arid southwest that received approximately 175 mm of precipitation in 2001 compared to more than 800 mm of precipitation at the Cresson Mountain site (Table 3). Despite the differences in mean annual mercury concentrations between the Cresson Mountain and Hills Creek sites, there does not appear to be any consistent spatial pattern across the state in 2001. The mean annual concentration (11.12 ng/L) at the Montgomery County site near Valley Forge (PA60) was higher than the mean annual concentration at either PA30 near Erie (10.0 ng/L) or at the Holbrook (PA37) site (9.9 ng/L) both

Table 3. Maximum and minimum weekly mercury concentrations (ng/L) and wet depositions ($ng/m^2$) at seven MDN sites in Pennsylvania. Values are listed for each site that was in operation for a complete calendar year starting in 1997.

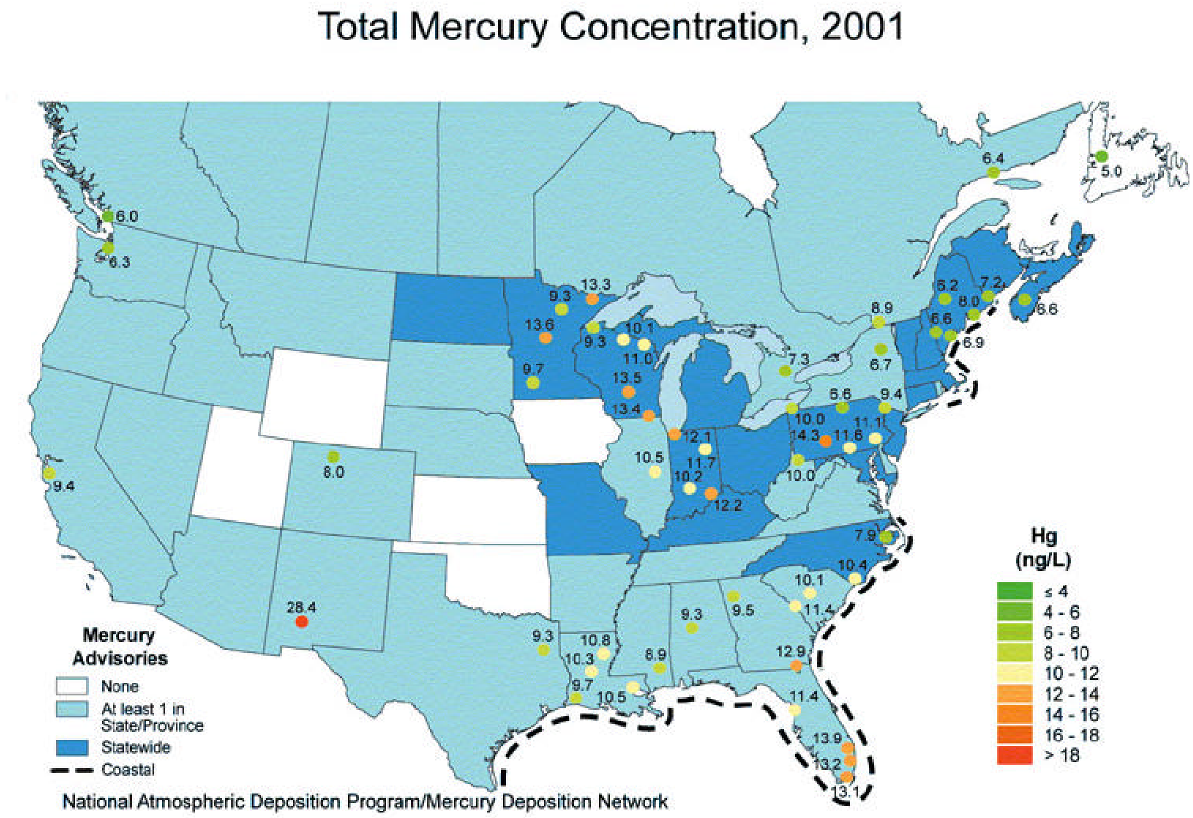
| Site/Year | Weekly Mercury Concentrations (ng/L) Maximum | Weekly Mercury Concentrations (ng/L) Minimum | WeeklyWet Mercury Deposition ($ng/m^2$) Maximum | WeeklyWet Mercury Deposition ($ng/m^2$) Minimum |
|---|---|---|---|---|
| **PA00** | | | | |
| 2001 | 63.8 | 2.7 | 487.3 | 16.8 |
| **PA13** | | | | |
| 1997 | 48.5 | 2.2 | 879.6 | 5.0 |
| 1998 | 50.6 | 2.8 | 723.3 | 4.6 |
| 1999 | 55.4 | 2.2 | 762.8 | 20.9 |
| 2000 | 25.4 | 3.1 | 548.0 | 24.2 |
| 2001 | 124.1 | 3.1 | 3183.7 | 13.7 |
| **PA30** | | | | |
| 2001 | 159.0 | 1.4 | 583.6 | 7.7 |
| **PA37** | | | | |
| 2000 | 62.6 | 2.1 | 715.3 | 9.3 |
| 2001 | 35.6 | 1.9 | 632.8 | 4.8 |
| **PA60** | | | | |
| 2000 | 154.7 | 2.8 | 1235.2 | 16.4 |
| 2001 | 44.2 | 2.1 | 875.4 | 7.7 |
| **PA72** | | | | |
| 2001 | 36.5 | 2.6 | 682.8 | 17.0 |
| **PA90** | | | | |
| 1997 | 69.9 | 1.7 | 629.8 | 14.7 |
| 1998 | 40.4 | 0.8 | 654.6 | 1.9 |
| 1999 | 44.0 | 1.7 | 452.8 | 7.2 |
| 2000 | 38.9 | 1.8 | 485.1 | 7.2 |
| 2001 | 56.4 | 1.4 | 474.6 | 18.0 |

of which are located in western Pennsylvania. The annual concentration at the Valley Forge site was also higher than the annual concentration mean (9.4 ng/L) at the Milford site (PA72) in the northeast corner of the state (Table 4, Figure 4). As previously stated, the 2001mean annual concentration at the Cresson Mountain site was the highest concentration recorded to date for any site in Pennsylvania. In fact, the mean was more than 3.0 ng/L higher than any previous annual mean. In contrast, the 2001 mean annual concentration at Hills Creek (PA90) was the

Table 4. Mean annual and seasonal volume-weighted mercury concentrations (ng/L) at seven Mercury Deposition Network sites in Pennsylvania from 1997 through March 2003. Seasonal means were based on weekly samples collected from December-February (Winter), March-May (Spring), June-August (Summer), and September-November (Fall). Annual values are presented for both the traditional calendar year (January-December) and a climatic year (December-November).

| | | Volume-Weighted Mean Concentration (ng/L) | | | | | |
|---|---|---|---|---|---|---|---|
| Site | Season | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
| PA00 | Winter | ----- | ----- | ----- | ----- | 9.77 | 10.19 |
| | Spring | ----- | ----- | ----- | ----- | 10.53 | |
| | Summer | ----- | ----- | ----- | ----- | 16.34 | |
| | Fall | ----- | ----- | ----- | ----- | 6.81 | |
| | Annual[1] | ----- | ----- | ----- | ----- | 10.53 | |
| | Annual[2] | ----- | ----- | ----- | ----- | 10.83 | |
| PA13 | Winter | 10.52 | 6.21 | 6.20 | 8.22 | 7.27 | 7.00 |
| | Spring | 12.65 | 8.66 | 9.70 | 8.76 | 27.97 | |
| | Summer | 11.41 | 14.10 | 14.47 | 12.02 | 12.30 | |
| | Fall | 4.21 | 13.03 | 6.80 | 9.36 | 6.79 | |
| | Annual[1] | 9.02 | 10.32 | 9.41 | 9.53 | 14.71 | |
| | Annual[2] | 9.19 | 10.18 | 9.26 | 9.69 | 14.30 | |
| PA30 | Winter | ----- | ----- | ----- | ----- | 12.26 | 8.79 |
| | Spring | ----- | ----- | ----- | ----- | 8.62 | |
| | Summer | ----- | ----- | ----- | (12.82) | 11.00 | |
| | Fall | ----- | ----- | ----- | 11.99 | 9.75 | |
| | Annual[1] | ----- | ----- | ----- | ----- | 10.17 | |
| | Annual[2] | ----- | ----- | ----- | ----- | 10.00 | |
| PA37 | Winter | ----- | ----- | ----- | 6.11 | 7.40 | 7.66 |
| | Spring | ----- | ----- | ----- | 13.38 | 9.08 | |
| | Summer | ----- | ----- | 15.56 | 12.69 | 11.30 | |
| | Fall | ----- | ----- | 7.97 | 10.92 | 9.90 | |
| | Annual[1] | ----- | ----- | ----- | 11.01 | 9.83 | |
| | Annual[2] | ----- | ----- | ----- | 11.22 | 9.95 | |
| PA60 | Winter | ----- | ----- | ----- | 8.02 | 11.33 | 7.15 |
| | Spring | ----- | ----- | ----- | 11.89 | 10.99 | |
| | Summer | ----- | ----- | ----- | 9.49 | 12.03 | |
| | Fall | ----- | ----- | ----- | 10.58 | 11.89 | |
| | Annual[1] | ----- | ----- | ----- | 10.17 | 11.44 | |
| | Annual[2] | ----- | ----- | ----- | 10.48 | 11.12 | |
| PA72 | Winter | ----- | ----- | ----- | ----- | 7.13 | 8.54 |
| | Spring | ----- | ----- | ----- | ----- | 8.13 | |
| | Summer | ----- | ----- | ----- | ----- | 13.99 | |
| | Fall | ----- | ----- | ----- | (8.89) | 7.05 | |
| | Annual[1] | ----- | ----- | ----- | ----- | 9.10 | |
| | Annual[2] | ----- | ----- | ----- | ----- | 9.38 | |
| PA90 | Winter | ----- | 4.78 | 4.15 | 5.14 | 7.06 | 7.71 |
| | Spring | 10.65 | 9.14 | 7.65 | 7.01 | 6.77 | |
| | Summer | 13.39 | 14.15 | 10.70 | 14.99 | 8.07 | |
| | Fall | 5.10 | 7.96 | 5.39 | 10.19 | 5.28 | |
| | Annual[1] | (9.69) | 9.07 | 7.08 | 9.41 | 6.77 | |
| | Annual[2] | (9.61) | 8.98 | 7.04 | 9.68 | 6.59 | |

Values in parentheses represent incomplete quarterly/annual estimates.
[1]Annual Period (December-November).
[2]Annual Period (January-December).



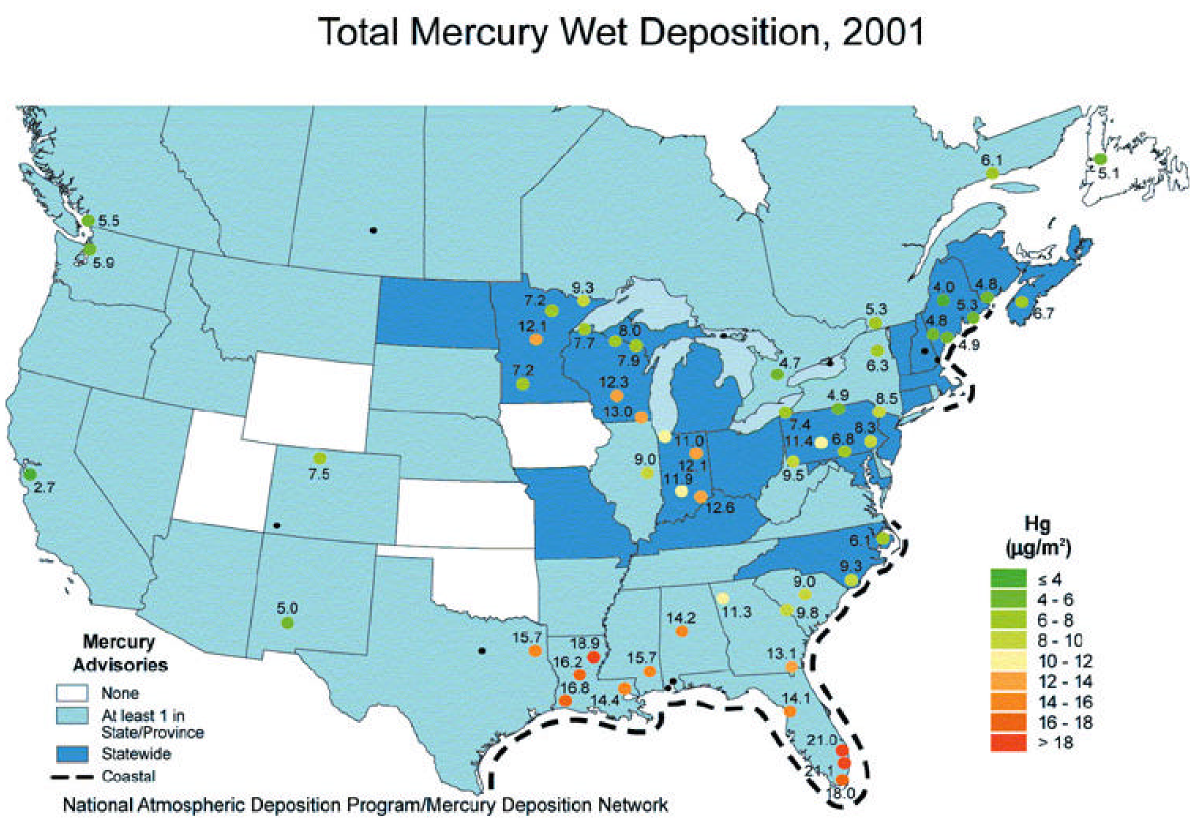




Figure 4. Volume-weighted mean annual total mercury concentrations (ng/L) and estimated wet depositions ( $\mu g/m^2$) at all Mercury Deposition Network sites that met the 75% data completeness criteria in 2001.

lowest annual concentration reported to date in Pennsylvania and more than half the mean annual concentration at the Cresson Mountain site. Such differences between these sites might be expected given the relative location of these sites. The Cresson Mountain site is located relatively close to numerous potential mercury emissions sources in western Pennsylvania. This site is also located on one of the highest peaks in central Pennsylvania and thus is likely influenced by mercury emissions from outside of Pennsylvania. The Hills Creek site on the other hand is located in a relatively remote part of north central Pennsylvania with fewer potential local mercury sources and in a region less likely to be effected by long-range transport processes.

**Estimated Wet Mercury Deposition**

Annual wet deposition estimates of total mercury in the United States and Canada for calendar year 2001 are shown in Figure 4. Annual and seasonal wet deposition estimates for each of the Pennsylvania MDN sites for all years of operation are listed in Table 5. Wet deposition across Pennsylvania in 2001 varied from a low of 4.9 $\mu g/m^2$ at the Hills Creek site (PA90) to 11.4 $\mu g/m^2$. at the Cresson Mountain site (PA13). Mercury deposition at the Hills Creek site was the fifth lowest amount measured in the MDN in 2001 (Figure 5). With the exception of a site in California, all of the low deposition sites are located in the Northeast, primarily New England. In contrast, the highest mercury deposition in Pennsylvania in 2001 was well within the range of values reported across North America and generally comparable to levels reported around the Great Lakes. The highest deposition levels in 2001 were reported in Florida and other Gulf states (Figure 4). The low deposition at Hills Creek was a function of both low mercury concentrations and below average precipitation volumes in 2001. Lower than average precipitation was also a contributing factor at the Cresson Mountain site and likely affected deposition levels in 2001 at the other Pennsylvania MDN sites as well. Wet mercury deposition at the remaining MDN sites in Pennsylvania ranged from 6.7 $\mu g/m^2$ at Arendtsville (PA00) in the south central region to 9.5 $\mu g/m^2$ at the Holbrook (PA37) in extreme southwestern Pennsylvania. Mercury deposition at the two eastern Pennsylvania sites was 8.3 $\mu g/m^2$ and 8.5 $\mu g/m^2$ at Valley Forge (PA60) and Milford (PA72), respectively. Although highly variable across the state, there is no evidence of a consistent deposition pattern. However, the regions of the state with the highest and lowest mercury depositions are consistent with the EPA's RELMAP model results shown in Figure 1, although the amount of deposition that each region of Pennsylvania received is much less than the modeled estimates by EPA.

Individual weekly depositions are highly variable (Table 3). In 2001, the highest weekly mercury deposition (3,183.7 $ng/m^2$ )was measured at the Cresson Mountain site (PA13); the lowest weekly deposition (4.8 $ng/m^2$) was recorded at the Holbrook site (PA37) in south western Pennsylvania (Table 3). Minimum weekly depositions in 2001 were fairly consistent and comparable to minimum deposition levels recorded in previous years of network operation. The maximum weekly deposition level in 2001 was nearly 2.5 times higher than the previous weekly maximum (1,235.2 $ng/m^2$) reported at PA60 (Valley Forge ) in 2000. At the rest of the sites, the maximum weekly deposition estimates are fairly consistent not only with respect to site but also with respect to year as well. For example, at Hills Creek (PA90), weekly maximum depositions have been generally in the upper 400 $ng/m^2$ to lower 600 $ng/m^2$ range since 1997.

Table 5. Seasonal and annual mercury wet depositions (μg/m²) at seven Mercury Deposition Network sites in Pennsylvania from 1997 through March 2003. Seasonal estimates were based on weekly samples collected from December-February (Winter), March-May (Spring), June-August (Summer), and September-November (Fall). Annual values are presented for both the traditional calendar year (January-December) and a climatic year (December-November).

| Site | Season | Seasonal/Annual Wet Mercury Deposition (μg/m²) | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
| PA00 | Winter | ----- | ----- | ----- | ----- | 1.98 | 1.21 |
| | Spring | ----- | ----- | ----- | ----- | 2.46 | |
| | Summer | ----- | ----- | ----- | ----- | 1.79 | |
| | Fall | ----- | ----- | ----- | ----- | 0.96 | |
| | Annual[1] | ----- | ----- | ----- | ----- | 7.23 | |
| | Annual[2] | ----- | ----- | ----- | ----- | 6.70 | |
| PA13 | Winter | (0.93) | 1.23 | 1.20 | 1.25 | 0.94 | 1.18 |
| | Spring | 4.51 | 3.07 | 2.56 | 2.87 | 6.43 | |
| | Summer | 2.95 | 3.40 | 3.55 | 2.66 | 3.19 | |
| | Fall | 1.79 | 1.75 | 1.85 | 1.95 | 1.11 | |
| | Annual[1] | (10.18) | 10.15 | 9.18 | 8.67 | 11.51 | |
| | Annual[2] | (10.87) | 9.77 | 9.09 | 8.96 | 11.42 | |
| PA30 | Winter | ----- | ----- | ----- | ----- | 1.73 | 2.59 |
| | Spring | ----- | ----- | ----- | ----- | 2.03 | |
| | Summer | ----- | ----- | ----- | (3.90) | 1.83 | |
| | Fall | ----- | ----- | ----- | 2.75 | 2.34 | |
| | Annual[1] | ----- | ----- | ----- | ----- | 7.97 | |
| | Annual[2] | ----- | ----- | ----- | ----- | 8.02 | |
| PA37 | Winter | ----- | ----- | ----- | 1.29 | 1.06 | 1.18 |
| | Spring | ----- | ----- | ----- | 3.51 | 2.47 | |
| | Summer | ----- | ----- | 2.81 | 3.34 | 4.18 | |
| | Fall | ----- | ----- | 1.97 | 1.41 | 1.58 | |
| | Annual[1] | ----- | ----- | ----- | 9.53 | 9.29 | |
| | Annual[2] | ----- | ----- | ----- | 9.65 | 9.48 | |
| PA60 | Winter | ----- | ----- | ----- | 1.42 | 2.95 | 1.24 |
| | Spring | ----- | ----- | ----- | 4.01 | 2.90 | |
| | Summer | ----- | ----- | ----- | 3.24 | 2.33 | |
| | Fall | ----- | ----- | ----- | 2.77 | 0.79 | |
| | Annual[1] | ----- | ----- | ----- | 11.76 | 8.50 | |
| | Annual[2] | ----- | ----- | ----- | 12.55 | 9.36 | |
| PA72 | Winter | ----- | ----- | ----- | ----- | 1.87 | 1.16 |
| | Spring | ----- | ----- | ----- | ----- | 2.16 | |
| | Summer | ----- | ----- | ----- | ----- | 3.26 | |
| | Fall | ----- | ----- | ----- | (1.25) | 1.41 | |
| | Annual[1] | ----- | ----- | ----- | ----- | 8.75 | |
| | Annual[2] | ----- | ----- | ----- | ----- | 8.53 | |
| PA90 | Winter | ----- | 0.88 | 0.69 | 0.79 | 0.56 | 0.95 |
| | Spring | 1.99 | 2.76 | 1.40 | 2.03 | 1.28 | |
| | Summer | 3.15 | 2.67 | 2.12 | 3.03 | 1.92 | |
| | Fall | 1.21 | 1.09 | 1.30 | 1.35 | 1.02 | |
| | Annual[1] | (6.96) | 7.69 | 5.58 | 7.31 | 4.92 | |
| | Annual[2] | (7.26) | 7.50 | 5.63 | 7.55 | 4.93 | |

Values in parentheses represent incomplete quarterly/annual estimates.
[1]Annual Period (December-November).
[2]Annual Period (January-December).

### Seasonal Patterns

In Pennsylvania, as well as at most MDN sites in North America and Canada, concentrations of total mercury in precipitation and annual mercury wet deposition estimates in 2001 show a definite seasonal pattern as shown in Figures 5. Average summer (June-August) mercury concentrations for the entire network are generally higher than any other seasonal period and about 1.5 times the concentrations observed during the winter (December-February) period. Mercury deposition is also much higher during the summer than any other season, with nearly three times the amount of deposition occurring during the summer months than during the winter (Figure 5). Higher deposition of mercury in the summer months is a function of both higher concentrations of mercury in rainfall and higher summer rainfall volumes at most sites.

Strong seasonal concentration patterns were also evident at the seven Pennsylvania sites in 2001 (Table 4, Figures 6 and 7). Seasonal concentration patterns are, for the most part, similar to those observed for the network as a whole with the highest seasonal concentrations occurring during the summer months and the lowest concentrations during the winter. However, deviations from this temporal pattern are evident at some of the Pennsylvania sites in 2001 for both concentration (Figures 6 and 7, Table 4) and wet deposition (Figures 6 and 7, Table 5). For example, the lowest seasonal concentrations at PA00 and PA13 occurred during the Fall, not the Winter period. Likewise, the highest season concentrations were reported during the Spring at PA13 and during the Winter at PA30, not the more frequent summer period at most network sites. Part of this variability might be related to differences in the amount and distribution of precipitation on a seasonal basis at the various sites in the state. This may be especially true for 2001 where many regions of the Commonwealth experienced severe drought conditions for at least part of the year.

## Summary

Annual wet deposition of total mercury at 65 MDN sites in the United States and eastern Canada in 2001 ranged from 2.7 µg/m$^2$ in California and 21.1 µg/m$^2$ in Florida (Figure 4). The average annual deposition across all sites in the network was 9.6 µg/m$^2$. Wet mercury deposition in Pennsylvania in 2001 ranged from 11.4 µg/m$^2$ in Cambria County to 4.9 µg/m$^2$ in Tioga County. Wet mercury deposition in Tioga County in 2001 was the fifth lowest amount reported in the United States and Canada that year. Volume-weighted mean annual concentrations of total mercury in precipitation in the United States in 2001 ranged from 6.0 ng/L to 28.4 ng/L. The volume-weighted mean annual mercury concentration measured across the network in 2001 was 13.7 ng/L. The volume-weighted mean concentration of total mercury in Pennsylvania ranged from 6.6 ng/L in Tioga County to 14.3 ng/L in Cambria County. Mercury concentrations and wet deposition estimates in the United States in 2001 were similar, although somewhat higher to the values reported since 1997 (see Appendix II). Although some differences are evident, these differences can be attributed to an annual increase in new MDN sites and to fluctuations in precipitation volumes within and between regions. In general, mercury concentrations and wet depositions were lowest in New

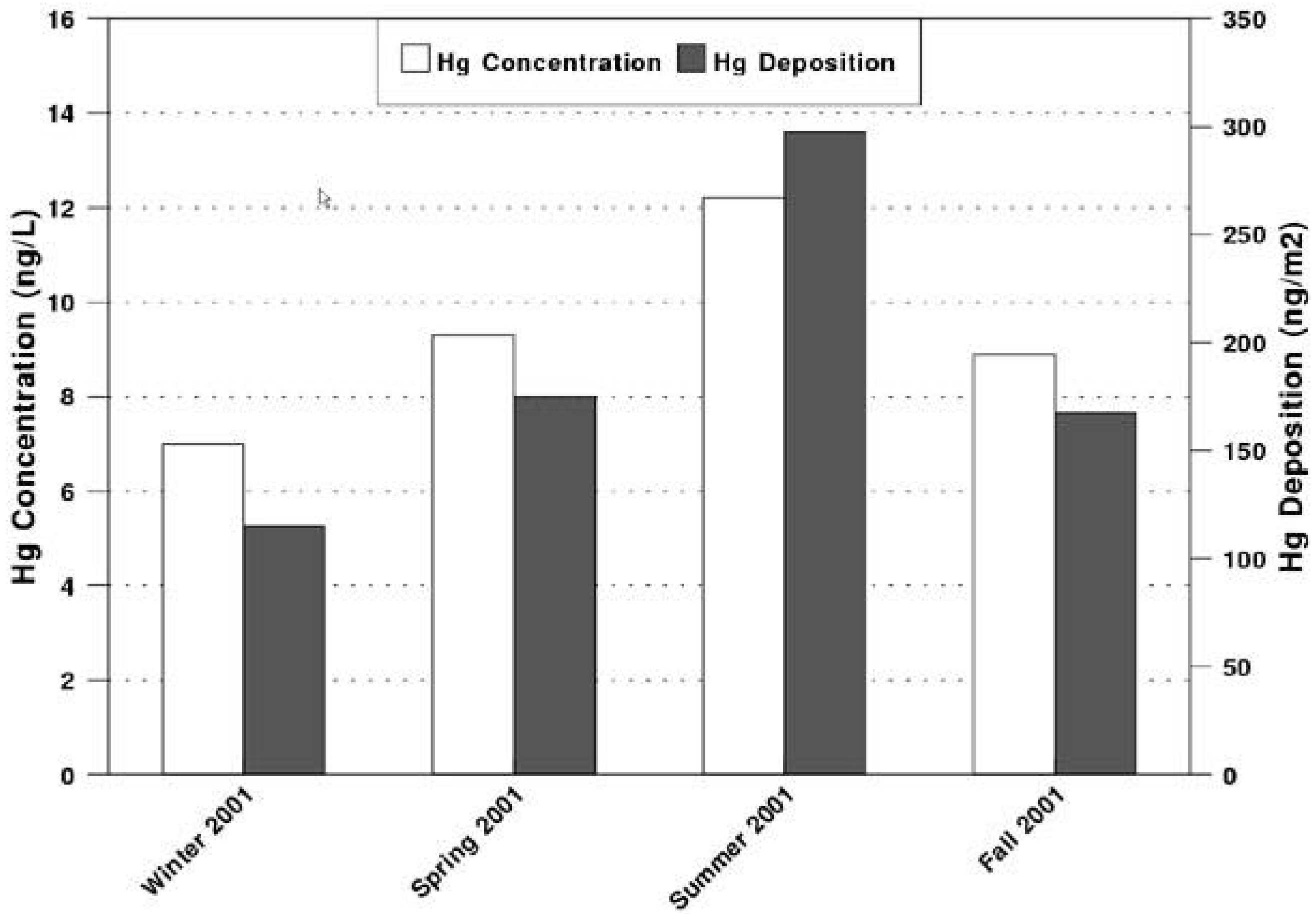



Figure 5. Average seasonal variations in total mercury concentrations (ng/L) and wet deposition ($\mu g/m^2$) at Mercury Deposition Network sites in North America during 2001.

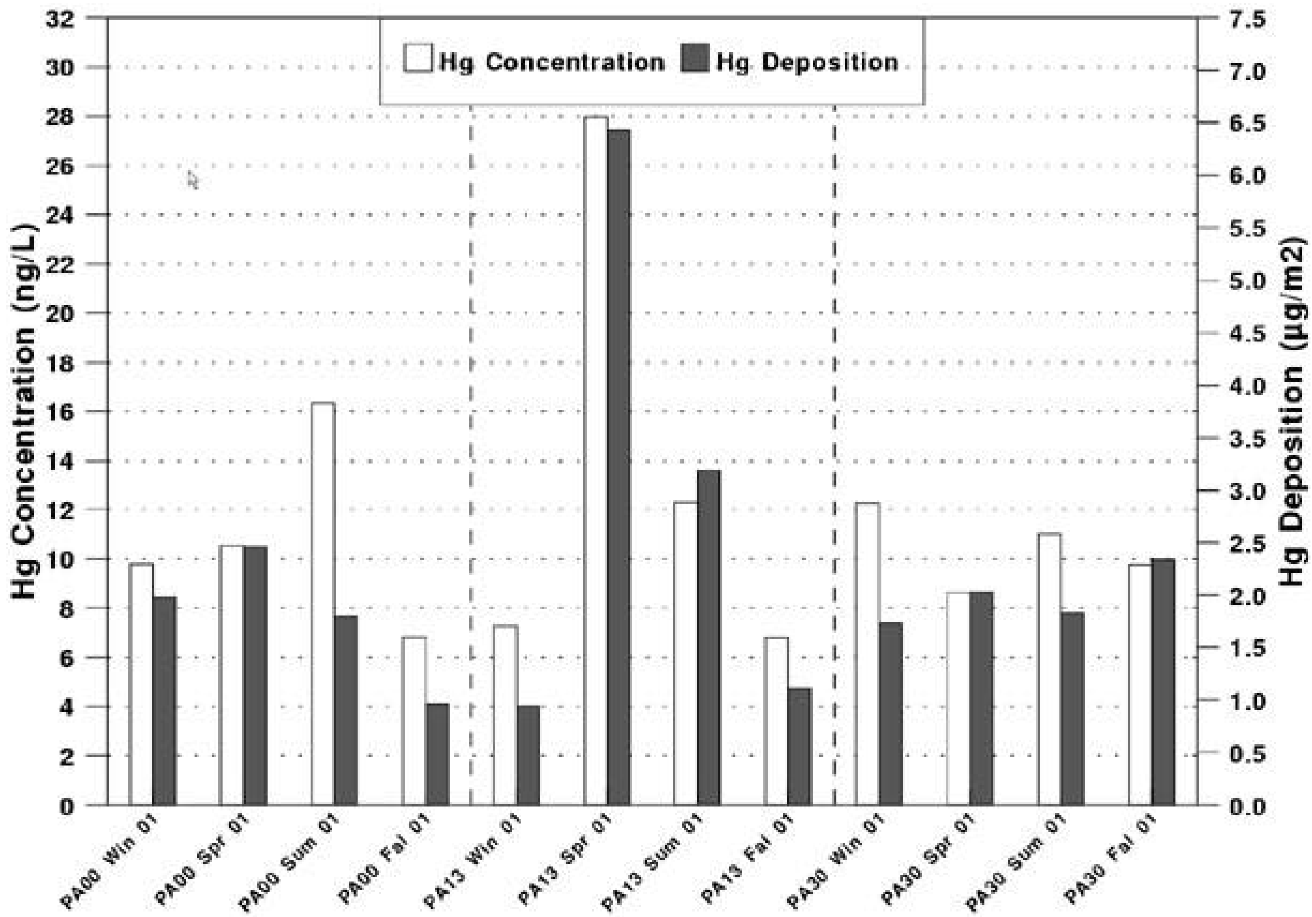



Figure 6. Seasonal variations in total mercury concentrations (ng/L) and wet depositions (µg/m$^2$) at MDN sites PA00 (Arendtsville), PA13 (Cresson Mountain), and PA30 (Erie) in Pennsylvania during 2001.

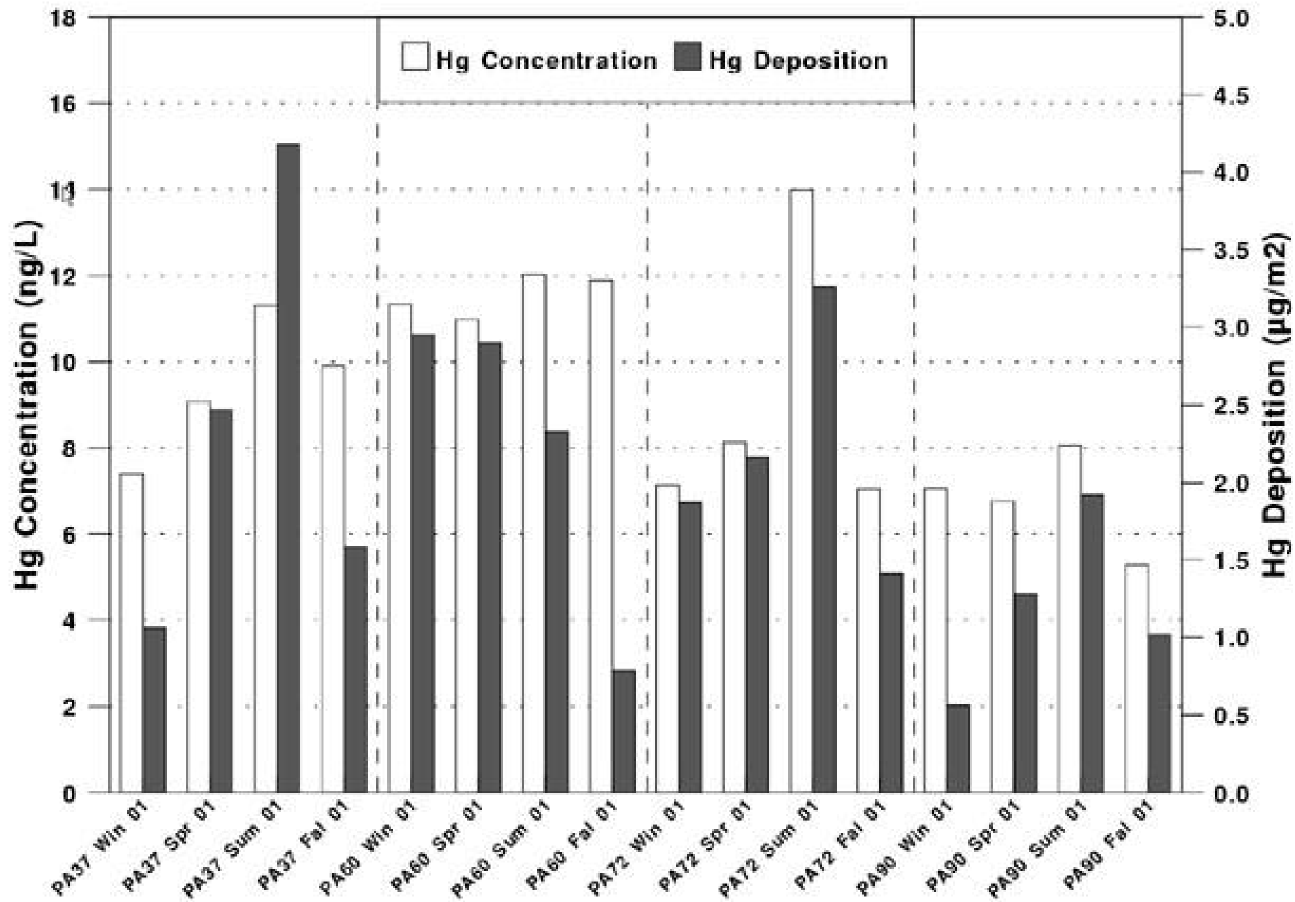



Figure 7. Seasonal variations in total mercury concentrations (ng/L) and wet depositions (µg/$m^2$) at MDN sites PA37 (Holbrook), PA60 (Valley Forge), PA72 (Milford) and PA90 (Hills Creek State Park) in Pennsylvania during 2001.

England and Eastern Canada and higher in Florida and other Gulf states and around the Great Lakes. Mercury depositions in Pennsylvania fall, for the most part, in the middle of this range, except for observations in Tioga County, which were lower in 2001 than most sites in North America. Mercury concentrations and wet deposition estimates in the United States are generally highest during the summer months and lowest during the winter period. This seasonal pattern was also evident at most, but not all, Pennsylvania sites in 2001. Wet deposition of mercury is the product of both the mercury concentration in precipitation and the amount of precipitation. Both of these factors are higher during the summer months at many of the MDN sites, including the Pennsylvania sites, and thus influence the amount of mercury deposited during this period. Mercury deposition monitoring will continue in Pennsylvania in 2003. The number of sites in the state will remain at eight.

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# APPENDIX I

***Weekly Total Mercury Concentrations and Depositions at Pennsylvania Mercury Deposition Network Sites January 1997 through March 2002***

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**ARENDTSVILLE PENNSYLVANIA (PA00)**

| Site | Date On | Date Off | Subppt mm | Pptrec mm | HgConc ng/L | HgDep ng/m² | QR | Sample Type | Notes |
|---|---|---|---|---|---|---|---|---|---|
| PA00 | 11/14/00 | 11/21/00 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA00 | 11/28/00 | 12/05/00 | 42.4 | 42.4 | -- | -- | C | W | euf |
| PA00 | 12/05/00 | 12/12/00 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | m |
| PA00 | 12/12/00 | 12/19/00 | 72.8 | 72.8 | 4.9 | 356.2 | B | W | d |
| PA00 | 12/19/00 | 12/26/00 | 5.2 | 5.2 | -- | -- | C | W | vi |
| PA00 | 12/26/00 | 01/02/01 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | mz |
| PA00 | 01/02/01 | 01/09/01 | 4.7 | 4.7 | 32.6 | 153.5 | A | W | |
| PA00 | 01/09/01 | 01/16/01 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | z |
| PA00 | 01/16/01 | 01/23/01 | 34.8 | 34.8 | 6.4 | 223.2 | B | W | dz |
| PA00 | 01/23/01 | 01/30/01 | 18.9 | 18.9 | 7.3 | 137.2 | A | W | |
| PA00 | 01/30/01 | 02/06/01 | 4.6 | 4.6 | 6.2 | 28.5 | B | W | d |
| PA00 | 02/06/01 | 02/13/01 | 0.5 | 0.5 | -- | -- | A | T | |
| PA00 | 02/13/01 | 02/20/01 | 8.6 | 8.6 | 16.1 | 139.3 | A | W | |
| PA00 | 02/20/01 | 02/27/01 | 10.0 | 10.0 | 46.9 | 470.9 | B | W | d |
| PA00 | 02/27/01 | 03/06/01 | 23.9 | 23.9 | -- | -- | C | W | dvf |
| PA00 | 03/06/01 | 03/13/01 | m | 16.0 | -- | -- | m | W | l |
| PA00 | 03/13/01 | 03/20/01 | m | 11.7 | -- | -- | m | W | l |
| PA00 | 03/20/01 | 03/27/01 | 21.7 | 21.7 | 6.0 | 130.1 | B | W | d |
| PA00 | 03/27/01 | 04/03/01 | 42.9 | 42.9 | 2.7 | 114.7 | B | W | dh |
| PA00 | 04/03/01 | 04/10/01 | 18.9 | 18.9 | 25.8 | 487.3 | B | W | d |
| PA00 | 04/10/01 | 04/17/01 | 29.4 | 29.4 | 14.8 | 435.5 | A | W | |
| PA00 | 04/17/01 | 04/24/01 | 0.9 | 0.9 | 48.5 | 43.1 | B | W | di |
| PA00 | 04/24/01 | 05/01/01 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA00 | 05/01/01 | 05/08/01 | 0.5 | 0.5 | -- | -- | B | T | d |
| PA00 | 05/08/01 | 05/15/01 | 4.1 | 4.1 | 36.2 | 147.3 | B | W | d |
| PA00 | 05/15/01 | 05/22/01 | 31.6 | 31.6 | 8.0 | 251.4 | B | W | dzh |
| PA00 | 05/22/01 | 05/29/01 | 32.0 | 32.0 | 9.4 | 301.8 | B | W | dh |
| PA00 | 05/29/01 | 06/05/01 | 9.5 | 9.5 | 10.2 | 97.0 | A | W | |
| PA00 | 06/05/01 | 06/12/01 | 0.8 | 0.8 | 63.8 | 48.6 | B | W | i |
| PA00 | 06/12/01 | 06/19/01 | 16.7 | 16.7 | 9.8 | 164.1 | B | W | dh |
| PA00 | 06/19/01 | 06/26/01 | 18.0 | 18.0 | 23.0 | 413.2 | B | W | dh |
| PA00 | 06/26/01 | 07/03/01 | 5.3 | 5.3 | 46.4 | 245.9 | B | W | d |
| PA00 | 07/03/01 | 07/10/01 | 10.4 | 10.4 | 12.7 | 132.1 | B | W | dh |
| PA00 | 07/10/01 | 07/17/01 | 7.1 | 7.1 | 34.6 | 245.7 | B | W | d |
| PA00 | 07/17/01 | 07/24/01 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA00 | 07/24/01 | 07/31/01 | 9.7 | 9.7 | 4.7 | 45.6 | B | W | d |
| PA00 | 07/31/01 | 08/07/01 | 5.7 | 5.7 | 21.8 | 124.3 | B | W | d |
| PA00 | 08/07/01 | 08/14/01 | 13.6 | 13.6 | 8.7 | 118.3 | B | W | d |
| PA00 | 08/14/01 | 08/21/01 | 11.9 | 11.9 | 11.4 | 135.7 | B | W | d |
| PA00 | 08/21/01 | 08/28/01 | 0.7 | 0.7 | 24.0 | 16.8 | B | W | di |
| PA00 | 08/28/01 | 09/04/01 | 12.4 | 12.4 | 10.2 | 126.5 | B | W | d |
| PA00 | 09/04/01 | 09/11/01 | 0.7 | 0.7 | -- | -- | C | W | v |
| PA00 | 09/11/01 | 09/18/01 | 3.8 | 3.8 | 12.9 | 49.0 | B | W | d |
| PA00 | 09/18/01 | 09/25/01 | 76.6 | 76.6 | 4.9 | 375.3 | B | W | d |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**ARENDTSVILLE PENNSYLVANIA (PA00)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA00 | 09/25/01 | 10/02/01 | 0.0 | 0.5 | -- | -- | B | T | dh |
| PA00 | 10/02/01 | 10/09/01 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA00 | 10/09/01 | 10/16/01 | 10.3 | 10.3 | 5.5 | 56.6 | B | W | d |
| PA00 | 10/16/01 | 10/23/01 | 6.7 | 6.7 | 15.8 | 105.9 | B | W | d |
| PA00 | 10/23/01 | 10/30/01 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA00 | 10/30/01 | 11/06/01 | 0.0 | 0.5 | -- | -- | A | T | |
| PA00 | 11/06/01 | 11/13/01 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA00 | 11/13/01 | 11/20/01 | 1.5 | 1.5 | 31.7 | 47.6 | B | W | hi |
| PA00 | 11/20/01 | 11/27/01 | 28.4 | 28.4 | 6.7 | 190.3 | B | W | d |
| PA00 | 11/27/01 | 12/04/01 | 10.2 | 10.2 | 13.0 | 132.6 | B | W | dm |
| PA00 | 12/04/01 | 12/11/01 | 15.9 | 15.9 | 6.9 | 109.7 | B | W | d |
| PA00 | 12/11/01 | 12/18/01 | 22.1 | 22.1 | 13.7 | 302.8 | B | W | d |
| PA00 | 12/18/01 | 12/25/01 | 4.3 | 4.3 | 5.7 | 24.5 | B | W | dh |
| PA00 | 01/01/02 | 01/08/02 | 19.7 | 19.7 | -- | -- | C | W | dhv |
| PA00 | 01/08/02 | 01/15/02 | 3.6 | 3.6 | 4.7 | 16.9 | B | W | dh |
| PA00 | 01/15/02 | 01/22/02 | 10.2 | 10.2 | 5.2 | 53.0 | B | W | d |
| PA00 | 01/22/02 | 01/29/02 | 18.3 | 18.3 | 8.9 | 162.9 | B | W | d |
| PA00 | 01/29/02 | 02/05/02 | 10.7 | 10.7 | 9.5 | 101.6 | B | W | d |
| PA00 | 02/05/02 | 02/12/02 | 4.2 | 4.2 | 26.2 | 110.0 | B | W | d |
| PA00 | 02/12/02 | 02/19/02 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA00 | 02/19/02 | 02/26/02 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA00 | 02/26/02 | 03/05/02 | 31.0 | 31.0 | 3.0 | 93.0 | B | W | d |
| PA00 | 03/05/02 | 03/12/02 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA00 | 03/12/02 | 03/19/02 | 25.9 | 25.9 | 22.3 | 577.6 | B | W | dh |
| PA00 | 03/19/02 | 03/26/02 | 25.1 | 25.1 | 6.6 | 165.7 | B | W | d |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**ALLEGHENY PORTAGE NATIONAL HISTORIC SITE (PA13)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA13 | 01/07/97 | 01/14/97 | 7.8 | 7.8 | 9.8 | 76.1 | A | W | v |
| PA13 | 01/14/97 | 01/21/97 | 5.1 | 5.1 | 7.3 | 37.0 | A | W | |
| PA13 | 01/21/97 | 01/28/97 | 25.4 | 25.4 | 7.8 | 197.8 | A | W | |
| PA13 | 01/28/97 | 02/04/97 | 2.5 | 2.5 | 13.7 | 34.9 | A | W | |
| PA13 | 02/04/97 | 02/11/97 | 23.6 | 23.6 | 6.4 | 151.6 | A | W | |
| PA13 | 02/11/97 | 02/18/97 | 18.8 | 18.8 | 18.7 | 351.6 | A | W | |
| PA13 | 02/18/97 | 02/25/97 | 5.1 | 5.1 | 15.6 | 79.0 | A | W | |
| PA13 | 02/25/97 | 03/04/97 | 37.6 | 37.6 | 11.8 | 442.5 | A | W | |
| PA13 | 03/04/97 | 03/11/97 | 24.8 | 24.8 | 18.8 | 465.7 | A | W | |
| PA13 | 03/11/97 | 03/18/97 | 18.0 | 18.0 | 12.4 | 223.7 | A | W | |
| PA13 | 03/18/97 | 03/25/97 | 4.5 | 4.5 | 22.7 | 100.9 | A | W | |
| PA13 | 03/25/97 | 04/01/97 | 30.5 | 30.5 | 6.1 | 186.1 | A | W | |
| PA13 | 04/01/97 | 04/08/97 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | n |
| PA13 | 04/08/97 | 04/15/97 | 13.6 | 13.6 | 13.9 | 189.2 | A | W | |
| PA13 | 04/15/97 | 04/22/97 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | h |
| PA13 | 04/22/97 | 04/29/97 | 15.9 | 15.9 | 9.6 | 152.4 | A | W | |
| PA13 | 04/29/97 | 05/06/97 | 16.5 | 16.5 | 19.2 | 316.5 | A | W | |
| PA13 | 05/06/97 | 05/13/97 | 8.9 | 8.9 | 17.5 | 155.9 | A | W | |
| PA13 | 05/13/97 | 05/20/97 | 57.2 | 57.2 | 15.4 | 879.6 | B | W | h |
| PA13 | 05/20/97 | 05/27/97 | 77.5 | 77.5 | 9.4 | 725.0 | A | W | |
| PA13 | 05/27/97 | 06/03/97 | 52.1 | 52.1 | 13.0 | 675.8 | A | W | |
| PA13 | 06/03/97 | 06/10/97 | 9.7 | 9.7 | 21.0 | 202.2 | A | W | |
| PA13 | 06/10/97 | 06/17/97 | 32.5 | 32.5 | 19.8 | 644.5 | A | W | |
| PA13 | 06/17/97 | 06/24/97 | 9.7 | 9.7 | 19.0 | 183.7 | A | W | |
| PA13 | 06/24/97 | 07/01/97 | 1.7 | 1.7 | 10.2 | 16.9 | A | W | |
| PA13 | 06/30/97 | 07/07/97 | 15.1 | -- | 7.0 | 105.5 | A | W | p |
| PA13 | 07/07/97 | 07/15/97 | 12.7 | 12.7 | 13.1 | 165.9 | A | W | |
| PA13 | 07/15/97 | 07/22/97 | 6.9 | 6.9 | 39.0 | 267.1 | A | W | |
| PA13 | 07/22/97 | 07/29/97 | 25.4 | 25.4 | 8.8 | 224.4 | A | W | |
| PA13 | 07/29/97 | 08/06/97 | 1.3 | 1.3 | 35.9 | 45.6 | A | W | |
| PA13 | 08/06/97 | 08/12/97 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | n |
| PA13 | 08/12/97 | 08/19/97 | 115.3 | 115.3 | 7.4 | 857.4 | B | W | hr |
| PA13 | 08/19/97 | 08/26/97 | 25.7 | 25.7 | 6.7 | 170.7 | A | W | |
| PA13 | 08/26/97 | 09/02/97 | 2.5 | 2.5 | 24.8 | 63.0 | A | W | |
| PA13 | 09/02/97 | 09/09/97 | 5.1 | 5.1 | 5.9 | 29.8 | A | W | |
| PA13 | 09/09/97 | 09/16/97 | 38.4 | 38.4 | 4.5 | 171.7 | A | W | |
| PA13 | 09/16/97 | 09/23/97 | 8.4 | 8.4 | 20.8 | 174.7 | A | W | |
| PA13 | 09/23/97 | 09/30/97 | 65.5 | 65.5 | 2.2 | 141.5 | B | W | x |
| PA13 | 09/30/97 | 10/07/97 | 8.9 | 8.9 | 6.8 | 60.4 | A | W | |
| PA13 | 10/07/97 | 10/15/97 | 2.3 | 2.3 | 3.7 | 8.4 | B | W | r |
| PA13 | 10/14/97 | 10/21/97 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | n |
| PA13 | 10/22/97 | 10/29/97 | 24.6 | 24.6 | 6.8 | 168.6 | A | W | |
| PA13 | 10/29/97 | 11/04/97 | 51.8 | 51.8 | 2.8 | 144.6 | B | W | h |
| PA13 | 11/04/97 | 11/12/97 | 162.1 | 162.1 | 2.6 | 419.0 | A | W | |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**ALLEGHENY PORTAGE NATIONAL HISTORIC SITE (PA13)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA13 | 11/12/97 | 11/18/97 | 18.3 | 18.3 | 5.4 | 97.8 | A | W | |
| PA13 | 11/18/97 | 11/25/97 | 8.9 | 8.9 | 5.0 | 44.4 | A | W | |
| PA13 | 11/25/97 | 12/02/97 | 30.4 | 30.4 | 10.8 | 327.1 | A | W | |
| PA13 | 12/02/97 | 12/09/97 | 10.0 | 10.0 | 7.0 | 70.5 | A | W | |
| PA13 | 12/09/97 | 12/16/97 | 14.7 | 14.7 | 5.2 | 76.0 | A | W | |
| PA13 | 12/16/97 | 12/23/97 | 7.9 | 7.9 | 48.5 | 384.8 | A | W | |
| PA13 | 12/23/97 | 12/30/97 | 21.2 | 21.2 | 7.5 | 158.3 | A | W | |
| PA13 | 12/30/97 | 01/06/98 | 12.2 | 12.2 | 12.1 | 147.0 | A | W | |
| PA13 | 01/06/98 | 01/13/98 | 32.5 | 32.5 | 9.6 | 311.1 | A | W | |
| PA13 | 01/13/98 | 01/20/98 | 14.0 | 14.0 | 4.1 | 57.8 | B | W | hm |
| PA13 | 01/20/98 | 01/27/98 | 25.7 | 25.7 | 2.9 | 75.5 | A | W | |
| PA13 | 01/27/98 | 02/03/98 | 10.2 | 10.2 | 6.8 | 69.5 | A | W | |
| PA13 | 02/03/98 | 02/10/98 | 21.6 | 21.6 | 6.3 | 136.8 | A | W | |
| PA13 | 02/10/98 | 02/17/98 | 8.3 | 8.3 | 9.0 | 74.4 | A | W | |
| PA13 | 02/17/98 | 02/25/98 | 60.7 | 60.7 | 3.3 | 203.3 | A | W | |
| PA13 | 02/25/98 | 03/03/98 | 13.5 | 13.5 | 11.8 | 158.5 | A | W | |
| PA13 | 03/03/98 | 03/10/98 | 21.6 | 21.6 | 6.9 | 150.0 | A | W | |
| PA13 | 03/10/98 | 03/17/98 | 2.5 | 2.5 | 20.6 | 52.2 | A | W | |
| PA13 | 03/17/98 | 03/24/98 | 38.1 | 38.1 | 8.4 | 319.5 | B | W | d |
| PA13 | 03/24/98 | 03/31/98 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA13 | 03/31/98 | 04/07/98 | 29.8 | 29.8 | 3.6 | 108.9 | A | W | |
| PA13 | 04/07/98 | 04/14/98 | 36.6 | 36.6 | 7.0 | 254.9 | B | W | d |
| PA13 | 04/14/98 | 04/21/98 | 54.6 | 54.6 | 9.1 | 495.7 | B | W | d |
| PA13 | 04/21/98 | 04/28/98 | 50.8 | 50.8 | 14.2 | 723.3 | B | W | d |
| PA13 | 04/28/98 | 05/04/98 | 24.6 | 24.6 | 5.6 | 137.0 | B | W | d |
| PA13 | 05/04/98 | 05/12/98 | 77.7 | 77.7 | 5.0 | 389.8 | B | W | d |
| PA13 | 05/12/98 | 05/19/98 | 5.8 | 5.8 | 31.0 | 181.1 | B | W | d |
| PA13 | 05/19/98 | 05/26/98 | 4.1 | 4.1 | 7.8 | 31.6 | A | W | |
| PA13 | 05/26/98 | 06/02/98 | 8.9 | 8.9 | 25.9 | 230.5 | B | W | d |
| PA13 | 06/02/98 | 06/09/98 | 3.7 | 3.7 | 18.6 | 68.5 | A | W | |
| PA13 | 06/09/98 | 06/16/98 | 61.5 | 61.5 | 11.6 | 713.8 | B | W | d |
| PA13 | 06/16/98 | 06/23/98 | 18.8 | 18.8 | 16.7 | 314.8 | B | W | d |
| PA13 | 06/23/98 | 06/30/98 | 12.7 | 12.7 | 19.2 | 244.0 | A | W | |
| PA13 | 06/30/98 | 07/07/98 | 14.0 | 14.0 | 12.1 | 168.6 | A | W | |
| PA13 | 07/07/98 | 07/14/98 | 33.2 | 33.2 | 10.1 | 335.9 | B | W | d |
| PA13 | 07/14/98 | 07/21/98 | 15.2 | 15.2 | 18.8 | 286.8 | A | W | |
| PA13 | 07/21/98 | 07/28/98 | 9.5 | 9.5 | 23.3 | 221.5 | B | W | h |
| PA13 | 07/28/98 | 08/04/98 | 7.6 | 7.6 | 17.3 | 132.1 | A | W | |
| PA13 | 08/04/98 | 08/11/98 | 13.8 | 13.8 | 14.9 | 205.6 | B | W | d |
| PA13 | 08/11/98 | 08/18/98 | 33.0 | 33.0 | 9.6 | 317.0 | A | W | |
| PA13 | 08/18/98 | 08/25/98 | 3.4 | 3.4 | 26.9 | 92.3 | A | W | |
| PA13 | 08/25/98 | 09/01/98 | 14.5 | 14.5 | 20.4 | 295.2 | A | W | |
| PA13 | 09/01/98 | 09/08/98 | 22.6 | 22.6 | 16.8 | 380.6 | A | W | |
| PA13 | 09/08/98 | 09/16/98 | 4.8 | 4.8 | 12.0 | 57.8 | A | W | |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**ALLEGHENY PORTAGE NATIONAL HISTORIC SITE (PA13)**

| Site | Date On | Date Off | Subppt mm | Pptrec mm | HgConc ng/L | HgDep ng/m² | QR | Sample Type | Notes |
|---|---|---|---|---|---|---|---|---|---|
| PA13 | 09/16/98 | 09/22/98 | 6.4 | 6.4 | 25.1 | 159.5 | A | W | |
| PA13 | 09/22/98 | 09/29/98 | 7.2 | 7.2 | 28.2 | 204.4 | A | W | |
| PA13 | 09/29/98 | 10/06/98 | 17.7 | 17.7 | 6.6 | 117.3 | A | W | |
| PA13 | 10/06/98 | 10/13/98 | 48.3 | 48.3 | 9.2 | 443.6 | A | W | |
| PA13 | 10/13/98 | 10/20/98 | 4.8 | 4.8 | 6.8 | 32.9 | A | W | |
| PA13 | 10/20/98 | 10/27/98 | 0.5 | -- | 9.2 | 4.6 | B | T | i |
| PA13 | 10/27/98 | 11/03/98 | 1.3 | 1.3 | 50.6 | 64.2 | A | W | |
| PA13 | 11/03/98 | 11/10/98 | 8.9 | 8.9 | 13.1 | 116.4 | A | W | |
| PA13 | 11/10/98 | 11/17/98 | 6.4 | 6.4 | 8.4 | 53.6 | A | W | |
| PA13 | 11/17/98 | 11/24/98 | 1.9 | 1.9 | 38.3 | 72.9 | A | W | |
| PA13 | 11/24/98 | 12/01/98 | 3.8 | 3.8 | 12.3 | 46.7 | A | W | |
| PA13 | 12/01/98 | 12/08/98 | 2.3 | 2.3 | 13.7 | 31.3 | B | W | m |
| PA13 | 12/08/98 | 12/15/98 | 4.8 | 4.8 | 2.8 | 13.5 | A | W | |
| PA13 | 12/15/98 | 12/22/98 | 22.2 | 22.2 | 11.4 | 254.3 | A | W | |
| PA13 | 12/22/98 | 12/29/98 | 1.3 | 1.3 | 10.2 | 12.9 | B | W | i |
| PA13 | 12/29/98 | 01/06/99 | 22.9 | 22.9 | 2.2 | 50.1 | B | W | d |
| PA13 | 01/06/99 | 01/12/99 | 30.5 | 30.5 | 3.1 | 93.2 | A | W | |
| PA13 | 01/12/99 | 01/19/99 | 34.0 | 34.0 | 5.7 | 193.9 | B | W | d |
| PA13 | 01/19/99 | 01/26/99 | 34.3 | 34.3 | 7.4 | 253.5 | B | W | dz |
| PA13 | 01/26/99 | 02/02/99 | 6.4 | 6.4 | 3.3 | 20.9 | B | W | z |
| PA13 | 02/02/99 | 02/09/99 | 15.6 | 15.6 | 11.2 | 174.7 | B | W | hm |
| PA13 | 02/09/99 | 02/17/99 | 3.8 | 3.8 | -- | -- | C | W | vf |
| PA13 | 02/17/99 | 02/23/99 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA13 | 02/23/99 | 03/02/99 | 16.3 | 16.3 | 5.1 | 82.7 | B | W | d |
| PA13 | 03/02/99 | 03/09/99 | 49.5 | 49.5 | 7.2 | 355.2 | B | W | dm |
| PA13 | 03/09/99 | 03/16/99 | 13.3 | 13.3 | 2.4 | 32.1 | B | W | d |
| PA13 | 03/16/99 | 03/23/99 | 19.7 | 19.7 | 2.2 | 44.2 | B | W | d |
| PA13 | 03/23/99 | 03/30/99 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA13 | 03/30/99 | 04/06/99 | 34.3 | 34.3 | 10.5 | 358.5 | B | W | d |
| PA13 | 04/06/99 | 04/13/99 | 49.5 | 49.5 | 15.4 | 762.8 | B | W | d |
| PA13 | 04/13/99 | 04/20/99 | 21.8 | 21.8 | 7.4 | 161.8 | B | W | d |
| PA13 | 04/20/99 | 04/27/99 | 24.6 | 24.6 | 11.8 | 289.9 | B | W | d |
| PA13 | 04/27/99 | 05/04/99 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA13 | 05/04/99 | 05/11/99 | 6.4 | 6.4 | 10.9 | 69.5 | B | W | d |
| PA13 | 05/11/99 | 05/18/99 | 14.0 | 14.0 | 22.2 | 310.4 | B | W | d |
| PA13 | 05/18/99 | 05/25/99 | 31.3 | -- | 5.7 | 179.7 | B | W | dm |
| PA13 | 05/25/99 | 06/01/99 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA13 | 06/01/99 | 06/08/99 | 9.0 | 9.0 | 9.8 | 88.2 | B | W | hd |
| PA13 | 06/08/99 | 06/15/99 | 2.0 | 2.0 | 18.3 | 37.2 | A | W | |
| PA13 | 06/15/99 | 06/22/99 | 21.1 | 21.1 | 7.8 | 164.2 | B | W | d |
| PA13 | 06/22/99 | 06/29/99 | 39.5 | 39.5 | 12.2 | 480.8 | B | W | hd |
| PA13 | 06/29/99 | 07/06/99 | 4.4 | 4.4 | 25.9 | 115.1 | B | W | d |
| PA13 | 07/06/99 | 07/13/99 | 25.5 | 25.5 | 21.9 | 558.2 | B | W | d |
| PA13 | 07/13/99 | 07/20/99 | 0.5 | 0.5 | 55.4 | 28.1 | B | T | i |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**ALLEGHENY PORTAGE NATIONAL HISTORIC SITE (PA13)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA13 | 07/20/99 | 07/27/99 | 21.8 | 21.8 | 19.6 | 427.1 | B | W | d |
| PA13 | 07/27/99 | 08/03/99 | 18.7 | 18.7 | 23.1 | 431.3 | B | W | d |
| PA13 | 08/03/99 | 08/10/99 | 4.1 | 4.1 | 17.8 | 72.2 | B | W | d |
| PA13 | 08/10/99 | 08/17/99 | 57.0 | 57.0 | 13.1 | 747.9 | B | W | d |
| PA13 | 08/17/99 | 08/24/99 | 6.4 | 6.4 | 19.8 | 127.1 | B | W | d |
| PA13 | 08/24/99 | 08/31/99 | 35.6 | 35.6 | 7.8 | 276.5 | B | W | d |
| PA13 | 08/31/99 | 09/07/99 | 39.3 | 39.3 | 4.9 | 191.3 | B | W | d |
| PA13 | 09/07/99 | 09/14/99 | 3.7 | 3.7 | 19.7 | 72.5 | B | W | d |
| PA13 | 09/14/99 | 09/21/99 | 33.8 | 33.8 | 9.0 | 302.5 | B | W | d |
| PA13 | 09/21/99 | 09/28/99 | 2.5 | 2.5 | 34.6 | 87.9 | B | W | d |
| PA13 | 09/28/99 | 10/05/99 | 38.4 | 38.4 | 4.4 | 168.7 | A | W | |
| PA13 | 10/05/99 | 10/12/99 | 19.6 | 19.6 | 6.4 | 124.5 | A | W | |
| PA13 | 10/12/99 | 10/19/99 | 11.0 | 11.0 | 14.7 | 161.0 | B | W | d |
| PA13 | 10/19/99 | 10/26/99 | 6.4 | 6.4 | 12.4 | 78.7 | B | W | d |
| PA13 | 10/26/99 | 11/02/99 | 0.9 | 0.9 | 27.3 | 24.3 | B | W | ih |
| PA13 | 11/02/99 | 11/09/99 | 53.6 | 53.6 | 3.9 | 207.5 | B | W | hd |
| PA13 | 11/09/99 | 11/16/99 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA13 | 11/16/99 | 11/23/99 | 5.6 | 5.6 | 9.4 | 52.3 | B | W | d |
| PA13 | 11/23/99 | 11/30/99 | 56.4 | 56.4 | 6.6 | 374.1 | B | W | d |
| PA13 | 11/30/99 | 12/07/99 | 5.3 | 5.3 | 11.5 | 61.4 | B | W | d |
| PA13 | 12/07/99 | 12/14/99 | 23.0 | 23.0 | 5.9 | 136.2 | B | W | hd |
| PA13 | 12/14/99 | 12/21/99 | 7.7 | -- | 2.9 | 22.2 | B | W | dm |
| PA13 | 12/21/99 | 12/28/99 | 0.5 | 0.5 | -- | -- | B | T | d |
| PA13 | 12/28/99 | 01/04/00 | 9.3 | 9.3 | 16.2 | 151.6 | B | W | d |
| PA13 | 01/04/00 | 01/11/00 | 7.1 | 7.1 | 6.5 | 45.9 | B | W | d |
| PA13 | 01/11/00 | 01/18/00 | 3.6 | 3.6 | 8.5 | 30.4 | B | W | d |
| PA13 | 01/18/00 | 01/25/00 | 6.7 | 6.7 | -- | -- | C | W | vd |
| PA13 | 01/25/00 | 02/01/00 | 6.9 | 6.9 | -- | -- | C | W | vdh |
| PA13 | 02/01/00 | 02/08/00 | 5.8 | 5.8 | 25.4 | 148.4 | B | W | di |
| PA13 | 02/08/00 | 02/15/00 | 36.1 | 36.1 | 5.4 | 194.9 | B | W | d |
| PA13 | 02/15/00 | 02/22/00 | 21.0 | 21.0 | 7.1 | 149.8 | B | W | d |
| PA13 | 02/22/00 | 02/29/00 | 19.3 | 19.3 | 10.1 | 195.7 | B | W | d |
| PA13 | 02/29/00 | 03/07/00 | 7.0 | 7.0 | 8.3 | 58.3 | B | W | d |
| PA13 | 03/07/00 | 03/14/00 | 15.2 | 15.2 | 12.5 | 191.1 | B | W | d |
| PA13 | 03/14/00 | 03/21/00 | 38.9 | 38.9 | 4.7 | 182.7 | B | W | d |
| PA13 | 03/21/00 | 03/28/00 | 4.1 | 4.1 | 12.1 | 49.1 | B | W | d |
| PA13 | 03/28/00 | 04/04/00 | 26.0 | 26.0 | 8.4 | 217.8 | B | W | d |
| PA13 | 04/04/00 | 04/11/00 | 15.1 | 15.1 | 7.8 | 117.2 | B | W | d |
| PA13 | 04/11/00 | 04/18/00 | 45.0 | 45.0 | 7.0 | 314.5 | B | W | dh |
| PA13 | 04/18/00 | 04/25/00 | 61.8 | 61.8 | 8.3 | 511.3 | B | W | d |
| PA13 | 04/25/00 | 05/02/00 | 6.2 | 6.2 | 22.0 | 135.4 | B | W | d |
| PA13 | 05/02/00 | 05/09/00 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | h |
| PA13 | 05/09/00 | 05/16/00 | 4.8 | 4.8 | 12.6 | 60.1 | A | W | |
| PA13 | 05/16/00 | 05/23/00 | 51.3 | 51.3 | 10.7 | 548.0 | A | W | |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**ALLEGHENY PORTAGE NATIONAL HISTORIC SITE (PA13)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA13 | 05/23/00 | 05/30/00 | 51.8 | 51.8 | 9.3 | 481.3 | B | W | dh |
| PA13 | 05/30/00 | 06/06/00 | 26.3 | 26.3 | 9.9 | 261.5 | A | W | |
| PA13 | 06/06/00 | 06/13/00 | 7.6 | 7.6 | 13.9 | 104.7 | A | W | |
| PA13 | 06/13/00 | 06/20/00 | 22.1 | 22.1 | 10.5 | 231.5 | B | W | d |
| PA13 | 06/20/00 | 06/27/00 | -- | 30.9 | -- | -- | B | W | h |
| PA13 | 06/27/00 | 07/03/00 | 2.7 | 2.7 | 16.7 | 44.7 | A | W | |
| PA13 | 07/03/00 | 07/11/00 | 30.5 | 30.5 | 9.8 | 299.3 | B | W | d |
| PA13 | 07/11/00 | 07/18/00 | 13.0 | 13.0 | 23.9 | 309.9 | A | W | |
| PA13 | 07/18/00 | 07/25/00 | 1.9 | 1.9 | 22.3 | 42.4 | A | W | |
| PA13 | 07/25/00 | 08/01/00 | 25.3 | 25.3 | 14.0 | 353.8 | B | W | d |
| PA13 | 08/01/00 | 08/08/00 | 33.4 | 33.4 | 9.6 | 320.0 | B | W | d |
| PA13 | 08/08/00 | 08/15/00 | 1.5 | 1.5 | 15.9 | 24.2 | B | W | d |
| PA13 | 08/15/00 | 08/22/00 | 5.3 | 5.3 | -- | -- | C | W | ld |
| PA13 | 08/22/00 | 08/29/00 | 21.1 | 21.1 | 11.3 | 237.4 | B | W | d |
| PA13 | 08/29/00 | 09/05/00 | 8.1 | 8.1 | 13.6 | 110.3 | B | W | dh |
| PA13 | 09/05/00 | 09/12/00 | 13.1 | 13.1 | 7.1 | 92.7 | B | W | d |
| PA13 | 09/12/00 | 09/19/00 | 27.5 | 27.5 | 7.0 | 192.9 | A | W | |
| PA13 | 09/19/00 | 09/26/00 | 22.5 | 22.5 | 13.3 | 300.5 | B | W | dh |
| PA13 | 09/26/00 | 10/03/00 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA13 | 10/03/00 | 10/10/00 | 36.1 | 36.1 | 12.6 | 456.1 | B | W | d |
| PA13 | 10/10/00 | 10/17/00 | 3.5 | -- | 18.4 | 63.7 | B | W | m |
| PA13 | 10/17/00 | 10/24/00 | 40.6 | 40.6 | -- | -- | C | W | ufd |
| PA13 | 10/24/00 | 10/31/00 | 6.4 | 6.4 | 16.3 | 103.5 | B | W | d |
| PA13 | 10/31/00 | 11/07/00 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA13 | 11/07/00 | 11/14/00 | 24.1 | 24.1 | 6.7 | 162.9 | B | W | d |
| PA13 | 11/14/00 | 11/21/00 | 1.5 | 1.5 | -- | -- | C | W | v |
| PA13 | 11/21/00 | 11/28/00 | 25.4 | 25.4 | 3.1 | 78.0 | B | W | dh |
| PA13 | 11/28/00 | 12/05/00 | 7.4 | 7.4 | 4.4 | 32.5 | B | W | d |
| PA13 | 12/05/00 | 12/11/00 | 5.6 | 5.6 | -- | -- | C | W | v |
| PA13 | 12/11/00 | 12/19/00 | 31.3 | 31.3 | 10.9 | 340.6 | B | W | d |
| PA13 | 12/19/00 | 12/27/00 | 4.6 | 4.6 | -- | -- | C | W | vd |
| PA13 | 12/27/00 | 01/02/01 | 2.0 | 2.0 | -- | -- | C | W | v |
| PA13 | 01/02/01 | 01/09/01 | 7.7 | 7.7 | -- | -- | C | W | v |
| PA13 | 01/09/01 | 01/16/01 | 1.5 | 1.5 | -- | -- | C | W | v |
| PA13 | 01/16/01 | 01/23/01 | 16.0 | 16.0 | 3.3 | 53.1 | B | W | d |
| PA13 | 01/23/01 | 01/30/01 | 9.0 | 9.0 | 7.7 | 69.2 | A | W | |
| PA13 | 01/30/01 | 02/06/01 | 17.8 | 17.8 | 3.9 | 68.9 | B | W | d |
| PA13 | 02/06/01 | 02/13/01 | 3.0 | 3.0 | 13.8 | 42.1 | B | W | d |
| PA13 | 02/13/01 | 02/20/01 | 20.4 | 20.4 | 4.8 | 97.6 | B | W | d |
| PA13 | 02/20/01 | 02/27/01 | 2.5 | 2.5 | 30.1 | 76.4 | A | W | |
| PA13 | 02/27/01 | 03/06/01 | 20.2 | 20.2 | -- | -- | C | W | mv |
| PA13 | 03/06/01 | 03/13/01 | 13.8 | 13.8 | 6.1 | 84.8 | B | W | d |
| PA13 | 03/13/01 | 03/20/01 | 18.5 | 18.5 | 7.6 | 140.1 | B | W | dh |
| PA13 | 03/20/01 | 03/27/01 | 23.1 | 23.1 | 4.8 | 112.0 | B | W | d |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**ALLEGHENY PORTAGE NATIONAL HISTORIC SITE (PA13)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA13 | 03/27/01 | 04/04/01 | 9.4 | 9.4 | 5.7 | 53.2 | B | W | dh |
| PA13 | 04/04/01 | 04/10/01 | 25.4 | 25.4 | 21.0 | 534.5 | A | W | |
| PA13 | 04/10/01 | 04/17/01 | 52.7 | 52.7 | 60.4 | 3183.7 | B | W | d |
| PA13 | 04/17/01 | 04/24/01 | 5.0 | 5.0 | 16.7 | 82.5 | B | W | d |
| PA13 | 04/24/01 | 05/01/01 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA13 | 05/01/01 | 05/08/01 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA13 | 05/08/01 | 05/15/01 | m | 6.3 | m | m | m | W | m |
| PA13 | 05/15/01 | 05/22/01 | 9.5 | 9.5 | 124.1 | 1182.1 | B | W | d |
| PA13 | 05/22/01 | 05/29/01 | 46.0 | 46.0 | 6.9 | 315.5 | B | W | d |
| PA13 | 05/29/01 | 06/05/01 | 37.6 | 37.6 | 7.4 | 279.9 | B | W | d |
| PA13 | 06/05/01 | 06/12/01 | 2.8 | 2.8 | 48.0 | 134.0 | B | W | dh |
| PA13 | 06/12/01 | 06/19/01 | 18.2 | 18.2 | 12.7 | 229.8 | B | W | d |
| PA13 | 06/19/01 | 06/26/01 | 53.6 | 53.6 | 16.8 | 899.5 | B | W | d |
| PA13 | 06/26/01 | 07/03/01 | 46.2 | 46.2 | 9.3 | 429.7 | A | W | |
| PA13 | 07/03/01 | 07/10/01 | 11.2 | 11.2 | 12.3 | 137.8 | B | W | d |
| PA13 | 07/10/01 | 07/17/01 | 0.4 | 0.5 | 34.2 | 13.7 | B | T | di |
| PA13 | 07/17/01 | 07/24/01 | 1.5 | 1.5 | 26.3 | 39.4 | B | W | d |
| PA13 | 07/24/01 | 07/31/01 | 1.3 | 1.3 | 20.7 | 26.9 | B | W | d |
| PA13 | 07/31/01 | 08/07/01 | 21.3 | 21.3 | 20.5 | 436.6 | B | W | h |
| PA13 | 08/07/01 | 08/14/01 | 18.8 | 18.8 | 8.1 | 152.3 | B | W | d |
| PA13 | 08/14/01 | 08/21/01 | 37.3 | 37.3 | 8.9 | 332.0 | B | W | d |
| PA13 | 08/21/01 | 08/28/01 | 9.4 | 9.4 | 8.8 | 82.7 | A | W | |
| PA13 | 08/28/01 | 09/04/01 | 15.2 | 15.2 | 10.2 | 155.0 | B | W | d |
| PA13 | 09/04/01 | 09/12/01 | 1.5 | 1.5 | 12.2 | 18.3 | B | W | d |
| PA13 | 09/12/01 | 09/19/01 | 4.3 | 4.3 | 8.0 | 34.4 | B | W | d |
| PA13 | 09/19/01 | 09/25/01 | 47.0 | 47.0 | 5.2 | 244.4 | B | W | d |
| PA13 | 09/25/01 | 10/02/01 | 0.0 | 1.7 | -- | -- | A | T | |
| PA13 | 10/02/01 | 10/09/01 | 1.3 | 1.3 | -- | -- | C | W | v |
| PA13 | 10/09/01 | 10/16/01 | 24.9 | 24.9 | 3.7 | 92.1 | B | W | d |
| PA13 | 10/16/01 | 10/23/01 | 9.9 | 9.9 | 4.9 | 48.5 | B | W | d |
| PA13 | 10/23/01 | 10/30/01 | 12.4 | 12.4 | 20.6 | 255.4 | B | W | dh |
| PA13 | 10/30/01 | 11/05/01 | 8.9 | 8.9 | 12.3 | 109.5 | B | W | d |
| PA13 | 11/05/01 | 11/13/01 | 0.8 | 0.8 | -- | -- | C | W | vl |
| PA13 | 11/13/01 | 11/20/01 | 2.8 | 2.8 | 8.5 | 23.8 | B | W | d |
| PA13 | 11/20/01 | 11/27/01 | 33.3 | 33.3 | 3.1 | 103.2 | B | W | dz |
| PA13 | 11/27/01 | 12/04/01 | 20.1 | 20.1 | 9.0 | 180.9 | B | W | d |
| PA13 | 12/04/01 | 12/11/01 | 14.7 | 14.7 | 3.8 | 55.9 | B | W | d |
| PA13 | 12/11/01 | 12/18/01 | 32.0 | 32.0 | 9.0 | 288.0 | B | W | d |
| PA13 | 12/18/01 | 12/26/01 | 4.6 | 4.6 | 4.5 | 20.7 | B | W | d |
| PA13 | 12/26/01 | 01/02/02 | 4.2 | 4.2 | -- | -- | C | W | v |
| PA13 | 01/02/02 | 01/08/02 | 20.2 | 20.2 | 3.3 | 66.7 | B | W | d |
| PA13 | 01/08/02 | 01/15/02 | 5.6 | 5.6 | 8.1 | 45.4 | A | W | |
| PA13 | 01/15/02 | 01/22/02 | 5.7 | 5.7 | 9.9 | 56.4 | B | W | d |
| PA13 | 01/22/02 | 01/29/02 | 9.4 | 9.4 | 7.3 | 68.6 | B | W | dh |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**ALLEGHENY PORTAGE NATIONAL HISTORIC SITE (PA13)**

| Site | Date On | Date Off | Subppt mm | Pptrec mm | HgConc ng/L | HgDep ng/m² | QR | Sample Type | Notes |
|---|---|---|---|---|---|---|---|---|---|
| PA13 | 01/29/02 | 02/05/02 | 16.0 | 16.0 | 8.1 | 129.6 | B | W | d |
| PA13 | 02/05/02 | 02/12/02 | 28.7 | 28.7 | 4.5 | 129.2 | B | W | d |
| PA13 | 02/12/02 | 02/19/02 | 3.2 | 3.2 | 23.4 | 74.9 | B | W | di |
| PA13 | 02/19/02 | 02/26/02 | 4.8 | 4.8 | 8.0 | 38.4 | B | W | d |
| PA13 | 02/26/02 | 03/05/02 | 17.9 | 17.9 | 3.9 | 69.8 | B | W | d |
| PA13 | 03/05/02 | 03/12/02 | 2.4 | 2.4 | 21.3 | 51.1 | B | W | z |
| PA13 | 03/12/02 | 03/19/02 | 25.1 | 25.1 | 20.8 | 522.1 | B | W | d |
| PA13 | 03/19/02 | 03/26/02 | 56.9 | 56.9 | 8.0 | 455.2 | B | W | d |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**ERIE PENNSYLVANIA (PA30)**

| Site | Date On | Date Off | Subppt mm | Pptrec mm | HgConc ng/L | HgDep ng/m² | QR | Sample Type | Notes |
|---|---|---|---|---|---|---|---|---|---|
| PA30 | 06/20/00 | 06/27/00 | 46.2 | 46.2 | 20.0 | 925.6 | B | W | dh |
| PA30 | 06/27/00 | 07/04/00 | 42.3 | 42.3 | 13.1 | 552.1 | B | W | d |
| PA30 | 07/04/00 | 07/11/00 | 55.6 | 55.6 | 2.5 | 139.1 | B | W | d |
| PA30 | 07/11/00 | 07/18/00 | 22.7 | 22.7 | 13.5 | 306.9 | B | W | d |
| PA30 | 07/18/00 | 07/25/00 | 2.2 | 2.2 | 25.1 | 54.3 | B | W | h |
| PA30 | 07/25/00 | 08/01/00 | 24.1 | 24.1 | 18.0 | 433.4 | B | W | dh |
| PA30 | 08/01/00 | 08/08/00 | 89.2 | 89.2 | 14.0 | 1252.0 | B | W | d |
| PA30 | 08/08/00 | 08/15/00 | 7.4 | 7.4 | 14.1 | 103.7 | B | W | d |
| PA30 | 08/15/00 | 08/22/00 | 4.3 | 4.3 | 21.0 | 89.4 | B | W | d |
| PA30 | 08/22/00 | 08/29/00 | 9.8 | 9.8 | 4.0 | 38.7 | A | W | |
| PA30 | 08/29/00 | 09/06/00 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA30 | 09/06/00 | 09/12/00 | 13.3 | 13.3 | 23.2 | 308.7 | B | W | sh |
| PA30 | 09/12/00 | 09/19/00 | 3.0 | 3.0 | 21.7 | 66.1 | A | W | |
| PA30 | 09/19/00 | 09/26/00 | 44.7 | 44.7 | 19.2 | 859.5 | B | W | dh |
| PA30 | 09/26/00 | 10/03/00 | 2.1 | 2.1 | 16.2 | 33.9 | B | W | h |
| PA30 | 10/03/00 | 10/10/00 | 62.5 | 62.5 | 13.2 | 822.9 | B | W | dh |
| PA30 | 10/10/00 | 10/17/00 | 2.2 | 2.2 | 27.2 | 58.8 | B | W | h |
| PA30 | 10/17/00 | 10/24/00 | 2.7 | 2.7 | 23.0 | 61.3 | A | W | |
| PA30 | 10/24/00 | 10/31/00 | 2.5 | 2.5 | 0.8 | 2.1 | B | W | d |
| PA30 | 10/31/00 | 11/07/00 | 3.0 | 3.0 | 4.9 | 14.9 | A | W | |
| PA30 | 11/07/00 | 11/14/00 | 20.1 | -- | 5.6 | 112.4 | B | W | hm |
| PA30 | 11/14/00 | 11/21/00 | 50.3 | 50.3 | 4.4 | 222.0 | B | W | dh |
| PA30 | 11/21/00 | 11/28/00 | 23.0 | 23.0 | 8.1 | 187.2 | A | W | |
| PA30 | 11/28/00 | 12/05/00 | m | 14.4 | -- | -- | -- | W | m |
| PA30 | 12/05/00 | 12/12/00 | m | 29.4 | -- | -- | -- | W | f |
| PA30 | 12/12/00 | 12/19/00 | -- | -- | -- | -- | -- | -- | f |
| PA30 | 12/19/00 | 12/26/00 | 6.5 | 6.5 | 26.4 | 170.9 | B | W | dh |
| PA30 | 12/26/00 | 01/02/01 | 0.0 | 0.0 | 0.0 | 0.0 | B | W | m |
| PA30 | 01/02/01 | 01/09/01 | 9.4 | 9.4 | 9.4 | 88.4 | B | W | h |
| PA30 | 01/09/01 | 01/16/01 | 5.3 | 5.3 | 7.5 | 40.1 | B | W | h |
| PA30 | 01/16/01 | 01/23/01 | 1.1 | 1.1 | -- | -- | C | W | v |
| PA30 | 01/23/01 | 01/30/01 | 9.3 | 9.3 | 9.5 | 89.1 | B | W | dh |
| PA30 | 01/30/01 | 02/06/01 | 13.1 | 13.1 | 4.5 | 59.5 | B | W | d |
| PA30 | 02/06/01 | 02/13/01 | 20.7 | 20.7 | 16.8 | 348.1 | B | W | h |
| PA30 | 02/13/01 | 02/20/01 | 22.9 | 22.9 | 3.7 | 84.0 | B | W | d |
| PA30 | 02/20/01 | 02/27/01 | 9.1 | 9.1 | 32.8 | 300.2 | B | W | dh |
| PA30 | 02/27/01 | 03/06/01 | 5.8 | 5.8 | 18.7 | 107.8 | A | W | |
| PA30 | 03/06/01 | 03/13/01 | 16.6 | 16.6 | 5.6 | 93.5 | B | W | h |
| PA30 | 03/13/01 | 03/20/01 | 18.5 | 18.5 | 7.0 | 129.8 | B | W | d |
| PA30 | 03/20/01 | 03/27/01 | 15.2 | 15.2 | 5.5 | 82.7 | B | W | d |
| PA30 | 03/27/01 | 04/03/01 | 4.7 | 4.7 | 15.2 | 71.2 | B | W | d |
| PA30 | 04/03/01 | 04/10/01 | 22.4 | 22.4 | 18.7 | 418.9 | A | W | |
| PA30 | 04/10/01 | 04/17/01 | m | 18.2 | -- | -- | -- | W | m |
| PA30 | 04/17/01 | 04/24/01 | 19.8 | 19.8 | 6.0 | 118.1 | B | W | d |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**ERIE PENNSYLVANIA (PA30)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA30 | 04/24/01 | 05/01/01 | 1.1 | 1.1 | 41.8 | 47.8 | B | W | dh |
| PA30 | 05/01/01 | 05/08/01 | m | 1.5 | -- | -- | -- | W | m |
| PA30 | 05/08/01 | 05/15/01 | 49.3 | 49.3 | 5.1 | 251.4 | B | W | dh |
| PA30 | 05/15/01 | 05/22/01 | 6.7 | 6.7 | 8.8 | 59.4 | B | W | d |
| PA30 | 05/22/01 | 05/28/01 | 56.0 | 56.0 | -- | -- | C | W | dhuf |
| PA30 | 05/28/01 | 06/04/01 | 17.9 | 17.9 | 8.0 | 142.5 | A | W | |
| PA30 | 06/04/01 | 06/12/01 | 18.5 | 18.5 | 5.5 | 102.1 | B | W | dh |
| PA30 | 06/12/01 | 06/19/01 | 6.1 | 6.1 | -- | -- | C | W | duf |
| PA30 | 06/19/01 | 06/26/01 | 23.5 | 23.5 | 11.8 | 277.6 | B | W | d |
| PA30 | 06/26/01 | 07/03/01 | 0.0 | 0.3 | 0.0 | 0.0 | B | D | h |
| PA30 | 07/03/01 | 07/10/01 | 8.1 | 8.1 | 8.9 | 72.1 | B | W | d |
| PA30 | 07/10/01 | 07/17/01 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA30 | 07/17/01 | 07/24/01 | 4.7 | 4.7 | 12.0 | 56.4 | B | W | d |
| PA30 | 07/24/01 | 07/31/01 | 0.1 | 0.5 | 159.0 | 15.9 | B | T | i |
| PA30 | 07/31/01 | 08/07/01 | 31.8 | 31.8 | 11.9 | 378.4 | B | W | d |
| PA30 | 08/07/01 | 08/28/01 | 55.9 | -- | 12.9 | 721.1 | B | W | edm |
| PA30 | 08/28/01 | 09/04/01 | m | 33.0 | -- | -- | -- | W | m |
| PA30 | 09/04/01 | 09/11/01 | 12.3 | 12.3 | 23.5 | 289.0 | B | W | dzh |
| PA30 | 09/11/01 | 09/18/01 | 7.4 | 7.4 | 10.4 | 77.0 | B | W | d |
| PA30 | 09/18/01 | 09/25/01 | 9.3 | 9.3 | 10.4 | 96.7 | B | W | d |
| PA30 | 09/25/01 | 10/02/01 | 40.4 | 40.4 | 3.0 | 121.2 | B | W | h |
| PA30 | 10/02/01 | 10/09/01 | 28.7 | 28.7 | 9.8 | 281.3 | B | W | d |
| PA30 | 10/09/01 | 10/16/01 | 12.4 | 12.4 | 16.2 | 200.9 | B | W | d |
| PA30 | 10/16/01 | 10/23/01 | 27.9 | 27.9 | 7.3 | 203.7 | B | W | d |
| PA30 | 10/23/01 | 10/30/01 | 41.1 | 41.1 | 14.2 | 583.6 | B | W | dzh |
| PA30 | 10/30/01 | 11/06/01 | 5.2 | 5.2 | 10.3 | 53.6 | B | W | d |
| PA30 | 11/06/01 | 11/13/01 | 5.0 | 5.0 | -- | -- | C | W | hl |
| PA30 | 11/13/01 | 11/20/01 | 11.4 | 11.4 | 4.4 | 50.2 | B | W | d |
| PA30 | 11/20/01 | 11/27/01 | 5.5 | 5.5 | 1.4 | 7.7 | B | W | dz |
| PA30 | 11/27/01 | 12/04/01 | m | 34.3 | -- | -- | -- | W | m |
| PA30 | 12/04/01 | 12/11/01 | 2.0 | 2.0 | -- | -- | C | W | hv |
| PA30 | 12/11/01 | 12/18/01 | 48.0 | 48.0 | 4.4 | 211.2 | B | W | dh |
| PA30 | 12/18/01 | 01/02/02 | 50.1 | 50.1 | 4.7 | 235.5 | B | W | ed |
| PA30 | 01/02/02 | 01/08/02 | 11.4 | 11.4 | 5.0 | 57.0 | B | W | dh |
| PA30 | 01/08/02 | 01/15/02 | 5.2 | 5.2 | 13.8 | 71.8 | B | W | d |
| PA30 | 01/15/02 | 01/22/02 | 11.2 | 11.2 | 8.3 | 93.0 | B | W | d |
| PA30 | 01/22/02 | 01/29/02 | 3.7 | 3.7 | 6.7 | 24.8 | B | W | d |
| PA30 | 01/29/02 | 02/05/02 | 90.2 | 90.2 | 14.5 | 1307.9 | B | W | dh |
| PA30 | 02/05/02 | 02/12/02 | 10.9 | 10.9 | 6.1 | 66.5 | B | W | d |
| PA30 | 02/12/02 | 02/19/02 | 7.6 | 7.6 | 11.9 | 90.4 | B | W | mh |
| PA30 | 02/19/02 | 02/26/02 | 20.6 | 20.6 | 5.7 | 117.4 | B | W | h |
| PA30 | 02/26/02 | 03/05/02 | 16.5 | 16.5 | 8.1 | 133.6 | B | W | d |
| PA30 | 03/05/02 | 03/12/02 | 12.1 | 12.1 | 11.3 | 136.7 | B | W | dh |
| PA30 | 03/12/02 | 03/19/02 | 5.3 | 5.3 | 9.0 | 47.7 | B | W | dh |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**ERIE PENNSYLVANIA (PA30)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA30 | 03/19/02 | 03/27/02 | 38.4 | 38.4 | 4.6 | 176.6 | B | W | dh |
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**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**HOLBROOK PENNSYLVANIA (PA37)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA37 | 05/27/99 | 06/01/99 | 0.3 | -- | 46.2 | 15.7 | B | T | isdm |
| PA37 | 06/01/99 | 06/08/99 | 16.3 | -- | 7.6 | 123.2 | B | W | dm |
| PA37 | 06/08/99 | 06/15/99 | 6.3 | -- | 11.8 | 74.8 | B | W | dm |
| PA37 | 06/15/99 | 06/22/99 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA37 | 06/22/99 | 06/29/99 | 8.9 | 8.9 | 8.7 | 76.9 | B | W | d |
| PA37 | 06/29/99 | 07/06/99 | 34.3 | 34.3 | 7.1 | 244.6 | B | W | d |
| PA37 | 07/06/99 | 07/13/99 | 14.9 | 14.9 | 22.5 | 336.4 | B | W | d |
| PA37 | 07/13/99 | 07/20/99 | 6.5 | 6.5 | 29.3 | 190.0 | A | W | |
| PA37 | 07/20/99 | 07/27/99 | 5.8 | 5.8 | 14.2 | 82.1 | A | W | |
| PA37 | 07/27/99 | 08/03/99 | 25.9 | 25.9 | 22.1 | 573.3 | B | W | d |
| PA37 | 08/03/99 | 08/10/99 | 9.9 | 9.9 | 13.8 | 136.9 | B | W | d |
| PA37 | 08/10/99 | 08/17/99 | 11.6 | 11.6 | 11.9 | 138.0 | B | W | d |
| PA37 | 08/17/99 | 08/24/99 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA37 | 08/24/99 | 08/31/99 | 40.0 | 40.0 | 20.8 | 830.5 | B | W | d |
| PA37 | 08/31/99 | 09/07/99 | 20.2 | 20.2 | 7.9 | 160.3 | B | W | d |
| PA37 | 09/07/99 | 09/14/99 | 8.3 | 8.3 | 23.9 | 197.2 | B | W | d |
| PA37 | 09/14/99 | 09/21/99 | 21.3 | 21.3 | 5.2 | 111.5 | B | W | d |
| PA37 | 09/21/99 | 09/28/99 | 4.2 | 4.2 | 16.6 | 69.5 | A | W | |
| PA37 | 09/28/99 | 10/05/99 | 57.9 | 57.9 | 9.0 | 523.3 | B | W | h |
| PA37 | 10/05/99 | 10/12/99 | 25.4 | 25.4 | 5.9 | 150.1 | B | W | h |
| PA37 | 10/12/99 | 10/19/99 | 11.4 | 11.4 | 13.6 | 155.0 | B | W | d |
| PA37 | 10/19/99 | 10/26/99 | 2.3 | 2.3 | 10.1 | 23.2 | B | W | d |
| PA37 | 10/26/99 | 11/03/99 | 33.1 | 33.1 | 9.5 | 314.2 | B | W | d |
| PA37 | 11/03/99 | 11/09/99 | 0.0 | -- | 0.0 | 0.0 | B | D | m |
| PA37 | 11/09/99 | 11/16/99 | 0.3 | -- | 39.3 | 10.2 | B | T | id |
| PA37 | 11/16/99 | 11/23/99 | 3.7 | 3.7 | 2.3 | 8.4 | B | W | d |
| PA37 | 11/23/99 | 11/30/99 | 59.3 | 59.3 | 4.2 | 249.9 | B | W | d |
| PA37 | 11/30/99 | 12/07/99 | 6.3 | 6.3 | 9.4 | 59.1 | B | W | d |
| PA37 | 12/07/99 | 12/14/99 | 52.8 | 52.8 | 6.0 | 316.1 | A | W | |
| PA37 | 12/14/99 | 12/21/99 | 6.5 | 6.5 | 2.2 | 14.1 | B | W | d |
| PA37 | 12/21/99 | 12/28/99 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | h |
| PA37 | 12/28/99 | 01/04/00 | 8.3 | 8.3 | 18.5 | 152.3 | B | W | dh |
| PA37 | 01/04/00 | 01/11/00 | 6.4 | 6.4 | 12.5 | 79.3 | B | W | dh |
| PA37 | 01/11/00 | 01/18/00 | 0.4 | -- | 36.9 | 13.7 | B | T | hi |
| PA37 | 01/18/00 | 01/25/00 | 4.9 | -- | 3.2 | 16.0 | B | W | dm |
| PA37 | 01/25/00 | 02/01/00 | 4.4 | 4.4 | 4.9 | 21.4 | B | W | d |
| PA37 | 02/01/00 | 02/08/00 | 1.9 | 1.9 | 7.4 | 14.0 | B | W | dhi |
| PA37 | 02/08/00 | 02/15/00 | 62.5 | 62.5 | 6.1 | 381.6 | B | W | d |
| PA37 | 02/15/00 | 02/22/00 | 51.3 | 51.3 | 3.3 | 171.3 | B | W | dh |
| PA37 | 02/22/00 | 02/29/00 | 5.1 | 5.1 | 9.6 | 49.0 | B | W | d |
| PA37 | 02/29/00 | 03/07/00 | 1.7 | 1.7 | 29.3 | 48.4 | A | W | |
| PA37 | 03/07/00 | 03/14/00 | 17.7 | 17.7 | 8.8 | 155.2 | B | W | d |
| PA37 | 03/14/00 | 03/21/00 | 45.5 | 45.5 | 7.4 | 336.4 | B | W | d |
| PA37 | 03/21/00 | 03/28/00 | 4.5 | 4.5 | 11.8 | 53.4 | A | W | |

# NATIONAL ATMOSPHERIC DEPOSITION PROGRAM
# MERCURY DEPOSITION NETWORK
# HOLBROOK PENNSYLVANIA (PA37)

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA37 | 03/28/00 | 04/04/00 | 39.8 | 39.8 | 6.3 | 251.6 | B | W | d |
| PA37 | 04/04/00 | 04/11/00 | 13.5 | 13.5 | 9.1 | 122.5 | B | W | dm |
| PA37 | 04/11/00 | 04/18/00 | 34.2 | 34.2 | 9.7 | 330.6 | B | W | dm |
| PA37 | 04/18/00 | 04/25/00 | 11.4 | 11.4 | 62.6 | 715.3 | B | W | h |
| PA37 | 04/25/00 | 05/02/00 | 18.5 | 18.5 | 15.1 | 279.4 | B | W | d |
| PA37 | 05/02/00 | 05/09/00 | 2.0 | 2.0 | 20.0 | 40.6 | B | W | dh |
| PA37 | 05/09/00 | 05/16/00 | 11.3 | 11.3 | 27.6 | 311.6 | A | W | |
| PA37 | 05/16/00 | 05/24/00 | 46.9 | 46.9 | 13.3 | 625.1 | B | W | dh |
| PA37 | 05/24/00 | 05/30/00 | 15.0 | 15.0 | 15.7 | 236.0 | B | W | d |
| PA37 | 05/30/00 | 06/06/00 | 8.1 | 8.1 | 18.3 | 148.4 | B | W | h |
| PA37 | 06/06/00 | 06/13/00 | 6.4 | 6.4 | 22.7 | 143.8 | A | W | |
| PA37 | 06/13/00 | 06/19/00 | 42.4 | 42.4 | 16.3 | 689.6 | B | W | d |
| PA37 | 06/19/00 | 06/27/00 | 13.6 | 13.6 | 13.1 | 177.5 | B | W | d |
| PA37 | 06/27/00 | 07/04/00 | 35.0 | -- | 5.5 | 192.8 | B | W | dhm |
| PA37 | 07/04/00 | 07/11/00 | 19.8 | 19.8 | 10.9 | 216.0 | B | W | dh |
| PA37 | 07/11/00 | 07/18/00 | 15.0 | 15.0 | 20.8 | 311.4 | B | W | d |
| PA37 | 07/18/00 | 07/25/00 | 19.4 | 19.4 | 15.0 | 290.2 | B | W | d |
| PA37 | 07/25/00 | 08/01/00 | 21.7 | 21.7 | 10.1 | 219.6 | B | W | d |
| PA37 | 08/01/00 | 08/08/00 | 59.6 | 59.6 | 11.7 | 696.9 | B | W | d |
| PA37 | 08/08/00 | 08/15/00 | 0.6 | 0.6 | 18.0 | 11.0 | B | T | i |
| PA37 | 08/15/00 | 08/22/00 | 9.1 | 9.1 | -- | -- | C | W | ld |
| PA37 | 08/22/00 | 08/29/00 | 12.8 | 12.8 | 10.2 | 130.8 | A | W | |
| PA37 | 08/29/00 | 09/05/00 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA37 | 09/05/00 | 09/12/00 | 2.4 | 2.4 | 17.3 | 41.7 | A | W | |
| PA37 | 09/12/00 | 09/19/00 | 7.0 | 7.0 | 10.1 | 70.3 | A | W | |
| PA37 | 09/19/00 | 09/25/00 | 21.8 | 21.8 | 14.7 | 321.3 | B | W | d |
| PA37 | 09/25/00 | 10/02/00 | 30.9 | 30.9 | 8.0 | 247.1 | B | W | d |
| PA37 | 10/02/00 | 10/09/00 | 16.0 | 16.0 | 14.1 | 225.6 | B | W | d |
| PA37 | 10/09/00 | 10/16/00 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA37 | 10/16/00 | 10/24/00 | 28.3 | 28.3 | 12.1 | 342.7 | B | W | d |
| PA37 | 10/24/00 | 10/31/00 | 1.5 | 1.5 | 13.2 | 20.1 | A | W | |
| PA37 | 10/31/00 | 11/06/00 | 1.7 | 1.7 | 21.1 | 34.9 | A | W | |
| PA37 | 11/06/00 | 11/13/00 | 12.3 | 12.3 | 6.5 | 80.0 | A | W | |
| PA37 | 11/13/00 | 11/21/00 | 1.0 | 1.0 | 9.2 | 9.3 | A | W | |
| PA37 | 11/21/00 | 11/28/00 | 5.8 | 5.8 | 2.1 | 12.5 | B | W | d |
| PA37 | 11/28/00 | 12/05/00 | 9.3 | 9.3 | 7.1 | 65.5 | B | W | d |
| PA37 | 12/05/00 | 12/12/00 | 15.2 | -- | 6.5 | 99.6 | B | W | dhm |
| PA37 | 12/12/00 | 12/19/00 | 36.1 | 36.1 | 9.5 | 342.3 | B | W | d |
| PA37 | 12/19/00 | 12/26/00 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA37 | 12/26/00 | 01/02/01 | 0.3 | 0.3 | -- | -- | A | T | |
| PA37 | 01/02/01 | 01/08/01 | 0.5 | 0.5 | -- | -- | A | T | |
| PA37 | 01/08/01 | 01/16/01 | -- | -- | -- | -- | -- | -- | m |
| PA37 | 01/16/01 | 01/23/01 | 16.4 | 16.4 | 2.0 | 33.3 | B | W | d |
| PA37 | 01/23/01 | 01/29/01 | 2.3 | 2.3 | 15.0 | 34.3 | B | W | i |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**HOLBROOK PENNSYLVANIA (PA37)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA37 | 01/29/01 | 02/06/01 | 22.4 | 22.4 | 7.2 | 161.4 | B | W | d |
| PA37 | 02/06/01 | 02/13/01 | 7.2 | 7.2 | 8.5 | 61.4 | A | W | |
| PA37 | 02/13/01 | 02/19/01 | 29.1 | 29.1 | 6.4 | 186.1 | B | W | d |
| PA37 | 02/19/01 | 02/26/01 | 4.8 | 4.8 | 15.2 | 73.2 | B | W | m |
| PA37 | 02/26/01 | 03/05/01 | 14.0 | 14.0 | 6.6 | 91.6 | B | W | d |
| PA37 | 03/05/01 | 03/12/01 | 1.1 | 1.1 | 27.8 | 31.8 | A | W | |
| PA37 | 03/12/01 | 03/19/01 | 35.7 | 35.7 | 7.3 | 260.1 | B | W | d |
| PA37 | 03/19/01 | 03/27/01 | 23.9 | 23.9 | 6.8 | 162.3 | B | W | d |
| PA37 | 03/27/01 | 04/03/01 | 8.6 | 8.6 | 5.0 | 43.1 | B | W | d |
| PA37 | 04/03/01 | 04/10/01 | 23.1 | 23.1 | 16.8 | 387.4 | B | W | h |
| PA37 | 04/10/01 | 04/17/01 | 34.0 | 34.0 | 15.5 | 525.9 | B | W | d |
| PA37 | 04/17/01 | 04/24/01 | 17.1 | 17.1 | 7.7 | 131.5 | B | W | dm |
| PA37 | 04/24/01 | 05/01/01 | 0.3 | 0.3 | 35.6 | 9.0 | B | T | di |
| PA37 | 05/01/01 | 05/08/01 | 1.1 | 1.1 | 30.4 | 34.7 | B | W | d |
| PA37 | 05/08/01 | 05/15/01 | 10.5 | 10.5 | 10.5 | 110.3 | B | W | dh |
| PA37 | 05/15/01 | 05/22/01 | 64.4 | 64.4 | 4.9 | 316.3 | B | W | d |
| PA37 | 05/22/01 | 05/29/01 | 37.8 | 37.8 | 9.6 | 361.6 | B | W | h |
| PA37 | 05/29/01 | 06/05/01 | 35.2 | 35.2 | 10.0 | 353.4 | A | W | |
| PA37 | 06/05/01 | 06/12/01 | 29.5 | 29.5 | 10.3 | 302.2 | B | W | d |
| PA37 | 06/12/01 | 06/19/01 | 25.4 | 25.4 | 9.4 | 239.0 | B | W | h |
| PA37 | 06/19/01 | 06/26/01 | 37.5 | 37.5 | 13.5 | 507.4 | B | W | d |
| PA37 | 06/26/01 | 07/03/01 | 30.5 | 30.5 | 8.5 | 259.2 | B | W | dh |
| PA37 | 07/03/01 | 07/10/01 | 62.0 | 62.0 | 6.7 | 415.4 | B | W | h |
| PA37 | 07/10/01 | 07/17/01 | 8.1 | 8.1 | 11.9 | 96.4 | B | W | d |
| PA37 | 07/17/01 | 07/24/01 | 23.4 | 23.4 | 8.8 | 205.9 | B | W | d |
| PA37 | 07/24/01 | 07/31/01 | 24.4 | 24.4 | 10.4 | 253.8 | B | W | d |
| PA37 | 07/31/01 | 08/07/01 | 15.1 | 15.1 | 24.1 | 363.9 | A | W | |
| PA37 | 08/07/01 | 08/14/01 | 45.2 | 45.2 | 14.0 | 632.8 | B | W | d |
| PA37 | 08/14/01 | 08/21/01 | 15.5 | 15.5 | 12.1 | 187.5 | B | W | d |
| PA37 | 08/21/01 | 08/28/01 | 18.3 | 18.3 | 19.9 | 364.2 | B | W | dh |
| PA37 | 08/28/01 | 09/04/01 | 23.9 | 23.9 | 10.3 | 246.2 | B | W | d |
| PA37 | 09/04/01 | 09/11/01 | 5.4 | 5.4 | 11.5 | 62.1 | B | W | dh |
| PA37 | 09/11/01 | 09/18/01 | 10.2 | 10.2 | 6.4 | 65.3 | B | W | d |
| PA37 | 09/18/01 | 09/26/01 | 30.0 | 30.0 | 10.7 | 321.0 | B | W | d |
| PA37 | 09/26/01 | 10/02/01 | 2.5 | 2.5 | 1.9 | 4.8 | A | W | |
| PA37 | 10/02/01 | 10/09/01 | 6.4 | 6.4 | 5.1 | 32.6 | B | W | d |
| PA37 | 10/09/01 | 10/16/01 | 14.9 | 14.9 | 10.1 | 150.5 | B | W | d |
| PA37 | 10/16/01 | 10/23/01 | 4.7 | 4.7 | 3.5 | 16.4 | B | W | d |
| PA37 | 10/23/01 | 10/30/01 | 14.2 | 14.2 | 21.0 | 298.2 | B | W | d |
| PA37 | 10/30/01 | 11/06/01 | 7.1 | 7.1 | 3.3 | 23.4 | B | W | d |
| PA37 | 11/06/01 | 11/13/01 | 2.4 | 2.4 | -- | -- | C | W | dl |
| PA37 | 11/13/01 | 11/20/01 | 6.5 | 6.5 | 2.8 | 18.2 | B | W | d |
| PA37 | 11/20/01 | 11/27/01 | 31.2 | 31.2 | 10.1 | 315.1 | B | W | dh |
| PA37 | 11/27/01 | 12/04/01 | 9.4 | 9.4 | 12.3 | 115.6 | B | W | d |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**HOLBROOK PENNSYLVANIA (PA37)**

| Site | Date On | Date Off | Subppt mm | Pptrec mm | HgConc ng/L | HgDep ng/m² | QR | Sample Type | Notes |
|---|---|---|---|---|---|---|---|---|---|
| PA37 | 12/04/01 | 12/11/01 | 9.9 | 9.9 | 1.9 | 18.8 | B | W | d |
| PA37 | 12/11/01 | 12/18/01 | 38.4 | 38.4 | 13.6 | 522.2 | B | W | d |
| PA37 | 12/18/01 | 12/25/01 | 9.7 | 9.7 | 3.2 | 31.0 | B | W | dh |
| PA37 | 12/25/01 | 01/01/02 | 1.4 | 1.4 | -- | -- | C | W | dv |
| PA37 | 01/01/02 | 01/08/02 | 8.0 | 8.0 | 3.4 | 27.2 | B | W | d |
| PA37 | 01/08/02 | 01/15/02 | 7.6 | 7.6 | 4.8 | 36.5 | B | W | d |
| PA37 | 01/15/02 | 01/22/02 | 3.8 | 3.8 | 8.9 | 33.8 | B | W | dh |
| PA37 | 01/22/02 | 01/29/02 | 17.4 | 17.4 | 9.5 | 165.3 | B | W | d |
| PA37 | 01/29/02 | 02/05/02 | 18.2 | 18.2 | 3.0 | 54.6 | B | W | dh |
| PA37 | 02/05/02 | 02/12/02 | 17.7 | 17.7 | 0.9 | 15.9 | B | W | d |
| PA37 | 02/12/02 | 02/19/02 | 1.3 | 1.3 | 43.2 | 56.2 | B | W | i |
| PA37 | 02/19/02 | 02/26/02 | 11.2 | 11.2 | 8.2 | 91.8 | B | W | dh |
| PA37 | 02/26/02 | 03/05/02 | 14.7 | 14.7 | 1.7 | 25.0 | B | W | d |
| PA37 | 03/05/02 | 03/12/02 | 2.8 | 2.8 | -- | -- | C | W | dv |
| PA37 | 03/12/02 | 03/19/02 | 58.2 | 58.2 | 8.1 | 471.4 | B | W | dh |
| PA37 | 03/19/02 | 03/26/02 | 31.8 | 31.8 | 5.1 | 162.2 | B | W | d |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**VALLEY FORGE PENNSYLVANIA (PA60)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA60 | 11/23/99 | 11/30/99 | 38.6 | 38.6 | 8.2 | 315.7 | B | W | d |
| PA60 | 11/30/99 | 12/07/99 | 17.0 | 17.0 | 6.2 | 105.6 | B | W | hd |
| PA60 | 12/07/99 | 12/13/99 | 9.9 | 9.9 | 3.8 | 37.8 | B | W | hd |
| PA60 | 12/13/99 | 12/21/99 | 42.6 | -- | 9.3 | 397.7 | B | W | dm |
| PA60 | 12/21/99 | 12/28/99 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA60 | 12/28/99 | 01/04/00 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA60 | 01/04/00 | 01/11/00 | 32.4 | 32.4 | 3.8 | 123.9 | A | W | |
| PA60 | 01/11/00 | 01/18/00 | 5.3 | 5.3 | 20.6 | 108.8 | B | W | d |
| PA60 | 01/18/00 | 01/26/00 | 27.0 | 27.0 | 9.4 | 254.6 | B | W | d |
| PA60 | 01/26/00 | 02/01/00 | 24.4 | 24.4 | 12.9 | 315.7 | B | W | dh |
| PA60 | 02/01/00 | 02/08/00 | 3.5 | -- | 8.7 | 30.6 | B | W | dm |
| PA60 | 02/08/00 | 02/15/00 | 14.2 | 14.2 | 7.7 | 109.8 | B | W | d |
| PA60 | 02/15/00 | 02/22/00 | 31.0 | 31.0 | 5.8 | 179.3 | B | W | d |
| PA60 | 02/22/00 | 02/29/00 | 8.8 | 8.8 | 8.7 | 76.1 | B | W | d |
| PA60 | 02/29/00 | 03/07/00 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA60 | 03/07/00 | 03/14/00 | 23.8 | 23.8 | 14.9 | 355.1 | B | W | d |
| PA60 | 03/14/00 | 03/21/00 | 31.8 | 31.8 | 5.9 | 188.6 | B | W | dh |
| PA60 | 03/21/00 | 03/28/00 | 105.2 | 105.2 | 5.3 | 555.6 | B | W | d |
| PA60 | 03/28/00 | 04/04/00 | 12.6 | 12.6 | 10.7 | 134.7 | B | W | d |
| PA60 | 04/04/00 | 04/11/00 | 16.4 | 16.4 | 16.5 | 271.3 | B | W | d |
| PA60 | 04/11/00 | 04/18/00 | 34.5 | 34.5 | 17.0 | 587.1 | B | W | dh |
| PA60 | 04/18/00 | 04/25/00 | 14.2 | 14.2 | 18.2 | 257.6 | B | W | d |
| PA60 | 04/25/00 | 05/02/00 | 3.4 | -- | 34.6 | 117.0 | B | W | dm |
| PA60 | 05/02/00 | 05/09/00 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA60 | 05/09/00 | 05/16/00 | 27.2 | 27.2 | 18.5 | 503.9 | B | W | d |
| PA60 | 05/16/00 | 05/23/00 | 44.3 | 44.3 | 15.5 | 686.7 | B | W | d |
| PA60 | 05/23/00 | 05/30/00 | 23.9 | 23.9 | 14.7 | 351.4 | A | W | |
| PA60 | 05/30/00 | 06/06/00 | 12.1 | 12.1 | 3.7 | 44.7 | B | W | d |
| PA60 | 06/06/00 | 06/14/00 | 43.3 | 43.3 | 11.5 | 497.1 | A | W | |
| PA60 | 06/14/00 | 06/20/00 | 29.5 | 29.5 | 9.2 | 271.0 | B | W | d |
| PA60 | 06/20/00 | 06/27/00 | 35.1 | -- | 10.3 | 362.2 | B | W | d |
| PA60 | 06/27/00 | 07/04/00 | 10.6 | 10.6 | 15.7 | 166.5 | B | W | dh |
| PA60 | 07/04/00 | 07/11/00 | 6.2 | 6.2 | 12.4 | 77.1 | A | W | |
| PA60 | 07/11/00 | 07/18/00 | 20.3 | 20.3 | 17.0 | 345.5 | B | W | h |
| PA60 | 07/18/00 | 07/25/00 | 10.9 | -- | 32.8 | 357.7 | B | W | dhm |
| PA60 | 07/25/00 | 08/01/00 | 99.9 | 99.9 | 2.8 | 283.9 | B | W | d |
| PA60 | 08/01/00 | 08/08/00 | 38.0 | 38.0 | 11.7 | 443.8 | B | W | dh |
| PA60 | 08/08/00 | 08/15/00 | 27.8 | 27.8 | 10.3 | 286.5 | A | W | |
| PA60 | 08/15/00 | 08/22/00 | 2.6 | 2.6 | 19.9 | 51.7 | B | W | d |
| PA60 | 08/22/00 | 08/29/00 | 5.3 | 5.3 | 10.3 | 55.2 | A | W | |
| PA60 | 08/29/00 | 09/05/00 | 6.9 | 6.9 | 19.8 | 135.8 | B | W | d |
| PA60 | 09/05/00 | 09/12/00 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA60 | 09/12/00 | 09/20/00 | 94.6 | 94.6 | 8.5 | 802.9 | B | W | dh |
| PA60 | 09/20/00 | 09/26/00 | 54.8 | 54.8 | 8.2 | 449.8 | B | W | dh |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**VALLEY FORGE PENNSYLVANIA (PA60)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA60 | 09/26/00 | 10/03/00 | 4.6 | 4.6 | 13.3 | 61.5 | A | W | |
| PA60 | 10/03/00 | 10/10/00 | 19.6 | -- | 11.7 | 229.2 | B | W | dm |
| PA60 | 10/10/00 | 10/17/00 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA60 | 10/17/00 | 10/24/00 | 19.1 | 19.1 | 14.8 | 281.5 | B | W | m |
| PA60 | 10/24/00 | 10/31/00 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | hm |
| PA60 | 10/31/00 | 11/07/00 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | m |
| PA60 | 11/07/00 | 11/14/00 | 25.4 | 25.4 | 14.4 | 365.5 | B | W | dm |
| PA60 | 11/14/00 | 11/21/00 | 3.8 | -- | 5.7 | 21.4 | B | W | dm |
| PA60 | 11/21/00 | 11/28/00 | 33.0 | 33.0 | 12.7 | 421.0 | B | W | dm |
| PA60 | 11/28/00 | 12/05/00 | 3.8 | 3.8 | 4.3 | 16.4 | B | W | hm |
| PA60 | 12/05/00 | 12/12/00 | 0.1 | 1.5 | 154.7 | 18.6 | B | T | dmi |
| PA60 | 12/12/00 | 12/19/00 | 100.8 | 100.8 | 12.2 | 1235.2 | B | W | d |
| PA60 | 12/19/00 | 12/26/00 | -- | -- | -- | -- | B | -- | m |
| PA60 | 12/26/00 | 01/02/01 | -- | 6.1 | -- | -- | B | W | l |
| PA60 | 01/02/01 | 01/09/01 | 4.4 | -- | 6.6 | 29.0 | B | W | m |
| PA60 | 01/09/01 | 01/16/01 | 4.4 | 4.4 | 10.1 | 44.7 | B | W | h |
| PA60 | 01/16/01 | 01/23/01 | 49.5 | 49.5 | 17.7 | 875.4 | B | W | zh |
| PA60 | 01/23/01 | 01/30/01 | 16.8 | 16.8 | 7.1 | 119.1 | B | W | h |
| PA60 | 01/30/01 | 02/06/01 | 45.1 | 45.1 | 2.6 | 118.0 | B | W | dh |
| PA60 | 02/06/01 | 02/13/01 | 0.8 | 0.8 | 20.5 | 15.6 | B | W | hi |
| PA60 | 02/13/01 | 02/20/01 | 11.6 | -- | 4.0 | 46.3 | B | W | m |
| PA60 | 02/20/01 | 02/27/01 | 16.8 | 16.8 | 21.5 | 361.3 | B | W | dh |
| PA60 | 02/27/01 | 03/06/01 | 18.0 | 18.0 | 19.2 | 345.9 | B | W | d |
| PA60 | 03/06/01 | 03/13/01 | 25.0 | 25.0 | 4.6 | 113.8 | B | W | dh |
| PA60 | 03/13/01 | 03/20/01 | 14.7 | 14.7 | 12.4 | 181.3 | A | W | |
| PA60 | 03/20/01 | 03/27/01 | 30.1 | 30.1 | 3.1 | 92.0 | B | W | dh |
| PA60 | 03/27/01 | 04/03/01 | 50.3 | -- | 5.7 | 284.7 | B | W | d |
| PA60 | 04/03/01 | 04/10/01 | 11.3 | 11.3 | 21.5 | 243.5 | B | W | d |
| PA60 | 04/10/01 | 04/17/01 | 25.1 | 25.1 | 20.2 | 508.9 | B | W | dh |
| PA60 | 04/17/01 | 04/24/01 | 6.6 | 6.6 | 16.2 | 106.9 | B | W | d |
| PA60 | 04/24/01 | 05/01/01 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | dh |
| PA60 | 05/01/01 | 05/08/01 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | h |
| PA60 | 05/08/01 | 05/15/01 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA60 | 05/15/01 | 05/22/01 | 39.4 | 39.4 | 16.2 | 639.2 | B | W | dh |
| PA60 | 05/22/01 | 05/29/01 | 43.3 | 43.3 | 8.8 | 383.2 | B | W | dh |
| PA60 | 05/29/01 | 06/05/01 | 18.4 | 18.4 | 10.5 | 193.6 | B | W | h |
| PA60 | 06/05/01 | 06/12/01 | 0.7 | -- | 37.8 | 27.6 | B | T | mi |
| PA60 | 06/12/01 | 06/19/01 | 64.1 | 64.1 | 9.6 | 615.1 | B | W | dh |
| PA60 | 06/19/01 | 06/26/01 | 5.1 | 5.1 | 12.2 | 62.0 | B | W | h |
| PA60 | 06/26/01 | 07/03/01 | 35.0 | 35.0 | 13.4 | 469.0 | B | W | dz |
| PA60 | 07/03/01 | 07/10/01 | 2.0 | 2.0 | -- | -- | C | W | hv |
| PA60 | 07/10/01 | 07/17/01 | 0.3 | 0.5 | 44.2 | 13.3 | B | T | dhi |
| PA60 | 07/17/01 | 07/24/01 | 21.6 | 21.6 | 13.5 | 291.6 | B | W | dz |
| PA60 | 07/24/01 | 07/31/01 | 1.3 | 1.3 | 32.3 | 42.0 | B | W | zh |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**VALLEY FORGE PENNSYLVANIA (PA60)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA60 | 07/31/01 | 08/07/01 | 14.0 | 14.0 | 11.7 | 163.8 | B | W | dz |
| PA60 | 08/07/01 | 08/14/01 | 30.4 | 30.4 | 13.8 | 419.5 | B | W | dzh |
| PA60 | 08/14/01 | 08/21/01 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | h |
| PA60 | 08/21/01 | 08/28/01 | 0.0 | 0.5 | -- | -- | B | T | h |
| PA60 | 08/28/01 | 09/04/01 | 0.0 | 0.5 | -- | -- | B | T | d |
| PA60 | 09/04/01 | 09/11/01 | 4.6 | 4.6 | 15.8 | 72.7 | B | W | d |
| PA60 | 09/11/01 | 09/18/01 | 15.2 | 15.2 | 7.5 | 114.0 | B | W | d |
| PA60 | 09/18/01 | 09/25/01 | 27.8 | 27.8 | 16.4 | 455.9 | B | W | dzh |
| PA60 | 09/25/01 | 10/02/01 | 3.4 | -- | 10.0 | 34.0 | B | W | dmh |
| PA60 | 10/02/01 | 10/09/01 | 2.3 | -- | 10.9 | 25.1 | B | W | m |
| PA60 | 10/09/01 | 10/16/01 | 8.0 | 8.0 | 5.1 | 40.8 | B | W | dh |
| PA60 | 10/16/01 | 10/23/01 | 0.2 | 0.0 | 38.7 | 7.7 | B | T | di |
| PA60 | 10/23/01 | 10/30/01 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | mh |
| PA60 | 10/30/01 | 11/06/01 | 2.5 | 2.5 | 4.2 | 10.5 | B | W | dh |
| PA60 | 11/06/01 | 11/13/01 | 0.0 | 0.0 | 0.0 | 0.0 | C | D | mhl |
| PA60 | 11/13/01 | 11/20/01 | 2.3 | 2.3 | -- | -- | C | W | mzv |
| PA60 | 11/20/01 | 11/27/01 | 15.7 | 15.7 | -- | -- | C | W | zhf |
| PA60 | 11/27/01 | 12/04/01 | 2.8 | 2.8 | -- | -- | C | W | zf |
| PA60 | 12/04/01 | 12/18/01 | 49.5 | 49.5 | 10.2 | 504.9 | B | W | ed |
| PA60 | 12/18/01 | 12/26/01 | 10.6 | -- | 2.1 | 22.3 | B | W | dm |
| PA60 | 12/26/01 | 01/02/01 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | |
| PA60 | 01/02/02 | 01/08/02 | 32.5 | 32.5 | 3.6 | 117.0 | B | W | dh |
| PA60 | 01/08/02 | 01/15/02 | 10.0 | 10.0 | 2.4 | 24.0 | B | W | dz |
| PA60 | 01/15/02 | 01/22/02 | 14.7 | 14.7 | 4.2 | 61.7 | B | W | d |
| PA60 | 01/22/02 | 01/29/02 | 21.2 | 21.2 | 6.7 | 142.0 | B | W | dh |
| PA60 | 01/29/02 | 02/05/02 | 10.8 | -- | 9.8 | 105.8 | B | W | dmh |
| PA60 | 02/05/02 | 02/12/02 | 3.8 | 3.8 | 21.9 | 83.2 | B | W | dh |
| PA60 | 02/12/02 | 02/19/02 | m | m | -- | -- | | -- | m |
| PA60 | 02/19/02 | 02/26/02 | 5.1 | 5.1 | 10.1 | 51.5 | A | W | |
| PA60 | 02/26/02 | 03/05/02 | 28.8 | 28.8 | 2.2 | 63.4 | B | W | dh |
| PA60 | 03/05/02 | 03/12/02 | 3.8 | 3.8 | 10.8 | 41.0 | B | W | d |
| PA60 | 03/12/02 | 03/19/02 | 26.9 | 26.9 | 31.5 | 847.4 | B | W | dh |
| PA60 | 03/19/02 | 03/26/02 | 24.6 | 24.6 | 6.1 | 150.1 | B | W | d |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**MILFORD PENNSYLVANIA (PA72)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA72 | 09/14/00 | 09/19/00 | 13.0 | 13.0 | 16.4 | 212.9 | B | W | ds |
| PA72 | 09/19/00 | 09/26/00 | 14.3 | 14.3 | 5.6 | 80.2 | B | W | d |
| PA72 | 09/26/00 | 10/03/00 | 9.3 | 9.3 | 4.6 | 42.7 | B | W | d |
| PA72 | 10/03/00 | 10/10/00 | 5.1 | 5.1 | 22.8 | 116.1 | B | W | h |
| PA72 | 10/10/00 | 10/17/00 | 2.7 | 2.7 | 25.9 | 69.1 | A | W | |
| PA72 | 10/17/00 | 10/24/00 | 26.9 | 26.9 | 5.8 | 157.1 | B | W | dh |
| PA72 | 10/24/00 | 10/31/00 | 5.9 | -- | 14.3 | 84.5 | B | W | dhm |
| PA72 | 10/31/00 | 11/07/00 | 0.1 | -- | 132.7 | 13.3 | B | T | i |
| PA72 | 11/07/00 | 11/14/00 | 39.2 | 39.2 | 10.4 | 408.0 | B | W | dh |
| PA72 | 11/14/00 | 11/21/00 | 6.1 | 6.1 | 2.6 | 15.9 | B | W | d |
| PA72 | 11/21/00 | 11/28/00 | 18.2 | 18.2 | 2.9 | 52.2 | B | W | d |
| PA72 | 11/28/00 | 12/05/00 | 5.6 | 5.6 | 8.3 | 46.3 | B | W | d |
| PA72 | 12/05/00 | 12/12/00 | 4.4 | 4.4 | 7.5 | 33.1 | A | W | |
| PA72 | 12/12/00 | 12/19/00 | 112.6 | 112.6 | 6.7 | 755.1 | B | W | d |
| PA72 | 12/19/00 | 12/26/00 | 5.7 | 5.7 | -- | -- | C | W | fv |
| PA72 | 12/26/00 | 01/02/01 | 19.6 | 19.6 | -- | -- | C | W | duf |
| PA72 | 01/02/01 | 01/09/01 | 5.0 | 5.0 | 11.6 | 57.6 | A | W | |
| PA72 | 01/09/01 | 01/16/01 | 2.2 | 2.2 | 36.6 | 78.9 | A | W | |
| PA72 | 01/16/01 | 01/23/01 | 25.8 | 25.8 | 3.7 | 94.7 | B | W | d |
| PA72 | 01/23/01 | 01/30/01 | 6.2 | 6.2 | 5.1 | 31.6 | B | W | d |
| PA72 | 01/30/01 | 02/06/01 | 41.9 | 41.9 | 4.2 | 175.1 | B | W | dz |
| PA72 | 02/06/01 | 02/13/01 | 2.8 | 2.8 | 36.5 | 101.9 | A | W | |
| PA72 | 02/13/01 | 02/20/01 | 10.5 | 10.5 | 5.8 | 61.2 | B | W | d |
| PA72 | 02/20/01 | 02/27/01 | 20.7 | 20.7 | 12.5 | 258.8 | A | W | |
| PA72 | 02/27/01 | 03/06/01 | 30.1 | 30.1 | 4.6 | 137.9 | B | W | dh |
| PA72 | 03/06/01 | 03/13/01 | 22.6 | 22.6 | 4.1 | 93.2 | B | W | d |
| PA72 | 03/13/01 | 03/20/01 | 11.0 | 11.0 | 5.6 | 62.1 | B | W | d |
| PA72 | 03/20/01 | 03/27/01 | 20.4 | 20.4 | 6.6 | 135.2 | B | W | d |
| PA72 | 03/27/01 | 04/03/01 | 35.7 | -- | 3.8 | 137.1 | B | W | dmh |
| PA72 | 04/03/01 | 04/10/01 | 25.7 | 25.7 | 19.4 | 498.2 | B | W | dh |
| PA72 | 04/10/01 | 04/17/01 | 4.1 | 4.1 | 22.3 | 90.5 | B | W | d |
| PA72 | 04/17/01 | 04/24/01 | 16.4 | 16.4 | 14.9 | 243.4 | B | W | dh |
| PA72 | 04/24/01 | 05/01/01 | 1.1 | 1.1 | 25.3 | 28.9 | B | W | d |
| PA72 | 05/01/01 | 05/08/01 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA72 | 05/08/01 | 05/15/01 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | h |
| PA72 | 05/15/01 | 05/22/01 | 34.5 | 34.5 | 5.1 | 176.6 | B | W | d |
| PA72 | 05/22/01 | 05/29/01 | 63.6 | 63.6 | 8.7 | 552.0 | B | W | dh |
| PA72 | 05/29/01 | 06/05/01 | 43.9 | 43.9 | 7.1 | 313.2 | B | W | dh |
| PA72 | 06/05/01 | 06/12/01 | 5.0 | 5.0 | 18.9 | 94.7 | B | W | d |
| PA72 | 06/12/01 | 06/19/01 | 32.3 | 32.3 | 18.9 | 608.6 | A | W | |
| PA72 | 06/19/01 | 06/26/01 | 31.8 | 31.8 | 21.5 | 682.8 | B | W | d |
| PA72 | 06/26/01 | 07/03/01 | 6.6 | 6.6 | 18.0 | 118.8 | B | W | d |
| PA72 | 07/03/01 | 07/10/01 | 22.1 | 22.1 | 16.2 | 358.0 | B | W | dmh |
| PA72 | 07/10/01 | 07/17/01 | 5.1 | 5.1 | 13.3 | 67.8 | B | W | d |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**MILFORD PENNSYLVANIA (PA72)**

| Site | Date On | Date Off | Subppt mm | Pptrec mm | HgConc ng/L | HgDep ng/m² | QR | Sample Type | Notes |
|---|---|---|---|---|---|---|---|---|---|
| PA72 | 07/17/01 | 07/24/01 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA72 | 07/24/01 | 07/31/01 | 22.4 | 22.4 | 6.9 | 154.6 | B | W | d |
| PA72 | 07/31/01 | 08/07/01 | 4.1 | 4.1 | 32.4 | 132.8 | B | W | h |
| PA72 | 08/07/01 | 08/14/01 | 37.3 | 37.3 | 11.8 | 440.1 | B | W | d |
| PA72 | 08/14/01 | 08/21/01 | 14.5 | 14.5 | 11.8 | 171.1 | B | W | d |
| PA72 | 08/21/01 | 08/28/01 | 8.1 | 8.1 | 14.8 | 119.9 | B | W | h |
| PA72 | 08/28/01 | 09/04/01 | 18.8 | 18.8 | 13.6 | 255.7 | B | W | dh |
| PA72 | 09/04/01 | 09/11/01 | 9.4 | 9.4 | 10.2 | 95.9 | B | W | d |
| PA72 | 09/11/01 | 09/18/01 | 14.0 | 14.0 | 17.4 | 243.6 | B | W | d |
| PA72 | 09/18/01 | 09/25/01 | 102.4 | 102.4 | 4.1 | 419.8 | B | W | d |
| PA72 | 09/25/01 | 10/02/01 | 2.8 | 2.8 | 12.7 | 35.6 | B | W | d |
| PA72 | 10/02/01 | 10/09/01 | 7.6 | 7.6 | 5.6 | 42.6 | B | W | dh |
| PA72 | 10/09/01 | 10/16/01 | 14.5 | 14.5 | 5.9 | 85.6 | A | W | |
| PA72 | 10/16/01 | 10/23/01 | 2.5 | 2.5 | 11.8 | 29.5 | B | W | d |
| PA72 | 10/23/01 | 10/30/01 | 0.0 | 0.0 | 0.0 | 0.0 | m | D | m |
| PA72 | 10/30/01 | 11/06/01 | 2.0 | -- | 20.4 | 40.8 | B | W | dm |
| PA72 | 11/06/01 | 11/13/01 | 0.0 | 0.0 | 0.0 | 0.0 | C | D | l |
| PA72 | 11/13/01 | 11/20/01 | 4.6 | 4.6 | 3.7 | 17.0 | B | W | d |
| PA72 | 11/20/01 | 11/27/01 | 21.8 | 21.8 | 6.7 | 146.1 | B | W | dh |
| PA72 | 11/27/01 | 12/04/01 | 15.5 | 15.5 | 14.0 | 217.0 | B | W | d |
| PA72 | 12/04/01 | 12/11/01 | 20.6 | 20.6 | 2.6 | 53.6 | B | W | dmh |
| PA72 | 12/11/01 | 12/18/01 | 32.5 | 32.5 | 10.8 | 351.0 | B | W | d |
| PA72 | 12/18/01 | 12/26/01 | 6.4 | 6.4 | 3.7 | 23.7 | B | W | dm |
| PA72 | 12/26/01 | 01/02/02 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | z |
| PA72 | 01/02/02 | 01/08/02 | 15.1 | 15.1 | 5.7 | 86.1 | B | W | d |
| PA72 | 01/08/02 | 01/15/02 | 6.7 | 6.7 | 1.9 | 12.7 | B | W | dmh |
| PA72 | 01/15/02 | 01/22/02 | 11.4 | 11.4 | 6.3 | 71.8 | B | W | d |
| PA72 | 01/22/02 | 01/29/02 | 2.0 | 2.0 | 15.1 | 30.2 | A | W | |
| PA72 | 01/29/02 | 02/05/02 | 12.0 | 12.0 | 12.6 | 151.2 | B | W | d |
| PA72 | 02/05/02 | 02/12/02 | 7.2 | 7.2 | 16.1 | 115.9 | B | W | d |
| PA72 | 02/12/02 | 02/19/02 | 0.2 | 0.3 | 53.0 | 10.6 | B | T | di |
| PA72 | 02/19/02 | 02/26/02 | 6.2 | 6.2 | 5.7 | 35.3 | B | W | dh |
| PA72 | 02/26/02 | 03/05/02 | 29.8 | 29.8 | 4.4 | 131.1 | B | W | d |
| PA72 | 03/05/02 | 03/12/02 | 4.3 | 4.3 | 10.7 | 46.0 | B | W | dh |
| PA72 | 03/12/02 | 03/19/02 | 11.3 | 11.3 | 9.4 | 106.2 | B | W | dmh |
| PA72 | 03/19/02 | 03/26/02 | 18.5 | 18.5 | 6.2 | 114.7 | B | W | d |
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**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**HILLS CREEK PENNSYLVANIA (PA90)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA90 | 01/07/97 | 01/14/97 | 5.6 | 5.6 | -- | -- | C | W | f |
| PA90 | 01/14/97 | 01/21/97 | 5.8 | 5.8 | 11.1 | 65.1 | A | W | |
| PA90 | 01/21/97 | 01/28/97 | 16.8 | 16.8 | 7.1 | 118.7 | A | W | |
| PA90 | 01/28/97 | 02/04/97 | 0.6 | 0.6 | 69.9 | 44.4 | A | W | v |
| PA90 | 02/04/97 | 02/11/97 | 13.5 | 13.5 | -- | -- | C | W | rc |
| PA90 | 02/11/97 | 02/18/97 | 14.5 | 14.5 | -- | -- | A | Q | v |
| PA90 | 02/19/97 | 02/26/97 | 1.1 | 1.1 | 42.8 | 48.9 | A | W | v |
| PA90 | 02/25/97 | 03/04/97 | 22.9 | 22.9 | 14.9 | 339.5 | A | W | |
| PA90 | 03/04/97 | 03/11/97 | 21.6 | 21.6 | 1.7 | 36.0 | A | W | |
| PA90 | 03/11/97 | 03/18/97 | 14.2 | 14.2 | 7.7 | 109.2 | A | W | |
| PA90 | 03/18/97 | 03/25/97 | 4.1 | 4.1 | 11.7 | 47.5 | A | W | |
| PA90 | 03/25/97 | 04/01/97 | 19.1 | 19.1 | 4.0 | 76.7 | A | W | |
| PA90 | 04/01/97 | 04/08/97 | 1.0 | 1.0 | -- | -- | A | T | n |
| PA90 | 04/08/97 | 04/15/97 | 6.4 | 6.4 | 6.4 | 40.8 | A | W | |
| PA90 | 04/15/97 | 04/22/97 | 5.1 | 5.1 | 6.0 | 30.6 | A | W | |
| PA90 | 04/22/97 | 04/29/97 | 10.5 | 10.5 | 10.5 | 110.8 | A | W | |
| PA90 | 04/29/97 | 05/06/97 | 16.0 | 16.0 | 14.2 | 226.8 | A | W | |
| PA90 | 05/06/97 | 05/13/97 | 9.7 | 9.7 | 7.7 | 73.9 | B | W | h |
| PA90 | 05/13/97 | 05/20/97 | 22.1 | 22.1 | 13.6 | 300.1 | B | W | h |
| PA90 | 05/20/97 | 05/27/97 | 6.4 | 6.4 | 25.3 | 160.5 | A | W | |
| PA90 | 05/27/97 | 06/03/97 | 27.7 | 27.7 | 15.3 | 424.5 | A | W | |
| PA90 | 06/03/97 | 06/10/97 | 1.4 | 1.4 | 35.9 | 50.1 | A | W | |
| PA90 | 06/10/97 | 06/17/97 | 3.1 | 3.1 | 6.4 | 19.6 | B | W | zr |
| PA90 | 06/17/97 | 06/24/97 | 19.8 | 19.8 | 16.2 | 321.6 | A | W | |
| PA90 | 06/24/97 | 07/01/97 | 39.4 | 39.4 | 16.0 | 629.8 | A | W | |
| PA90 | 07/01/97 | 07/08/97 | 1.3 | 1.3 | 13.8 | 17.5 | A | W | |
| PA90 | 07/08/97 | 07/15/97 | 25.9 | 25.9 | 15.3 | 397.4 | A | W | |
| PA90 | 07/15/97 | 07/22/97 | 19.8 | 19.8 | 14.0 | 277.0 | A | W | |
| PA90 | 07/22/97 | 07/29/97 | 23.6 | 23.6 | 10.6 | 249.2 | A | W | |
| PA90 | 07/29/97 | 08/05/97 | 7.9 | 7.9 | 5.7 | 45.5 | A | W | |
| PA90 | 08/05/97 | 08/12/97 | 2.8 | 2.8 | 29.0 | 80.9 | A | W | |
| PA90 | 08/12/97 | 08/19/97 | 48.1 | 48.1 | 11.7 | 562.6 | A | W | |
| PA90 | 08/19/97 | 08/26/97 | 17.6 | -- | 11.8 | 208.1 | B | W | hpr |
| PA90 | 08/26/97 | 09/02/97 | 24.9 | -- | 11.9 | 295.8 | A | W | p |
| PA90 | 09/02/97 | 09/09/97 | 4.1 | -- | 15.9 | 65.1 | B | W | pr |
| PA90 | 09/09/97 | 09/16/97 | 18.8 | -- | 5.4 | 101.7 | A | W | p |
| PA90 | 09/16/97 | 09/23/97 | 11.7 | -- | 11.0 | 128.5 | A | W | p |
| PA90 | 09/23/97 | 09/30/97 | 38.1 | 38.1 | 5.1 | 194.0 | A | W | |
| PA90 | 09/30/97 | 10/07/97 | 8.4 | 8.4 | 18.3 | 153.0 | A | W | |
| PA90 | 10/07/97 | 10/14/97 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | n |
| PA90 | 10/14/97 | 10/21/97 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | n |
| PA90 | 10/21/97 | 10/28/97 | 20.8 | 20.8 | 3.5 | 73.0 | B | W | h |
| PA90 | 10/28/97 | 11/04/97 | 55.1 | 55.1 | 2.2 | 123.4 | A | W | |
| PA90 | 11/04/97 | 11/10/97 | 36.6 | 36.6 | 5.4 | 198.9 | A | W | |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**HILLS CREEK PENNSYLVANIA (PA90)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA90 | 11/10/97 | 11/18/97 | 28.7 | 28.7 | 3.4 | 97.7 | A | W | |
| PA90 | 11/18/97 | 11/25/97 | 5.7 | 5.7 | 6.8 | 39.0 | A | W | |
| PA90 | 11/25/97 | 12/03/97 | 10.4 | 10.4 | 3.9 | 40.6 | A | W | |
| PA90 | 12/03/97 | 12/09/97 | 5.0 | 5.0 | 9.7 | 48.2 | A | W | |
| PA90 | 12/09/97 | 12/16/97 | 20.3 | 20.3 | 8.4 | 170.1 | B | W | h |
| PA90 | 12/16/97 | 12/22/97 | 0.5 | 0.5 | 28.9 | 14.7 | A | W | v |
| PA90 | 12/22/97 | 12/29/97 | 11.1 | 11.1 | 6.1 | 67.7 | A | W | |
| PA90 | 12/29/97 | 01/06/98 | 33.8 | 33.8 | 3.6 | 121.9 | B | W | h |
| PA90 | 01/06/98 | 01/13/98 | 35.8 | 35.8 | 7.0 | 251.2 | A | W | |
| PA90 | 01/13/98 | 01/20/98 | 15.6 | 15.6 | 1.7 | 27.3 | A | W | |
| PA90 | 01/20/98 | 01/27/98 | 13.5 | 13.5 | 4.7 | 63.9 | A | W | |
| PA90 | 01/27/98 | 02/03/98 | 1.5 | 1.5 | 11.1 | 17.0 | B | W | hi |
| PA90 | 02/03/98 | 02/10/98 | 3.3 | 3.3 | 11.8 | 39.1 | B | W | h |
| PA90 | 02/10/98 | 02/17/98 | 10.2 | 10.2 | 5.0 | 50.7 | A | W | |
| PA90 | 02/17/98 | 02/24/98 | 51.1 | 51.1 | 4.9 | 249.9 | A | W | |
| PA90 | 02/24/98 | 03/03/98 | 19.1 | 19.1 | 3.1 | 58.3 | A | W | |
| PA90 | 03/03/98 | 03/10/98 | 22.6 | 22.6 | 3.4 | 77.2 | A | W | |
| PA90 | 03/10/98 | 03/17/98 | 3.3 | 3.3 | 9.6 | 31.8 | A | W | |
| PA90 | 03/17/98 | 03/24/98 | 34.3 | 34.3 | 6.4 | 218.2 | B | W | h |
| PA90 | 03/24/98 | 03/31/98 | 1.0 | 1.0 | 25.1 | 25.5 | B | W | i |
| PA90 | 03/31/98 | 04/07/98 | 12.2 | 12.2 | 6.0 | 73.3 | B | W | d |
| PA90 | 04/07/98 | 04/14/98 | 42.2 | 42.2 | 4.4 | 185.1 | B | W | d |
| PA90 | 04/14/98 | 04/21/98 | 46.5 | 46.5 | -- | -- | C | W | fv |
| PA90 | 04/21/98 | 04/28/98 | 18.5 | 18.5 | 4.8 | 89.1 | A | W | |
| PA90 | 04/28/98 | 05/05/98 | 14.7 | 14.7 | 10.3 | 151.7 | B | W | d |
| PA90 | 05/05/98 | 05/12/98 | 67.1 | 67.1 | 5.5 | 370.9 | B | W | d |
| PA90 | 05/12/98 | 05/19/98 | 18.3 | 18.3 | 35.3 | 645.0 | B | W | d |
| PA90 | 05/19/98 | 05/26/98 | 4.6 | 4.6 | 11.2 | 51.1 | A | W | |
| PA90 | 05/26/98 | 06/02/98 | 16.0 | 16.0 | 25.7 | 411.2 | B | W | d |
| PA90 | 06/02/98 | 06/09/98 | 12.2 | 12.2 | 17.5 | 213.9 | B | W | d |
| PA90 | 06/09/98 | 06/16/98 | 36.8 | 36.8 | 9.0 | 333.0 | A | W | |
| PA90 | 06/16/98 | 06/23/98 | 3.8 | 3.8 | 14.0 | 53.5 | B | W | h |
| PA90 | 06/23/98 | 06/30/98 | 42.7 | 42.7 | 15.3 | 654.6 | B | W | dh |
| PA90 | 06/30/98 | 07/07/98 | 16.5 | 16.5 | 13.3 | 220.2 | B | W | dh |
| PA90 | 07/07/98 | 07/14/98 | 14.0 | 14.0 | 21.9 | 306.4 | B | W | h |
| PA90 | 07/14/98 | 07/21/98 | 11.7 | 11.7 | 11.1 | 129.8 | A | W | |
| PA90 | 07/21/98 | 07/28/98 | 26.7 | 26.7 | 4.7 | 126.1 | B | W | h |
| PA90 | 07/28/98 | 08/04/98 | 1.0 | 1.0 | 18.8 | 19.1 | A | W | |
| PA90 | 08/04/98 | 08/11/98 | 7.6 | 7.6 | 19.7 | 149.8 | B | W | d |
| PA90 | 08/11/98 | 08/18/98 | 2.3 | 2.3 | 23.7 | 54.1 | B | W | d |
| PA90 | 08/18/98 | 08/25/98 | 4.4 | 4.4 | 28.9 | 128.6 | A | W | |
| PA90 | 08/25/98 | 09/01/98 | 8.9 | 8.9 | 31.4 | 279.1 | B | W | d |
| PA90 | 09/01/98 | 09/08/98 | 17.5 | 17.5 | 9.4 | 164.6 | B | W | d |
| PA90 | 09/08/98 | 09/15/98 | 3.9 | 3.9 | 4.4 | 17.2 | A | W | |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**HILLS CREEK PENNSYLVANIA (PA90)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA90 | 09/15/98 | 09/22/98 | 3.3 | 3.3 | 15.6 | 51.4 | B | W | h |
| PA90 | 09/22/98 | 09/29/98 | 9.9 | 9.9 | 16.0 | 158.1 | A | W | |
| PA90 | 09/29/98 | 10/06/98 | 4.1 | 4.1 | 8.3 | 34.2 | B | W | m |
| PA90 | 10/06/98 | 10/13/98 | 67.1 | 67.1 | 6.4 | 428.0 | B | W | d |
| PA90 | 10/13/98 | 10/20/98 | 1.8 | 1.8 | 40.4 | 71.8 | B | W | dhz |
| PA90 | 10/20/98 | 10/27/98 | 3.8 | 3.8 | 5.1 | 19.4 | A | W | |
| PA90 | 10/27/98 | 11/03/98 | 2.4 | 2.4 | 0.8 | 1.9 | A | W | |
| PA90 | 11/03/98 | 11/10/98 | 1.4 | 1.4 | 13.3 | 18.9 | A | W | |
| PA90 | 11/10/98 | 11/17/98 | 10.0 | 10.0 | 7.0 | 70.5 | A | W | |
| PA90 | 11/17/98 | 11/24/98 | 5.7 | 5.7 | 3.7 | 21.1 | B | W | h |
| PA90 | 11/24/98 | 12/02/98 | 5.5 | 5.5 | 5.2 | 28.5 | B | W | d |
| PA90 | 12/02/98 | 12/08/98 | 1.8 | 1.8 | 13.2 | 23.6 | B | W | mi |
| PA90 | 12/08/98 | 12/17/98 | 2.0 | 2.0 | 3.9 | 8.0 | A | W | |
| PA90 | 12/17/98 | 12/22/98 | 22.0 | 22.0 | 4.2 | 91.7 | B | W | s |
| PA90 | 12/22/98 | 12/29/98 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA90 | 12/29/98 | 01/05/99 | 22.4 | 22.4 | 1.8 | 40.6 | B | W | h |
| PA90 | 01/05/99 | 01/12/99 | 13.0 | 13.0 | -- | -- | C | W | vfz |
| PA90 | 01/12/99 | 01/19/99 | 54.1 | 54.1 | 3.7 | 201.7 | A | W | |
| PA90 | 01/19/99 | 01/26/99 | 24.4 | 24.4 | 5.3 | 129.4 | B | W | m |
| PA90 | 01/26/99 | 02/02/99 | 5.5 | 5.5 | 4.6 | 25.1 | A | W | |
| PA90 | 02/02/99 | 02/09/99 | 8.9 | 8.9 | -- | -- | C | W | vfz |
| PA90 | 02/09/99 | 02/16/99 | 3.7 | 3.7 | 8.4 | 30.8 | A | W | |
| PA90 | 02/16/99 | 02/23/99 | 1.8 | 1.8 | -- | -- | C | W | ch |
| PA90 | 02/23/99 | 03/02/99 | 5.3 | 5.3 | 6.7 | 35.7 | B | W | hd |
| PA90 | 03/02/99 | 03/09/99 | 67.3 | 67.3 | 4.7 | 317.6 | B | W | hd |
| PA90 | 03/09/99 | 03/16/99 | 1.8 | 1.8 | -- | -- | C | W | vfh |
| PA90 | 03/16/99 | 03/23/99 | 15.2 | 15.2 | 2.4 | 36.1 | B | W | hd |
| PA90 | 03/23/99 | 03/30/99 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA90 | 03/30/99 | 04/06/99 | 14.0 | 14.0 | 6.0 | 83.6 | B | W | d |
| PA90 | 04/06/99 | 04/13/99 | 28.4 | 28.4 | 9.3 | 263.9 | B | W | d |
| PA90 | 04/13/99 | 04/20/99 | 12.3 | 12.3 | 7.6 | 93.6 | B | W | d |
| PA90 | 04/20/99 | 04/27/99 | 18.9 | 18.9 | 9.0 | 170.6 | B | W | hd |
| PA90 | 04/27/99 | 05/04/99 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA90 | 05/04/99 | 05/11/99 | 10.4 | 10.4 | 10.8 | 112.7 | B | W | d |
| PA90 | 05/11/99 | 05/18/99 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA90 | 05/18/99 | 05/25/99 | 15.0 | 15.0 | 20.6 | 310.4 | B | W | d |
| PA90 | 05/25/99 | 06/01/99 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | hd |
| PA90 | 06/01/99 | 06/08/99 | 5.1 | 5.1 | 7.7 | 39.2 | B | W | d |
| PA90 | 06/08/99 | 06/15/99 | 2.4 | 2.4 | 8.8 | 21.5 | B | W | hd |
| PA90 | 06/15/99 | 06/21/99 | 11.8 | 11.8 | 10.7 | 126.1 | B | W | d |
| PA90 | 06/21/99 | 06/29/99 | 62.5 | 62.5 | 7.3 | 452.8 | B | W | d |
| PA90 | 06/29/99 | 07/06/99 | 18.1 | 18.1 | 6.1 | 110.3 | B | W | hd |
| PA90 | 07/06/99 | 07/13/99 | 15.9 | 15.9 | 27.7 | 440.1 | B | W | hd |
| PA90 | 07/13/99 | 07/20/99 | 3.5 | 3.5 | 6.0 | 20.8 | A | W | |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**HILLS CREEK PENNSYLVANIA (PA90)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA90 | 07/20/99 | 07/27/99 | 13.1 | 13.1 | 7.0 | 91.9 | B | W | d |
| PA90 | 07/27/99 | 08/03/99 | 9.1 | 9.1 | 30.4 | 278.1 | B | W | d |
| PA90 | 08/03/99 | 08/10/99 | 1.3 | 1.3 | 44.0 | 55.9 | B | W | id |
| PA90 | 08/10/99 | 08/17/99 | 23.9 | 23.9 | 10.1 | 241.4 | B | W | d |
| PA90 | 08/17/99 | 08/24/99 | 14.2 | 14.2 | 11.9 | 167.8 | B | W | hd |
| PA90 | 08/24/99 | 08/31/99 | 17.1 | 17.1 | 4.3 | 73.5 | B | W | d |
| PA90 | 08/31/99 | 09/07/99 | 54.0 | 54.0 | 3.8 | 207.5 | B | W | d |
| PA90 | 09/07/99 | 09/14/99 | 2.8 | 2.8 | 20.0 | 56.0 | B | W | hd |
| PA90 | 09/14/99 | 09/21/99 | 57.6 | 57.6 | 5.2 | 298.3 | B | W | d |
| PA90 | 09/21/99 | 09/28/99 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA90 | 09/28/99 | 10/05/99 | 40.2 | 40.2 | 4.2 | 169.6 | A | W | |
| PA90 | 10/05/99 | 10/12/99 | 4.1 | 4.1 | 8.9 | 36.6 | A | W | |
| PA90 | 10/12/99 | 10/19/99 | 9.5 | 9.5 | 8.5 | 80.5 | B | W | hd |
| PA90 | 10/19/99 | 10/26/99 | 4.2 | 4.2 | 14.5 | 60.8 | B | W | hd |
| PA90 | 10/26/99 | 11/02/99 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA90 | 11/02/99 | 11/09/99 | 9.5 | 9.5 | 5.6 | 53.8 | B | W | hd |
| PA90 | 11/09/99 | 11/16/99 | 1.3 | 1.3 | 35.5 | 45.1 | B | W | i |
| PA90 | 11/16/99 | 11/23/99 | 1.3 | 1.3 | 8.9 | 11.3 | B | W | d |
| PA90 | 11/23/99 | 11/30/99 | 57.2 | 57.2 | 5.0 | 283.7 | B | W | hd |
| PA90 | 11/30/99 | 12/07/99 | 3.5 | 3.5 | 5.1 | 17.8 | B | W | hd |
| PA90 | 12/07/99 | 12/15/99 | 30.2 | 30.2 | 5.1 | 155.2 | B | W | hd |
| PA90 | 12/15/99 | 12/21/99 | 4.2 | 4.2 | 1.7 | 7.2 | B | W | d |
| PA90 | 12/21/99 | 12/28/99 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | d |
| PA90 | 12/28/99 | 01/04/00 | 11.7 | 11.7 | 12.3 | 144.2 | B | W | d |
| PA90 | 01/04/00 | 01/11/00 | 10.7 | 10.7 | 3.1 | 32.6 | B | W | d |
| PA90 | 01/11/00 | 01/18/00 | 10.3 | 10.3 | -- | -- | C | W | vd |
| PA90 | 01/18/00 | 01/25/00 | 6.1 | 6.1 | -- | -- | C | W | fvpm |
| PA90 | 01/25/00 | 02/01/00 | 11.4 | 11.4 | -- | -- | C | W | vh |
| PA90 | 02/01/00 | 02/08/00 | 1.8 | 1.8 | -- | -- | C | W | v |
| PA90 | 02/08/00 | 02/15/00 | 24.1 | 24.1 | -- | -- | C | W | fv |
| PA90 | 02/15/00 | 02/22/00 | 26.2 | 26.2 | -- | -- | C | W | fv |
| PA90 | 02/22/00 | 02/29/00 | 14.2 | 14.2 | 1.8 | 25.9 | B | W | dm |
| PA90 | 02/29/00 | 03/07/00 | 2.9 | 2.9 | 6.7 | 19.0 | B | W | d |
| PA90 | 03/07/00 | 03/14/00 | 18.2 | 18.2 | 19.6 | 355.1 | B | W | dh |
| PA90 | 03/14/00 | 03/21/00 | 20.2 | 20.2 | 3.6 | 73.4 | B | W | dh |
| PA90 | 03/21/00 | 03/28/00 | 21.6 | 21.6 | 11.1 | 240.2 | B | W | h |
| PA90 | 03/28/00 | 04/04/00 | 44.5 | 44.5 | 3.0 | 133.8 | A | W | |
| PA90 | 04/04/00 | 04/11/00 | 27.2 | 27.2 | 9.9 | 268.2 | B | W | dh |
| PA90 | 04/11/00 | 04/18/00 | 17.1 | 17.1 | 5.2 | 89.4 | B | W | d |
| PA90 | 04/18/00 | 04/25/00 | 36.1 | 36.1 | 4.2 | 150.0 | B | W | d |
| PA90 | 04/25/00 | 05/02/00 | 6.0 | 6.0 | 16.7 | 99.8 | B | W | h |
| PA90 | 05/02/00 | 05/09/00 | 2.0 | 2.0 | -- | -- | C | W | fv |
| PA90 | 05/09/00 | 05/16/00 | 7.4 | 7.4 | 4.2 | 31.3 | B | W | dh |
| PA90 | 05/16/00 | 05/23/00 | 58.9 | 58.9 | 7.4 | 433.2 | B | W | h |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**HILLS CREEK PENNSYLVANIA (PA90)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA90 | 05/23/00 | 05/30/00 | 26.7 | 26.7 | 4.4 | 118.0 | A | W | |
| PA90 | 05/30/00 | 06/06/00 | 21.3 | 21.3 | -- | -- | C | W | fv |
| PA90 | 06/06/00 | 06/13/00 | 19.1 | 19.1 | -- | -- | C | W | f |
| PA90 | 06/13/00 | 06/20/00 | 47.9 | 47.9 | 9.4 | 451.0 | B | W | d |
| PA90 | 06/20/00 | 06/27/00 | 19.7 | 19.7 | 17.9 | 353.2 | B | W | dh |
| PA90 | 06/27/00 | 07/03/00 | 3.1 | 3.1 | 17.6 | 54.8 | A | W | |
| PA90 | 07/03/00 | 07/11/00 | 10.6 | 10.6 | 38.9 | 412.6 | A | W | |
| PA90 | 07/11/00 | 07/18/00 | 12.6 | 12.6 | 16.7 | 210.1 | B | W | dh |
| PA90 | 07/18/00 | 07/25/00 | 3.2 | 3.2 | 23.2 | 73.6 | B | W | d |
| PA90 | 07/25/00 | 08/01/00 | 17.0 | 17.0 | 23.5 | 398.6 | A | W | |
| PA90 | 08/01/00 | 08/08/00 | 34.2 | 34.2 | 9.9 | 336.6 | B | W | d |
| PA90 | 08/08/00 | 08/15/00 | 4.4 | 4.4 | 12.6 | 55.0 | A | W | |
| PA90 | 08/15/00 | 08/22/00 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA90 | 08/22/00 | 08/29/00 | 8.8 | 8.8 | 8.5 | 74.8 | B | W | h |
| PA90 | 08/29/00 | 09/05/00 | 10.3 | 10.3 | 29.0 | 298.5 | A | W | |
| PA90 | 09/05/00 | 09/12/00 | 4.8 | 4.8 | 7.7 | 37.2 | B | W | h |
| PA90 | 09/12/00 | 09/19/00 | 16.8 | 16.8 | 10.3 | 173.1 | B | W | d |
| PA90 | 09/19/00 | 09/26/00 | 11.6 | -- | 9.8 | 113.3 | B | W | m |
| PA90 | 09/26/00 | 10/03/00 | 2.4 | -- | 3.0 | 7.2 | B | W | m |
| PA90 | 10/03/00 | 10/10/00 | 34.7 | 34.7 | 13.9 | 482.1 | B | W | d |
| PA90 | 10/10/00 | 10/17/00 | 0.0 | 0.0 | 0.0 | 0.0 | A | D | |
| PA90 | 10/17/00 | 10/24/00 | 22.9 | 22.9 | 2.9 | 67.1 | B | W | dh |
| PA90 | 10/24/00 | 10/31/00 | 1.8 | 1.8 | 20.1 | 35.7 | B | W | h |
| PA90 | 10/31/00 | 11/07/00 | 1.5 | 1.5 | 28.9 | 42.2 | A | W | |
| PA90 | 11/07/00 | 11/14/00 | 14.5 | 14.5 | 4.2 | 60.5 | A | W | |
| PA90 | 11/14/00 | 11/21/00 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | h |
| PA90 | 11/21/00 | 11/28/00 | 11.2 | 11.2 | 2.9 | 32.9 | B | W | dh |
| PA90 | 11/28/00 | 12/05/00 | 2.2 | 2.2 | -- | -- | C | W | fvh |
| PA90 | 12/05/00 | 12/12/00 | 11.0 | 11.0 | -- | -- | C | W | v |
| PA90 | 12/12/00 | 12/19/00 | 23.4 | 23.4 | 9.5 | 223.3 | B | W | dh |
| PA90 | 12/19/00 | 12/26/00 | 3.2 | 3.2 | -- | -- | C | W | vh |
| PA90 | 12/26/00 | 01/02/01 | 0.5 | 0.5 | -- | -- | B | T | h |
| PA90 | 01/02/01 | 01/09/01 | 1.1 | 1.1 | -- | -- | C | T | hv |
| PA90 | 01/09/01 | 01/16/01 | 1.3 | 1.3 | -- | -- | C | W | v |
| PA90 | 01/16/01 | 01/23/01 | 9.5 | 9.5 | 3.5 | 33.2 | B | W | dh |
| PA90 | 01/23/01 | 01/30/01 | 1.5 | 1.5 | 21.1 | 32.2 | B | W | di |
| PA90 | 01/30/01 | 02/06/01 | 6.9 | 6.9 | -- | -- | C | W | dhf |
| PA90 | 02/06/01 | 02/13/01 | 3.4 | 3.4 | -- | -- | C | W | vf |
| PA90 | 02/13/01 | 02/20/01 | 11.4 | 11.4 | 3.0 | 34.8 | B | W | dh |
| PA90 | 02/20/01 | 02/27/01 | 4.1 | 4.1 | -- | -- | C | W | hfv |
| PA90 | 02/27/01 | 03/06/01 | 30.0 | 30.0 | 2.3 | 68.0 | B | W | d |
| PA90 | 03/06/01 | 03/13/01 | 20.0 | 20.0 | 6.6 | 132.9 | B | W | dh |
| PA90 | 03/13/01 | 03/20/01 | 14.9 | 14.9 | 4.8 | 70.7 | A | W | |
| PA90 | 03/20/01 | 03/27/01 | 25.0 | 25.0 | 1.4 | 35.7 | B | W | dh |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**HILLS CREEK PENNSYLVANIA (PA90)**

| Site | Date | Date | Subppt | Pptrec | HgConc | HgDep | QR | Sample | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | On | Off | mm | mm | ng/L | ng/m² | | Type | |
| PA90 | 03/27/01 | 04/03/01 | 24.5 | 24.5 | -- | -- | C | W | dvf |
| PA90 | 04/03/01 | 04/10/01 | 18.9 | 18.9 | 23.9 | 452.6 | B | W | d |
| PA90 | 04/10/01 | 04/17/01 | 12.6 | 12.6 | 5.9 | 73.9 | B | W | d |
| PA90 | 04/17/01 | 04/24/01 | 20.1 | 20.1 | -- | -- | C | W | dhuf |
| PA90 | 04/24/01 | 05/01/01 | 0.4 | 0.4 | -- | -- | B | T | h |
| PA90 | 05/01/01 | 05/08/01 | 0.5 | 0.5 | -- | -- | B | T | h |
| PA90 | 05/08/01 | 05/15/01 | 5.7 | 5.7 | -- | -- | C | W | hvf |
| PA90 | 05/15/01 | 05/22/01 | 14.8 | 14.8 | 7.4 | 109.3 | B | W | dh |
| PA90 | 05/22/01 | 05/29/01 | 28.4 | 28.4 | 6.2 | 177.6 | B | W | h |
| PA90 | 05/29/01 | 06/05/01 | 8.8 | 8.8 | 6.8 | 59.5 | B | W | hz |
| PA90 | 06/05/01 | 06/12/01 | 3.0 | 3.0 | -- | -- | C | W | hf |
| PA90 | 06/12/01 | 06/19/01 | 21.3 | 21.3 | -- | -- | C | W | vf |
| PA90 | 06/19/01 | 06/26/01 | 59.8 | 59.8 | 7.9 | 474.6 | B | W | dh |
| PA90 | 06/26/01 | 07/03/01 | 21.3 | 21.3 | 6.2 | 132.1 | B | W | dh |
| PA90 | 07/03/01 | 07/10/01 | 16.6 | 16.6 | 8.8 | 146.1 | B | W | dzh |
| PA90 | 07/10/01 | 07/17/01 | 1.3 | 1.3 | 21.3 | 27.7 | B | W | h |
| PA90 | 07/17/01 | 07/24/01 | 0.5 | 0.5 | 56.4 | 28.2 | B | T | di |
| PA90 | 07/24/01 | 07/31/01 | 17.5 | 17.5 | 11.9 | 208.2 | B | W | d |
| PA90 | 07/31/01 | 08/07/01 | 1.5 | 1.5 | -- | -- | C | W | zhv |
| PA90 | 08/07/01 | 08/14/01 | 8.1 | 8.1 | 9.3 | 75.3 | B | W | dzh |
| PA90 | 08/14/01 | 08/21/01 | 46.5 | 46.5 | 7.4 | 344.1 | B | W | dh |
| PA90 | 08/21/01 | 08/28/01 | 16.5 | 16.5 | 4.1 | 67.6 | B | W | dh |
| PA90 | 08/28/01 | 09/04/01 | 15.4 | 15.4 | 9.8 | 150.9 | B | W | dh |
| PA90 | 09/04/01 | 09/11/01 | 13.5 | 13.5 | 6.6 | 89.1 | B | W | dzh |
| PA90 | 09/11/01 | 09/18/01 | 30.5 | 30.5 | 6.4 | 195.2 | B | W | d |
| PA90 | 09/18/01 | 09/25/01 | 74.8 | 74.8 | 3.5 | 261.8 | B | W | dh |
| PA90 | 09/25/01 | 10/02/01 | 9.9 | 9.9 | 5.8 | 57.4 | B | W | dh |
| PA90 | 10/02/01 | 10/09/01 | 4.3 | 4.3 | 7.1 | 30.5 | B | W | h |
| PA90 | 10/09/01 | 10/16/01 | 15.6 | 15.6 | 6.6 | 103.0 | B | W | dz |
| PA90 | 10/16/01 | 10/23/01 | 12.8 | 12.8 | 6.4 | 81.9 | B | W | d |
| PA90 | 10/23/01 | 10/30/01 | 6.6 | 6.6 | 8.4 | 55.4 | B | W | dh |
| PA90 | 10/30/01 | 11/06/01 | 0.8 | 0.8 | 52.0 | 41.6 | B | W | d |
| PA90 | 11/06/01 | 11/14/01 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | h |
| PA90 | 11/14/01 | 11/20/01 | 4.6 | 4.6 | 5.5 | 25.3 | B | W | d |
| PA90 | 11/20/01 | 11/27/01 | 19.3 | 19.3 | 4.0 | 77.2 | B | W | d |
| PA90 | 11/27/01 | 12/04/01 | 17.5 | 17.5 | 7.0 | 122.5 | B | W | dzh |
| PA90 | 12/04/01 | 12/11/01 | 9.9 | 9.9 | 2.2 | 21.8 | B | W | dh |
| PA90 | 12/11/01 | 12/18/01 | 31.0 | 31.0 | 6.1 | 189.1 | B | W | d |
| PA90 | 12/18/01 | 12/24/01 | 2.5 | 2.5 | 7.2 | 18.0 | B | W | d |
| PA90 | 12/24/01 | 12/31/01 | 1.5 | 1.5 | -- | -- | C | W | vf |
| PA90 | 12/31/01 | 01/08/02 | 11.5 | 11.5 | 3.1 | 35.6 | B | W | dh |
| PA90 | 01/08/02 | 01/15/02 | 1.3 | 1.3 | -- | -- | C | W | hv |
| PA90 | 01/15/02 | 01/22/02 | 7.6 | 7.6 | 38.9 | 295.6 | B | W | dh |
| PA90 | 01/22/02 | 01/29/02 | 3.0 | 3.0 | 8.2 | 24.6 | B | W | dh |

**NATIONAL ATMOSPHERIC DEPOSITION PROGRAM**
**MERCURY DEPOSITION NETWORK**
**HILLS CREEK PENNSYLVANIA (PA90)**

| Site | Date On | Date Off | Subppt mm | Pptrec mm | HgConc ng/L | HgDep ng/m² | QR | Sample Type | Notes |
|---|---|---|---|---|---|---|---|---|---|
| PA90 | 01/29/02 | 02/05/02 | 13.5 | 13.5 | 10.1 | 136.4 | B | W | dh |
| PA90 | 02/05/02 | 02/12/02 | 20.3 | 20.3 | 2.4 | 48.7 | B | W | d |
| PA90 | 02/12/02 | 02/19/02 | 0.0 | 0.0 | 0.0 | 0.0 | B | D | h |
| PA90 | 02/19/02 | 02/26/02 | 3.2 | 3.2 | 10.6 | 33.9 | B | W | d |
| PA90 | 02/26/02 | 03/05/02 | 9.1 | 9.1 | 4.1 | 37.3 | B | W | h |
| PA90 | 03/05/02 | 03/12/02 | 3.2 | 3.2 | 8.4 | 26.9 | B | W | d |
| PA90 | 03/12/02 | 03/19/02 | 7.4 | 7.4 | 7.3 | 54.0 | B | W | d |
| PA90 | 03/19/02 | 03/26/02 | 14.5 | 14.5 | 6.0 | 87.0 | B | W | d |

## EXPLANATION OF MDN DATA FIELDS

**SITE CODE:** Two-letter state or province designator plus SAROAD county code for U.S. sites or sequential numbers for Canada.

**START DATE**: Month/Day/Year (mm/dd/yy)

**END DATE**: Month/Day/Year (mm/dd/yy)

**SUBPPT**: Rain gauge precipitation amount in millimeters (mm) if available, otherwise precipitation amount in mm is calculated from the net precipitation volume caught in the sample bottle.

**PPT**: Precipitation amount in mm from the rain gauge, if blank, no rain gauge data available.

**HG CONC**: Total mercury concentration reported by the lab in nanograms/Liter (ng/L).

**DEPOSITION**: Product of SUBPPT and HG CONC. Units are $ng/m^2$.

**QUALITY RATING (QR) CODE**:

A = fully qualified with no problems
B = valid data with minor problems, used for summary statistics
C = invalid data not used for summary statistics
Blank = no sample submitted for the time period

**SAMPLE TYPE**:

**W** = Wet sample, measurable precipitation (> or = 0.03 inch) on the rain gauge (RG) or net bottle catch (BC) = or > 10.0 mL if RG data is missing. Concentration and deposition data are reported unless the QR code is C.

**D** = Dry sample, no indication of sampler openings on the RG or net BC < 1.5 mL if RG event recorder data are missing. No concentration data are reported. Ppt, subppt and deposition are set at zero.

**T** = Trace sample. RG shows openings or a trace of precipitation amount (<0.03inch). If RG data are missing, a net BC between 1.5 mL and 10.0 mL (inclusive) will be coded as a trace (T) sample type. Concentration data may or may not be reported depending on whether the BC is 1.5 mL or higher. If the BC = 1.5 mL or higher, then ppt is left blank, subppt = BC, and deposition is based on the BC volume. If BC < 1.5 mL, then ppt subppt, and deposition are all set to zero.

**Q** = Sampler was used for a Quality Assurance (QA) sample; no ambient sample submitted. No concentration values are reported (QA values will be published in the QA Report). Deposition is only reported where the value is zero (D or T samples with no measurable precipitation).

| NOTES: | | QR CODE | Valid for Symmary (Yes/NO) |
|---|---|---|---|
| s = | short sample time (< 6 days) | B | Y |
| e = | extended sample time (> 6 days) | B | Y |
| d = | debris present (previously marked with an x) | B | Y |
| m = | missing information (previously p or r for missing precipitation or missing event recorder data | B | Y |
| z = | site operations problems | B | Y |
| h = | sample handling problems (Codes z and h include equipment and handling problems that don't seriously compromise the sample. | B | Y |
| i = | low volume sample (1.49 mL < net BC < 10.0 mL) (Mercury concentration data are reported for i coded samples but they are less certain than those for samples with net BC of at least 10 mL) | B | Y |
| b = | bulk sample (wet side exposed entire sampling interval) | C | N |
| v = | RG indicates precipitation occurred but BC < 1 mL, or < 10% of indicated RG amount | C | N |
| u = | undefined sample (wet side bucket exposed during rain free periods | C | N |
| f = | serious problems with field operations that seriously compromise the sample integrity | C | N |
| l = | lab error | C | N |
| c = | sample compromised due to contamination | C | N |
| p = | no precipitation data from either RG and BC | C | N |
| n = | no sample submitted | – | N |

**Calculation of Deposition:**

1. If a valid precipitation amount can be read from the rain gauge chart (RG ≥ 0.03 inch), the sample type is set to "W" (wet); and the value from the RG chart is used to calculate deposition (RG amount in mm times Hg concentration in ng/L). If the RG chart event recorder shows no sampler opening, sample type is set to "D" (dry) and precipitation amount and deposition are set to zero.

2. If the precipitation amount from the RG chart is not available, the net bottle catch (BC) will be used to calculate deposition as long as BC > 1.49 mL. If the BC is between 1.5 and 10.0 mL, the sample type will be set to "T" (trace) and the BC used to calculate deposition. These samples are also coded with an "i" in the Notes field and downgraded to a "B" Quality Rating to indicate uncertainty due to low volume. If BC > 10 mL, the sample type will be set to "W" (wet) and the BC will be used to calculate deposition.

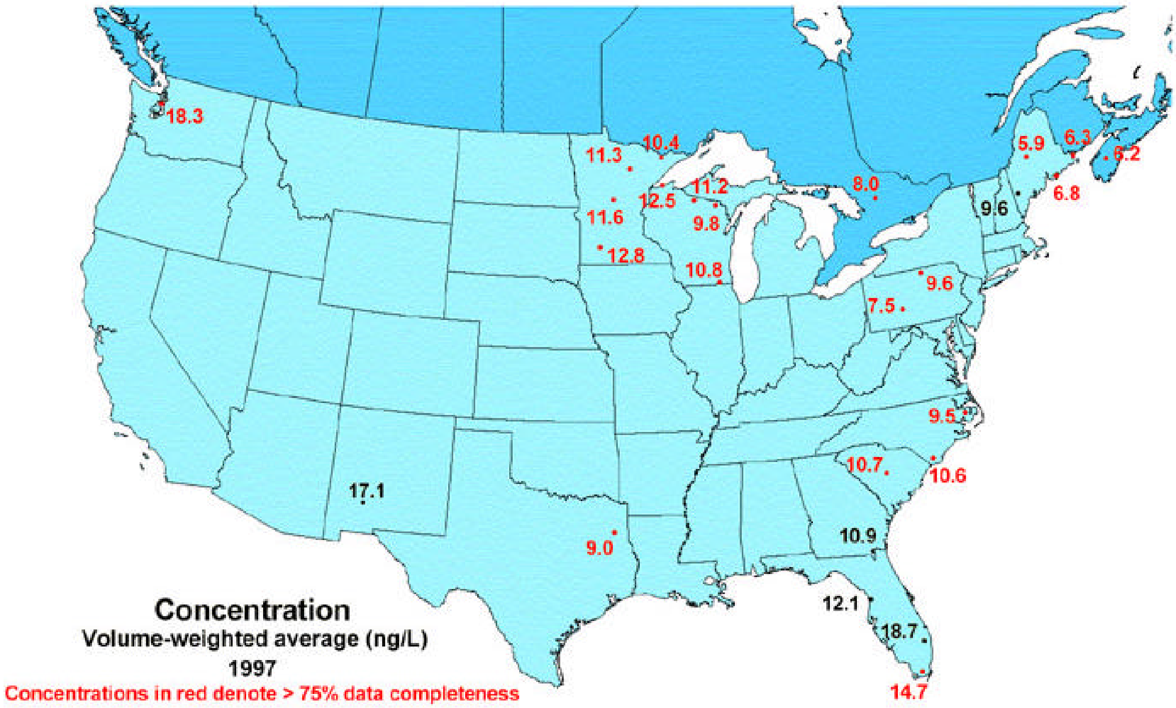
3. If the rain gauge indicates sampler openings, but the precipitation amount cannot be determined accurately from the RG chart (RG $< 0.03$ inch), the sample type will be coded “T” (trace) and the BC will be used to calculate deposition as long as the BC $\geq 1.5$ mL. If the BC $< 10$ mL, samples will be coded for low volume as in 2. If the BC $< 1.5$ mL, no concentration will be reported and the ppt and subppt and deposition will be set to zero.

4. In cases where there is a valid precipitation amount from wither the RG or BC but invalid or missing concentration data, seasonal or annual summary deposition values will be calculated using the site-specific, seasonal, volume-weighted mean concentration. This deposition value will not be displayed for individual weeks in the WEB database, but will be used only for the calculation of seasonal and annual average concentrations and deposition estimates on maps and summary products.

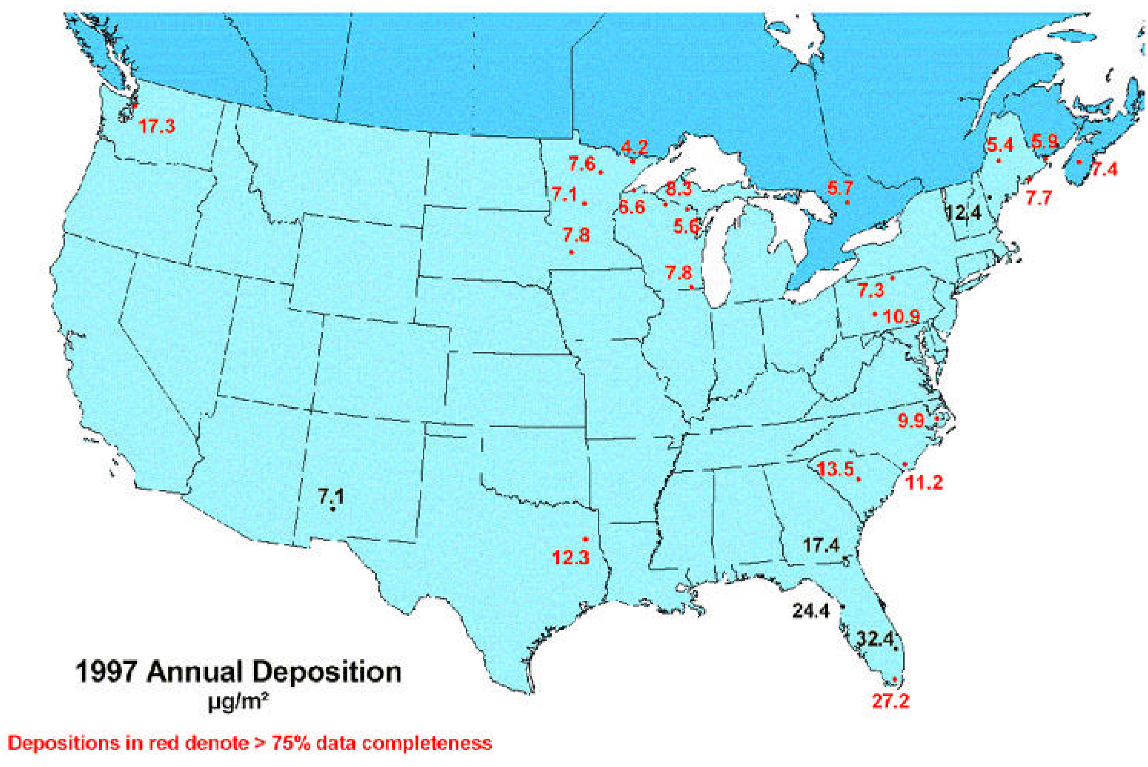
# APPENDIX II

***Mean Annual Volume-Weighted Mercury Concentrations and Wet Depositions for all MDN Sites in the United States and Canada for Calendar Years 1997 through 2000***

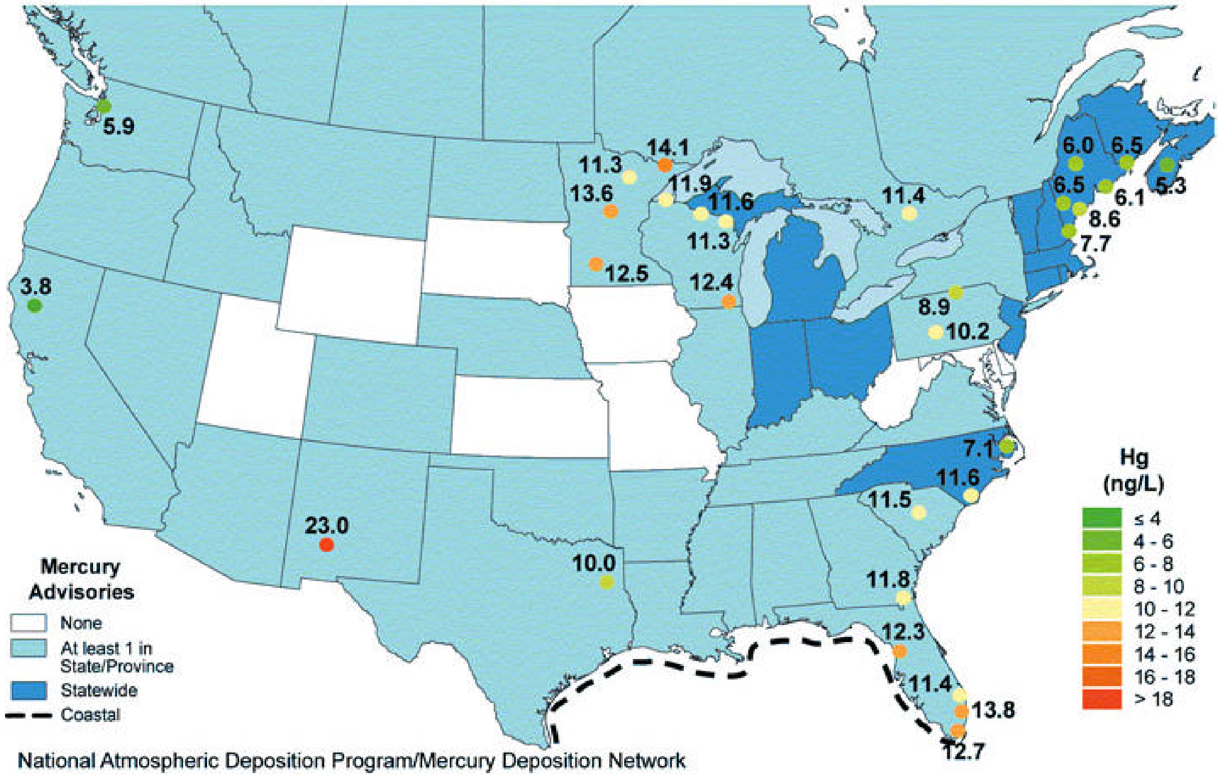
## National Atmospheric Deposition Program
## Mercury Deposition Network



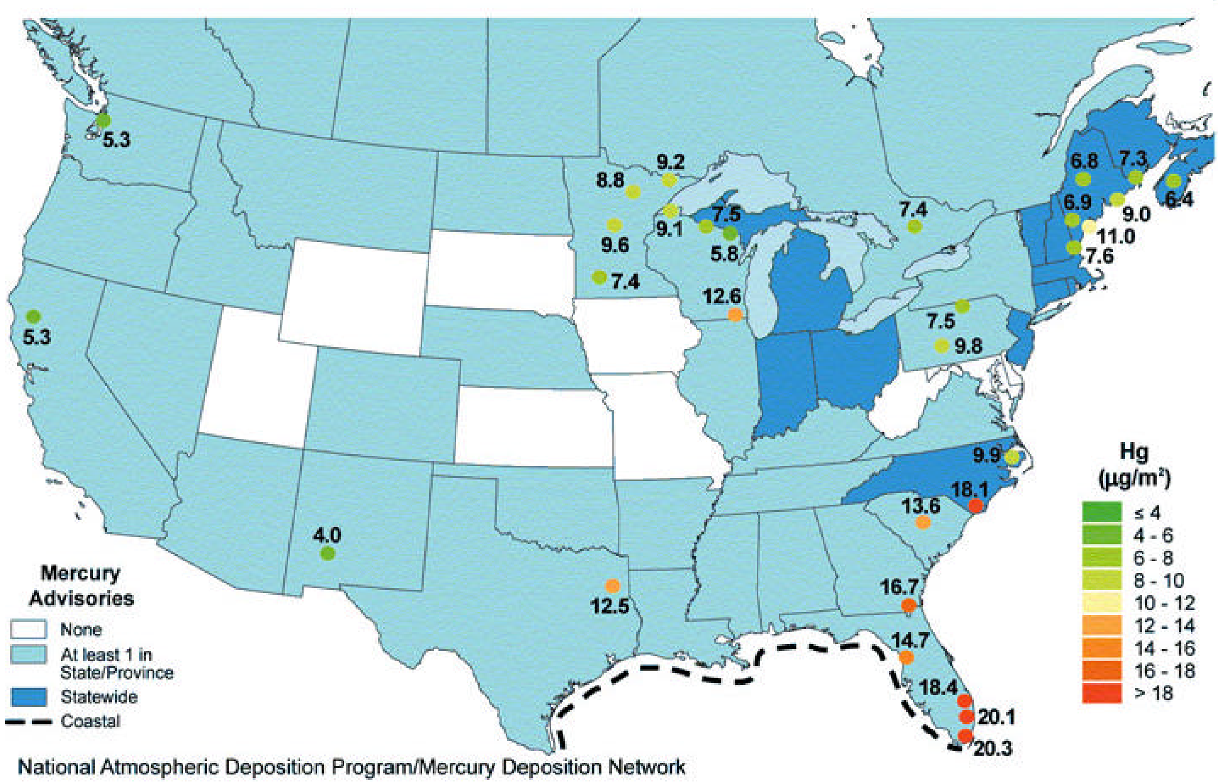

## National Atmospheric Deposition Program
## Mercury Deposition Network



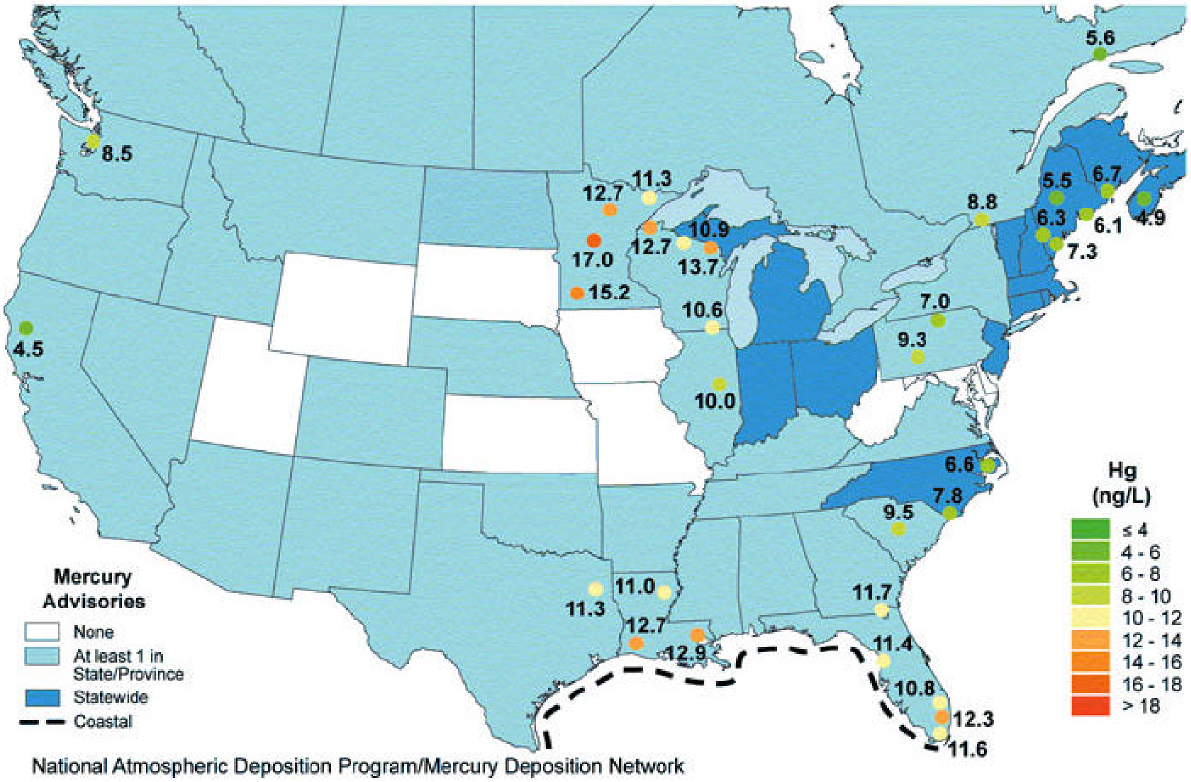
# Total Mercury Concentration, 1998



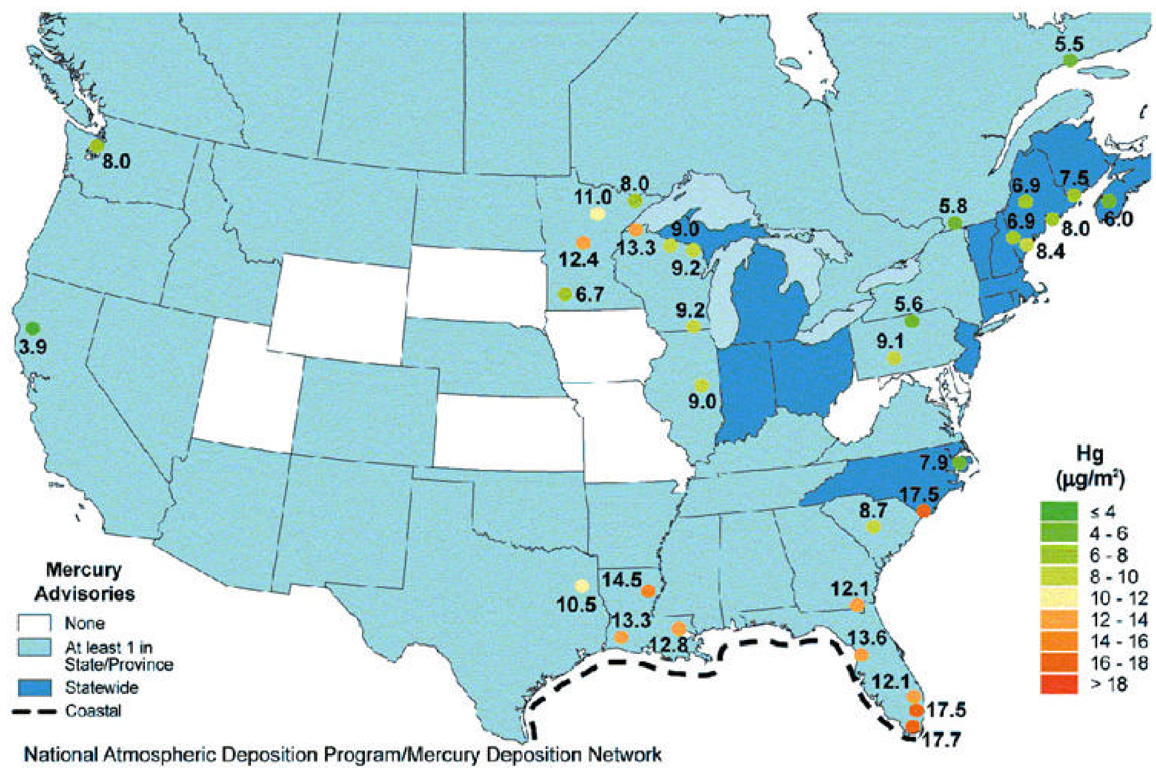

# Total Mercury Wet Deposition, 1998



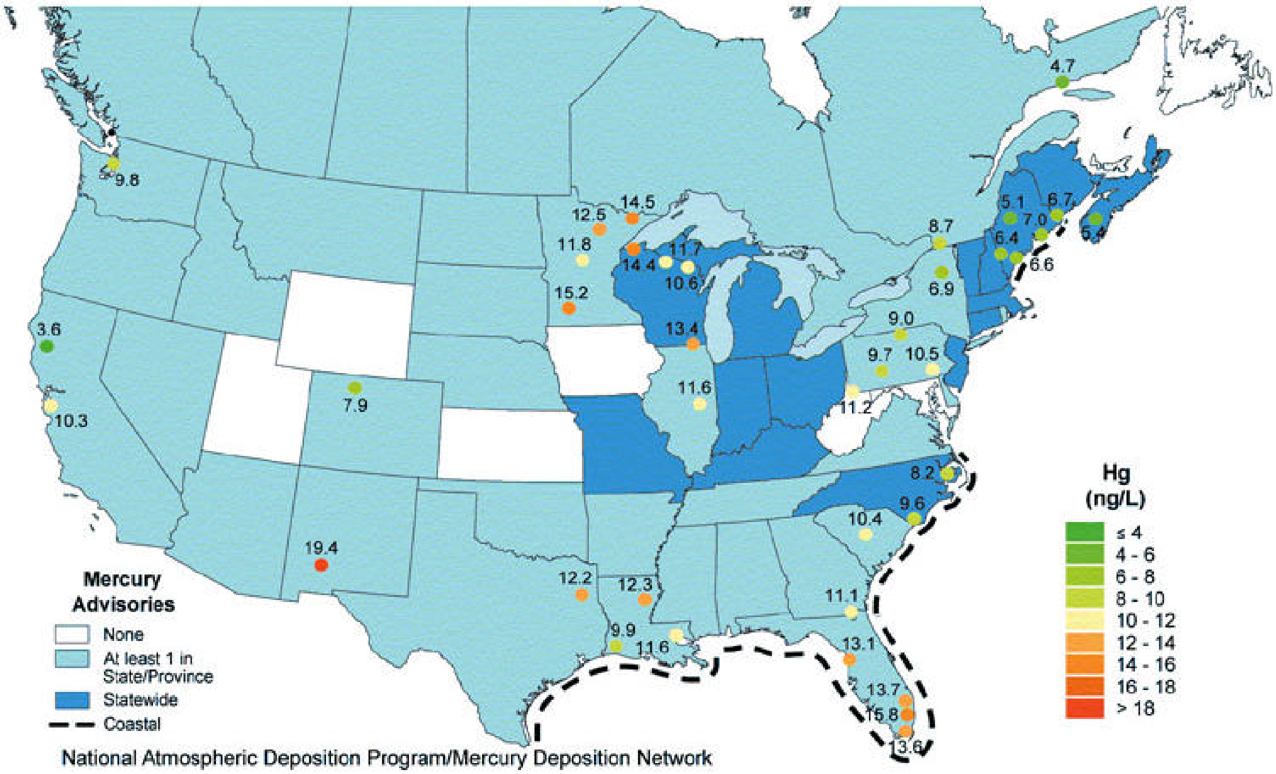
# Total Mercury Concentration, 1999




# Total Mercury Wet Deposition, 1999



# Total Mercury Concentration, 2000




# Total Mercury Wet Deposition, 2000