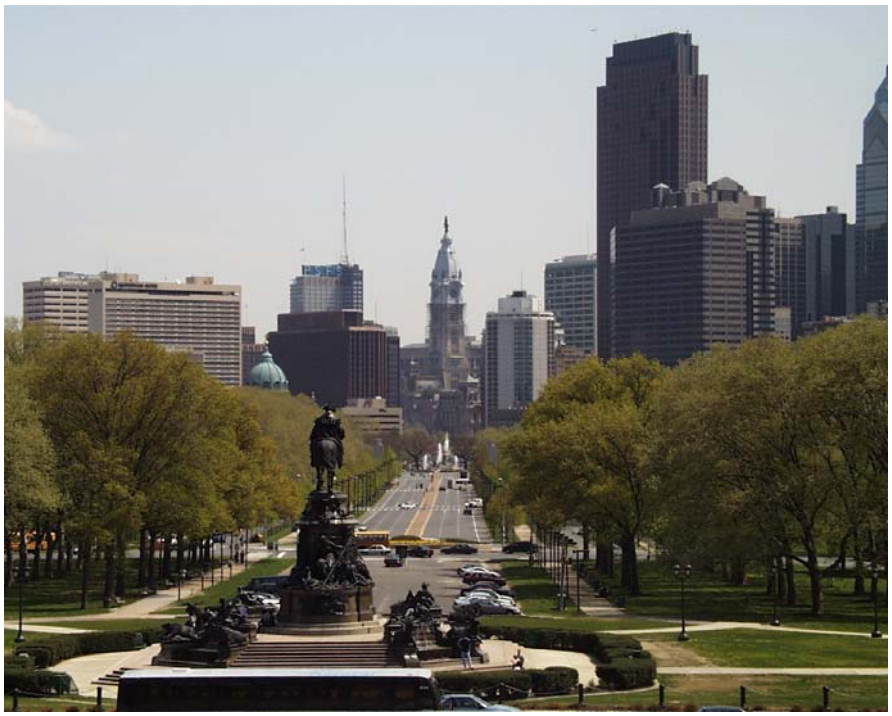
City of Philadelphia
Department of Public Health
Air Management Services

Philadelphia's Air Quality Report 2006



EXECUTIVE SUMMARY

This report focuses on the air quality of the City of Philadelphia, as presented by the Philadelphia Department of Public Health, Air Management Services (AMS), the local air pollution control agency for the City of Philadelphia. As an urban area, Philadelphia faces many of the same pollution challenges as other densely populated areas, such as emissions from vehicles and industries. The information contained in this report reviews Philadelphia's air quality for the year 2006, and reports how the City's air compares with the National Ambient Air Quality Standards (NAAQS). This report covers the criteria pollutants: **ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter,** and **lead**. It also provides an overview of **Hazardous Air Pollutants** also referred to as air toxics. There are no national standards for air toxics; instead they are referred to in terms of risk.

In general, trends show many air pollutants in Philadelphia to be decreasing. In 2006, Philadelphia was considered to be in attainment for all pollutants, with the exception of ozone and particulate matter less than 2.5 microns. There were 220 good days, 135 moderate days, and 10 unhealthy days in Philadelphia. In addition, air toxics that are measured in Philadelphia that show an excess lifetime cancer risk of 1 or more out of a million are: 1,1,2,2-tetrachloroethane, 1,4-dichlorobenzene, acetaldehyde, benzene, carbon tetrachloride, methylene chloride, ethylene dichloride, and tetrachloroethylene.

For further information, please visit the Air Management Services website at:

http://www.phila.gov/health/units/ams/index.html

or contact us at:

215-685-7580

During non-business hours, contact the City switchboard at: 215-686-1776.

Michael A. Nutter, Mayor
Donald F. Schwarz, Deputy Mayor for Health and Opportunity and Health Commissioner

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Introduction

AMS is responsible for the prevention, abatement, and control of air pollution and air pollution nuisances, achieving and maintaining federal National Ambient Air Quality Standards (NAAQS) in Philadelphia, and protecting the health and quality of life of the Philadelphia community from the adverse effects of air contaminants and noise.

AMS implements the environmental protection mandates contained in city, state, and federal laws, reviews construction and operating permits for compliance with air standards and guidelines, operates and maintains a citywide air sampling network to continuously monitor Philadelphia's air, routinely inspects pollution sources, services citywide complaints of air pollution, asbestos, and noise, responds to complaints, conducts enforcement actions against violators of air pollution and noise standards, issues violations, enforces standards, and advances voluntary emissions reductions.

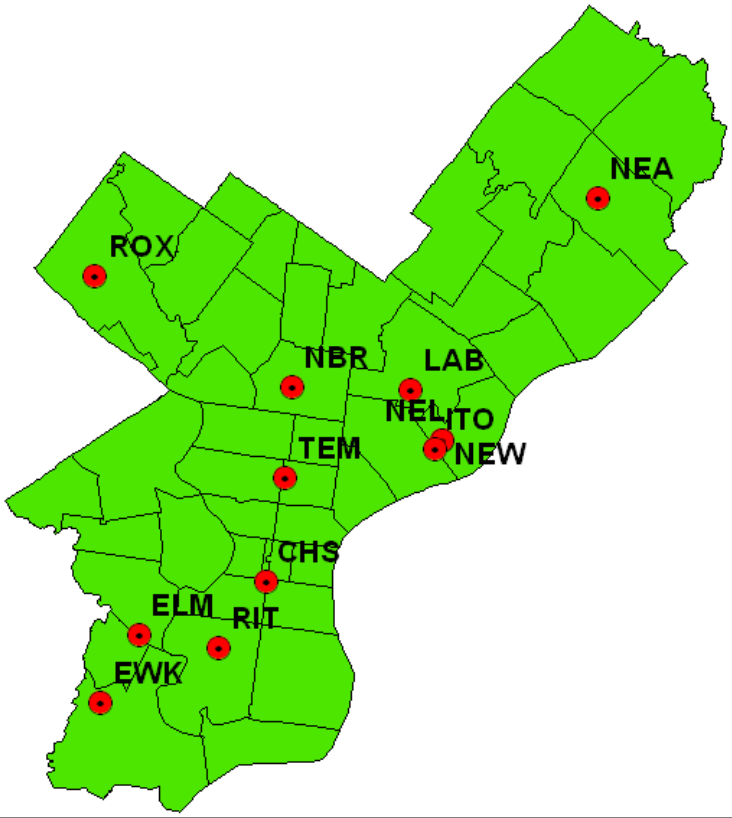
The Air Monitoring Network

The City of Philadelphia is served by a network of 12 air monitoring sites located throughout the City that measure the criteria pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM_{10} and $PM_{2.5}$), and lead. Five of the sites also measure toxics, such as benzene, acetaldehyde, and carbon tetrachloride. Many of the measurements are made in "real time," meaning that the measurements show pollution levels as they occur, instead of after the fact. The map on page 5 shows the location of air monitors and the pollutants measured at each monitor location. AMS measures air quality for several reasons:

- To ensure that long-term goals and targets to reduce levels of air pollution are being met.
- To provide information to the public as to how good or bad the air quality is in Philadelphia.
- To ensure attainment with standards that are set forth by the EPA.

An annual air monitoring network plan will be made available to the public starting in the Year 2007.

2006 PHILADELPHIA AIR MONITORING NETWORK



			Parameter						
AQS Site Code	AMS Site	Address	CO	SO2	Ozone	NO2	PM2.5 FRM	PM10	Toxics
421010004	LAB	1501 E. Lycoming	X	X	X	X	X	X	X
421010014	ROX	Eva & Dearnley			X				X
421010024	NEA	Grant & Ashton			X		X		
421010027	NBR	Broad & Butler	X						
421010136	ELM	5917 Elmwood		X	X		X	X	X
421010053	VET	Vet Stadium						X	
421010047	CHS	500 S. Broad	X			X	X		X
421010048	NEW	3900 Richmond							
421010649	NEL	3900 Richmond						X	
421010449	ITO	Castor & Delaware						X	
421010055	RIT	24th & Ritner		X			X		X
421010056	EWK	2851 Island Ave					X		

Quality Assurance

The AMS Air Monitoring Laboratory's main job is to provide accurate data on the quality of the City's air. Consequently, much effort is spent to achieve this objective. The measurement of pollutants in the atmosphere is being done to answer a number of questions such as:

- Are the NAAQS being met in Philadelphia?
- How close or far away are we from meeting these standards?
- Which pollutants are getting worse (increasing in concentration) or better?

Many of our measurements require detecting very small amounts of a pollutant, often expressed as parts per million or parts per billion. An illustration: imagine a million yellow balls all the same size with several red balls in the middle of them; we would need to find those red balls and then be able to count them. The instruments used to measure air pollutants need to be reliable in identifying the pollutant and accurate in making the measurement every time. The main way we check to see if our instruments are giving accurate measurements is to send a sample of air which has a known amount (concentration) of a pollutant and compare what the instrument says is the concentration to what we know is the right concentration. Then adjustments (calibration) to an instrument can be made to give a better measurement. If the needed correction is too great, the instrument needs to be repaired or replaced. EPA and our Laboratory have guidelines on how good and reliable measurements need to be to answer the questions being asked. The instruments being used now are much more reliable than those available years ago. Steps to assure good data quality include:

- Automated calibration
- Manual calibration conducted by chemists
- Review of the data by an experienced engineer or scientist

The system is geared towards public safety; for example, a few measurements can be enough to identify a problem in meeting one of the NAAQS, but many good measurements over a period of time (often three years) as well as additional types of analysis are needed to "demonstrate compliance" with one of the NAAQS.

Air Quality Reporting and Standards

Air Quality Index

The Air Quality Index (AQI) is a color coding system for air quality used by government agencies across the United States. Media outlets disseminate air quality reports using the AQI to help warn the public about day-to-day pollution problems. Air quality alerts are issued when pollution is rated as Orange (Unhealthy for Sensitive Groups), Red (Unhealthy) or Maroon (Very Unhealthy). Alerts are more likely to occur in the summer months, but can happen any time of the year.

The AQI is needed to report pollutant levels based on five criteria air pollutants: ground-level ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide. Using formulas created by the EPA, data for each pollutant is converted into a score ranging from 1 to 500. Values exceeding 100, which generally corresponds to the National Ambient Air Quality Standard for a pollutant, trigger “Action Days,” where the public is advised to do their part in reducing pollution and take precautions to protect themselves and their families from health effects. For example, on an Orange day, children, seniors and those with respiratory ailments are advised to minimize prolonged outdoor exposure. On a Red day, all residents are advised to limit outdoor activity. The highest of the five pollutant scores is reported as the overall air quality rating for Philadelphia for a given day. That is, any individual pollutant can, on its own, trigger an Action Day. Action Days are reported through print, radio and television media and by local and regional air agencies.

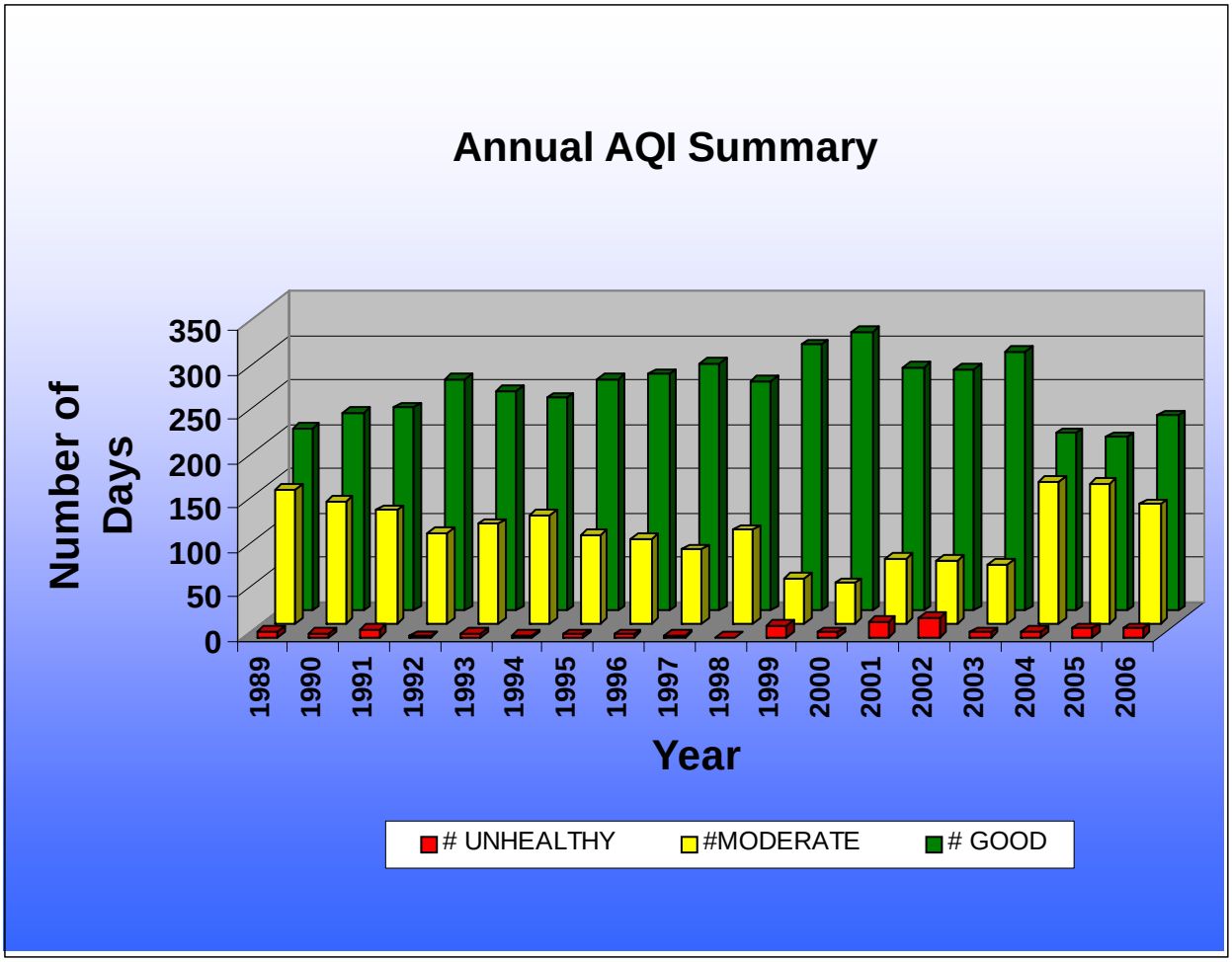
Philadelphia's Real-Time Air Quality Website is located at www.phila.gov/aqi and provides the most up-to-date information about the air quality in Philadelphia. It lets you know what you should do to protect your health if the air quality is unhealthy.

The following page shows the AQI summaries, as used by media outlets. The recommended actions that individuals should take to protect their health and plan their daily activities are described below the index.

Air Quality Index (AQI) Values	Levels of Health Concern	Colors
When the AQI is in this range:	...air quality conditions are:	...as symbolized by this color:
0 to 50	Good	Green
51 to 100	Moderate	Yellow
101 to 150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon

"Good" The AQI value is between 0 and 50. Air quality is considered satisfactory, and air pollution poses little or no risk.
"Moderate" The AQI is between 51 and 100. Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people. For example, people who are unusually sensitive to ozone may experience respiratory symptoms.
"Unhealthy for Sensitive Groups" When AQI values are between 101 and 150, members of sensitive groups may experience health effects. This means they are likely to be affected at lower levels than the general public. For example, people with lung disease are at greater risk from exposure to ozone, while people with either lung disease or heart disease are at greater risk from exposure to particle pollution. The general public is not likely to be affected when the AQI is in this range.
"Unhealthy" Everyone may begin to experience health effects when AQI values are between 151 and 200. Members of sensitive groups may experience more serious health effects.
"Very Unhealthy" AQI values between 201 and 300 trigger a health alert, meaning everyone may experience more serious health effects.
"Hazardous" AQI values over 300 trigger health warnings of emergency conditions. The entire population is more likely to be affected.

The following graph shows the annual summary of the number of good, moderate, and unhealthy air quality days, in Philadelphia based on monitoring conducted by AMS, since 1989.



The number of days with good air quality steadily increased until 1999 and then leveled off, while in the same timeframe the number of days with moderate air quality decreased and leveled off. These improvements can be attributed mainly to emission reductions from gasoline marketing, including vapor recovery at retail gasoline stations, companies shutting down pollution producing processes. Over the period from 1989 through 1998, the annual number of days with unhealthy air quality dramatically decreased. However, in 1999, the new national 8-hour standard for ozone was incorporated into the AQI, and in 2004, the new national $PM_{2.5}$ standard was also added. Because these are more stringent standards, some days that in prior years would have been reported as good fell into the moderate range and those that would have been reported as moderate fell into the unhealthy range. Therefore, the charts **do not reflect a deterioration in air quality since 1999**. The years 2000, 2003-4 show a relatively smaller number of unhealthy days, due to the years' unusually cool and cloudy summer days, which tends to decrease the production of ozone.

National Ambient Air Quality Standards

The Clean Air Act of 1970 empowered EPA to establish National Ambient Air Quality Standards (NAAQS) to protect the public health and welfare. Since that time, standards have been set for: carbon monoxide, sulfur dioxide, nitrogen dioxide, lead, particulate matter ("dust") and ozone. The NAAQS is expressed as a pollutant concentration averaged over a fixed amount of time. For example, the NAAQS for sulfur dioxide are:

- 0.5 parts of sulfur dioxide per million parts of air over a time period of 3 hours
- 0.14 parts of sulfur dioxide per million parts of air over a time period of 24 hours
- 0.03 parts of sulfur dioxide per million parts of air over a time period of one year

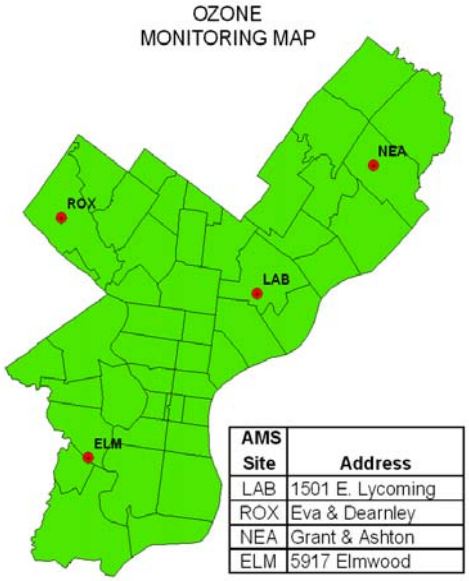
In 2006, Philadelphia was considered to be in attainment for all pollutants, with the exception of ozone and particulate matter less than 2.5 microns.

The Pollutants We Measure

The following sections provide information on the health effects, sources and trends of pollutants measured in Philadelphia. Included are the pollutants having National Ambient Air Quality Standards (NAAQS) commonly called criteria pollutants as well as pollutants identified as being toxic or hazardous. Each of the criteria pollutants are graphed to show the historical trend compared with the national standards. The graphs also identify the sites of the "worst" levels, the "best" levels, and with a solid circle, the mean level (the average of all recorded levels). It is important to note the mean, as it factors out extreme levels, and thereby provides a better indication of the average for air quality.

Ozone (O_3)

NAAQS:
Highest 2nd daily maximum 1 hour concentration = 0.12 ppm
Highest 4th daily maximum 8 hour concentration = 0.08 ppm



AMS Site	Address
LAB	1501 E. Lycoming
ROX	Eva & Dearnley
NEA	Grant & Ashton
ELM	5917 Elmwood

Ground level ozone (the primary constituent of smog) is the pollutant most often responsible for unhealthy air quality in the Philadelphia region. Ozone is not emitted into the atmosphere directly but is formed by reactions of other pollutants. Volatile Organic Compounds (VOCs) and Nitrogen Oxides (NOx) react to create ozone in the presence of heat and sunlight. Ozone levels are consistently higher during the summer months.

There are four categories of emission sources from human activity that produce VOC and NOx. The four categories are: **Point sources** - the largest utilities, industries, and other operations; **Area Sources** - commercial, solvent use, waste disposal, and other categories; **Nonroad Engine Sources** - construction and agricultural equipment, recreational boats, and lawnmowers; **Highway Vehicle Sources** - cars, trucks, buses, and motorcycles. Emissions of VOC and NOx may be carried by wind currents while reacting to produce high ozone levels hundreds of miles from their sources. In the eastern United States, during summer, ground level ozone is frequently high over wide areas containing several states.

Unlike the oxygen that we breathe, which has only two atoms of oxygen (O_2), ozone has an additional oxygen atom, making it very reactive. This is why ozone is said to burn or irritate the lungs. People who are very young or very old, or who have chronic lung problems such as asthma are particularly sensitive to ground level ozone.

In any discussion of ozone, it is important to distinguish between the effects of ozone at the ground and ozone high in the atmosphere, several miles above our heads. An advertisement might use the slogan “good up high, bad nearby,” to describe ozone. Regardless of where it is, no one would want to breathe it. However, up high in what’s called the ozone layer, ozone is essential to the health of nearly every living thing, since it protects the Earth from harmful ultraviolet (UV) light. If not for this natural layer, UV light would sterilize the Earth’s surface, and life as we know it would cease

cease to exist.

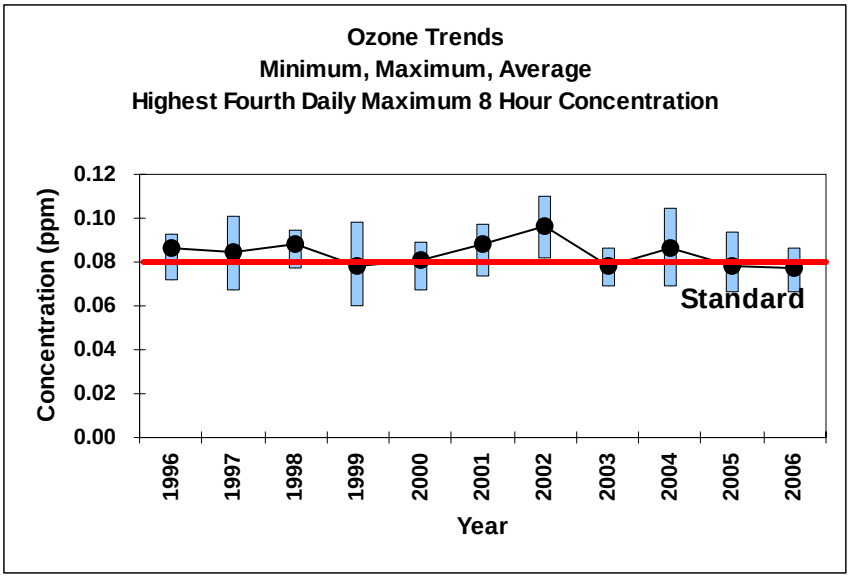
Near the ground, ozone reacts with buildings, plants, animals, and people, and is one of the most irritating, harmful components of smog. Smog refers to the whole mixture of air pollution in an area, and may include ozone, a whole host of other gases, and fine particles and the hazy conditions they cause.

VOCs are organic compounds that evaporate readily, such as gasoline vapors and paint fumes. NOx stands for two compounds, nitric oxide (NO) and nitrogen dioxide (NO_2). VOCs that come from human activities are called anthropogenic VOCs. Some anthropogenic VOCs, such as benzene, are themselves toxic and may increase risks of cancer or lead to other adverse health effects in addition to helping form ozone. Some VOCs are considerably more reactive in the atmosphere than others, and the reactivity of a VOC influences how quickly ozone forms. A compound that reacts in a few minutes to produce ozone will have a much greater impact near its source than one that reacts more slowly. Thus, ozone can form nearer or farther downwind of a VOC source due to faster or slower chemical reactions.

On July 18, 1997, the EPA promulgated a revision to the National Ambient Air Quality Standard for ozone which came into effect on July 1, 1999. Previously, the standard was based on the number of times that the daily maximum hourly ozone concentration was greater than 0.12 parts per million (PPM) over a 3 year period. The revised NAAQS is based on an 8-hour average ozone concentration. EPA revoked the 1-hour standard on June 15, 2005.

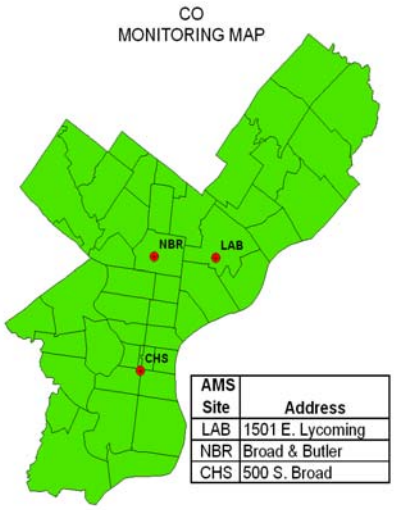
In 2006, Philadelphia and the surrounding counties are in nonattainment for the 8-hr ozone standard. This means that the standard set by the EPA for ozone has been exceeded. This standard was exceeded seven times in 2006. We're continuing our efforts with surrounding agencies to get into compliance for ozone. A State Implementation Plan (SIP) is a plan which identifies how a State will attain the standard. Each State is required to have a SIP which contains control measures and strategies which demonstrate how each area will attain and maintain the NAAQS. These plans are developed through a public process, formally adopted by the State, and submitted by the Governor's designee to EPA.

The following graph shows ozone trends just for Philadelphia.



Carbon Monoxide (CO)

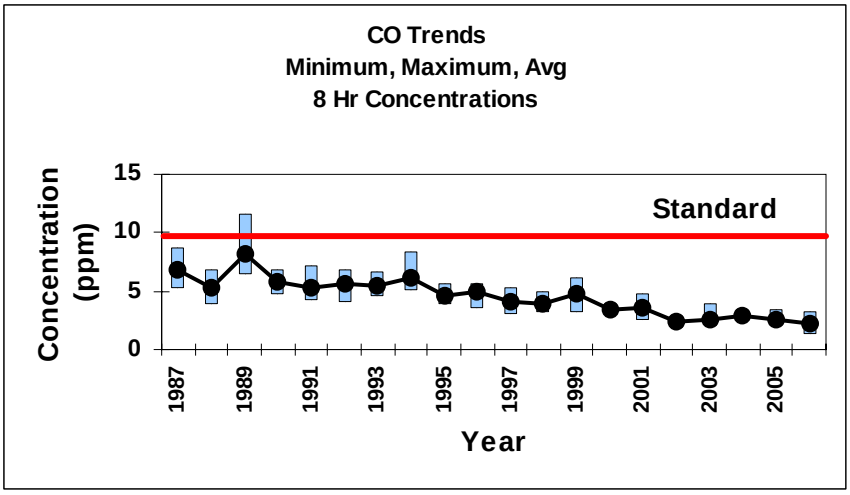
NAAQS:
Highest 2nd maximum 8 hour concentration = 9 ppm



Carbon monoxide (CO) is colorless, odorless, and at high concentrations is a poisonous gas. It is formed when carbon in fuels are not burned completely. The major source of CO is motor vehicle emissions. Other sources of CO include residential, industrial, and natural processes. Weather greatly affects CO levels, and peak CO concentrations typically occur during the colder months of the year.

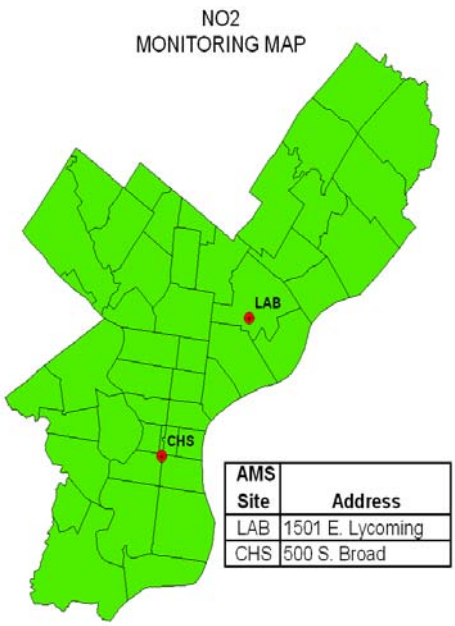
Carbon monoxide enters the bloodstream and reduces oxygen delivery to the body's organs and tissues. The health threat from carbon monoxide is most serious for those who suffer from cardiovascular disease. Exposure to elevated CO levels is associated with impairment of vision, reduced work capacity, reduced manual dexterity, poor learning ability, and difficulty in performing complex tasks. At very high levels, carbon monoxide can be fatal.

Over a sixteen year period, there has been a continued reduction in carbon monoxide levels. This is mainly the result of federal requirements for cleaner automobiles and fuel and state inspection/maintenance programs.



Nitrogen Dioxide (NO_2)

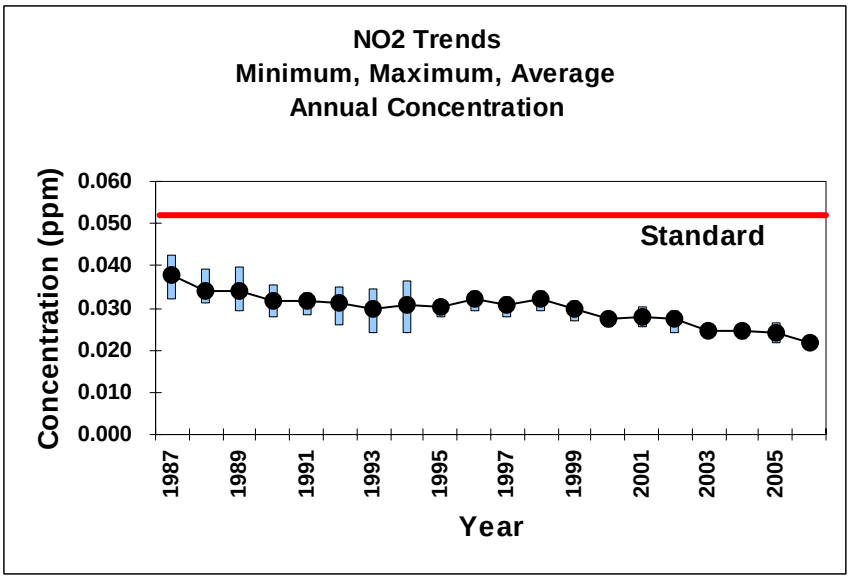
NAAQS:
Highest Annual Arithmetic Mean concentration = 0.053 ppm



Nitrogen dioxide is a light brown gas that is an important component of urban haze. The compound is created primarily from fuel combustion in motor vehicles, utilities, and industrial sources.

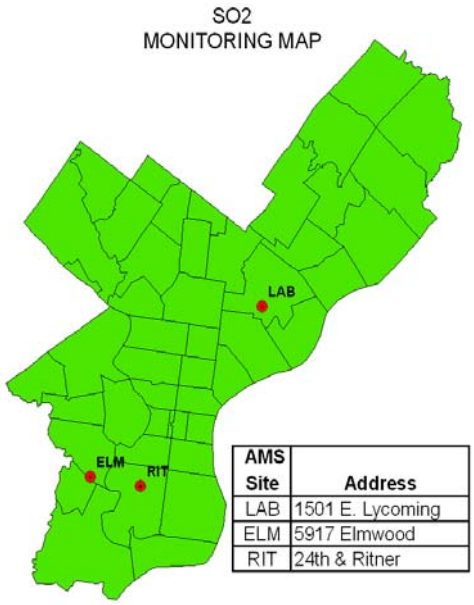
Nitrogen dioxide can irritate the lungs and lower resistance to respiratory infections such as influenza. Nitrogen oxides (NO_X) are an important precursor to both ozone and acid rain and can affect both land and water ecosystems. They contribute to the formation of fine particulate matter, haze and reductions in visibility.

Ambient levels of nitrogen dioxide in Philadelphia are better than the NAAQS showing a sustained downward trend over time.



Sulfur Dioxide (SO_2)

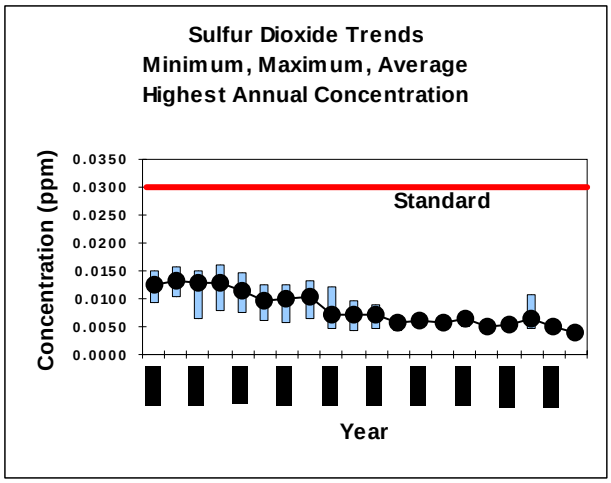
NAAQS:
Highest Annual Mean Concentration = 0.03 ppm
Highest Second Maximum 24 Hour Concentration = 0.14 ppm

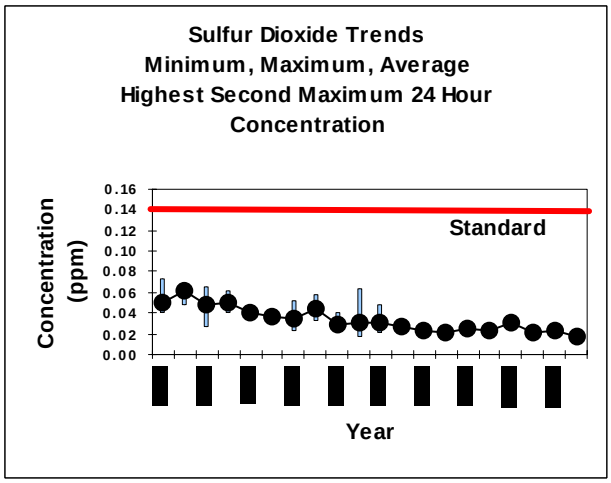


SO_2 is emitted from the burning of fuels that contain sulfur. Industrial grade fuel oils are the primary source in Philadelphia.

The major health concerns associated with exposure to high concentrations of SO_2 include effects on breathing, respiratory illness, alterations in the lungs' defenses, and aggravation of existing respiratory and cardiovascular disease. Together, SO_2 and NO_X are the major ingredients of acid rain. SO_2 also plays a significant role in the formation of fine particulate matter.

SO_2 levels are well within air quality standards and show a slow, continued improvement over time. This is mainly due to industry, businesses, and homes changing to fuels with lower sulfur content such as natural gas. On June 1, 2006, 80 percent of diesel fuel for on-road use produced by U.S. refineries must meet a limit of 15 ppm sulfur. This 15 ppm sulfur fuel must be available at distribution terminals by July 15, 2006 and at retail by September 1, 2006.





Lead (Pb)

NAAQS:
Highest Quarterly Maximum Concentration = 1.5 μg/m^3

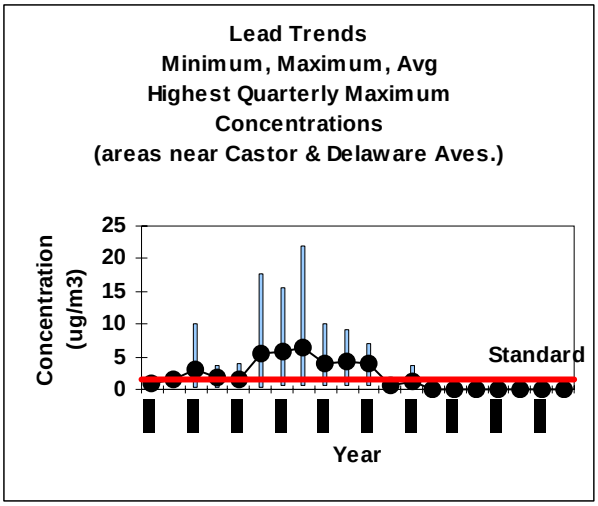
The processing of metals is the major source of lead emissions to the atmosphere. It does not travel over great distances in the air and so concentrations vary, with highest levels near particular industrial sites.

Lead is a metal that is highly toxic when inhaled or ingested. Lead accumulates in the blood, bone, and soft tissue and may affect the kidneys, liver, nervous system and other organs. It also can cause learning difficulties in children.

Ambient lead levels have been decreasing throughout the city due to the elimination of leaded gasoline and greater control of emissions from companies that produce or process lead compounds.

Lead levels in certain parts of the city were extremely high due to the concentration of particular industries in the area, and this is reflected in the previously high readings for monitors near Castor and Delaware Avenues. The levels of lead in these areas have drastically improved, and are now comparable to the rest of the city.

Currently, AMS measures for ambient lead only at the historically highest location, ITO.



Particulate Matter (PM_{10}, $PM_{2.5}$)

Particulate matter is the general term used for a mixture of solid particles and liquid droplets found in the air. These particles come in a wide range of sizes and originate from stationary, mobile, and natural sources.

PM_{10} and $PM_{2.5}$ are small particulate matter that measure less than 10 micrometers (0.00001 meters) and 2.5 micrometers (0.0000025 meters) respectively. These small particles penetrate deeply into the respiratory system and can have adverse health effects. In addition to health problems, particulate matter can cause reduced visibility, soiling, and damage to materials. In 1997, the EPA revised the National Ambient Air Quality Fine particles are made up of both primary (combustion) and secondary (formed in the air) sources. Particles of this size remain airborne for long periods of time and disperse in uniform concentrations across wide areas, crossing geographic boundaries.

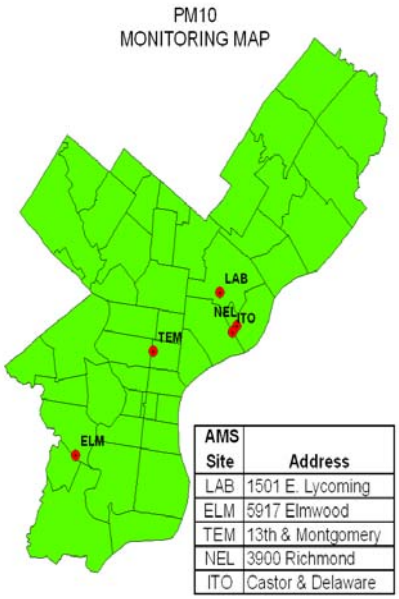
Particles in the PM2.5 size range are able to travel deeply into the respiratory tract, reaching the lungs. Exposure to fine particles can cause short-term health effects such as eye, nose, throat and lung irritation, coughing, sneezing, runny nose and shortness of breath. Exposure to fine particles can also affect lung function and worsen medical conditions such as asthma and heart disease. Scientific studies have linked increases in daily PM2.5 exposure with increased respiratory and cardiovascular hospital admissions, emergency department visits and deaths. Recent studies suggest that long term exposure to particulate matter may be associated with increased rates of bronchitis and reduced lung function.

Particles come in a wide variety of shapes and sizes, which affect their impacts on the environment and human health. Bigger particles, such as dust, are easier to see and can cause problems, but smaller particles are probably worse for our health. Fine particles, those 2.5 micrometers (µm) in diameter or less, called $PM_{2.5}$, can be inhaled deeply into the lungs. Particles below 10 micrometers in diameter can also make their way into the lungs, though not as deeply as those below 2.5 micrometers.

Fine particles are treated as though they are a single pollutant, but fine particles come from many different sources and are composed of thousands of different compounds. Fortunately, these compounds fall into a few dominant categories: sulfates, nitrates, ammonium compounds, soil, organic carbon compounds, and elemental carbon. Water is nearly always an important and variable part of PM, and sea salt is often significant near the coast. Given the complex composition of PM, it is no surprise that its chemistry is also complex. Particles may be dry or wet. When the wind blows hard enough, soil, silt, and sand can be lifted from the surface. Human activities such as mining, construction, plowing, and driving on unpaved roads, also lift particles into the air. Soot, also referred to as black carbon or elemental carbon, is emitted directly by diesel engines and forest fires, among other sources. Most individual particles are likely mixtures of different substances, the products of growing by collisions with other particles and by taking on gases.

PM_{10}

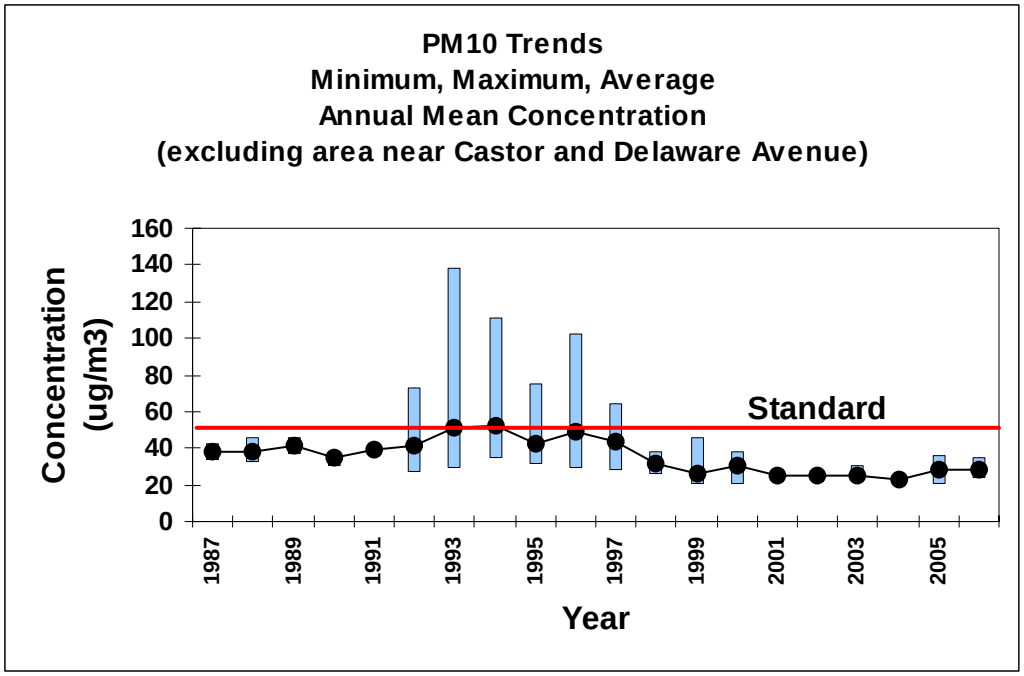
NAAQS:
Highest Annual Mean Concentration = 50 $\mu g/m^3$
Highest Second Maximum 24 Hour Concentration = 150 $\mu g/m^3$

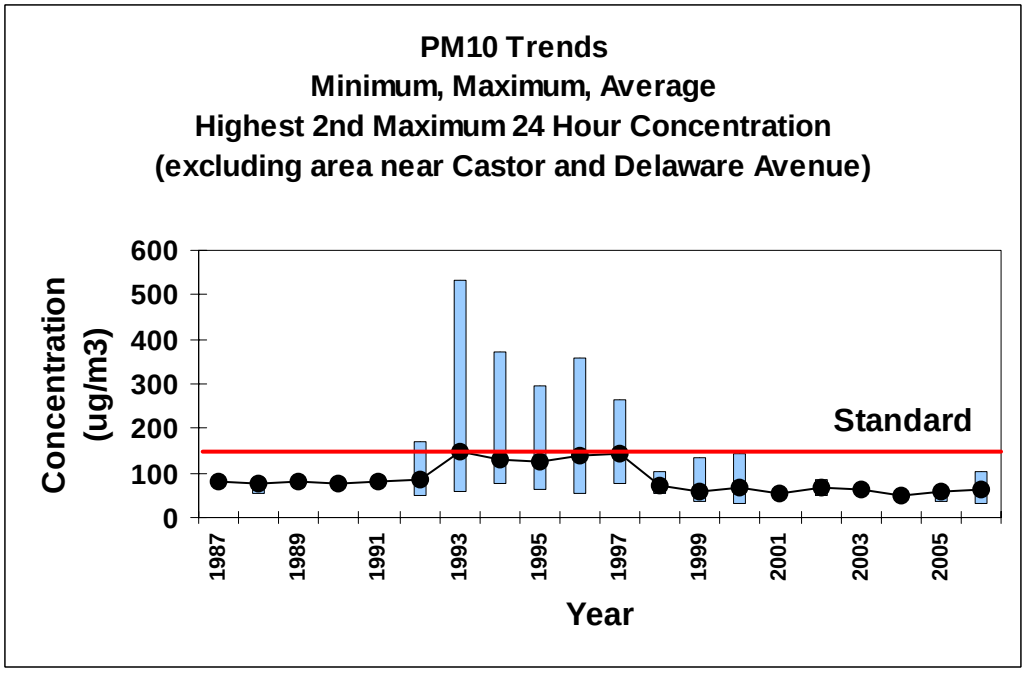


AMS Site	Address
LAB	1501 E. Lycoming
ELM	5917 Elmwood
TEM	13th & Montgomery
NEL	3900 Richmond
ITO	Castor & Delaware

Particulate matter levels have been decreasing due to regulations limiting the amount of emissions allowed and the change to cleaner fuels such as natural gas by industry, businesses and homes.

There are two sets of trend charts shown for this pollutant. During the mid 1990s, particulate emissions from several sources in the area of Castor and Delaware Avenues caused extremely high localized measurements. In fact, the levels were many times higher than those measured at other city locations. Because the impact was not widespread, the additional charts are presented to highlight that fact. Specific action to abate these sources have resulted in air quality that now meets the national standards and are now comparable to levels in the rest of the city. The graphs on the following page show PM_{10} trends.

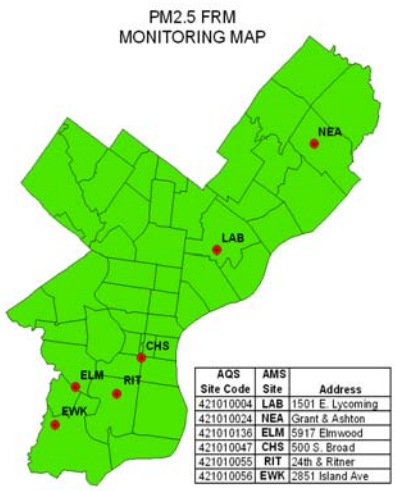




Prior to 1998, a facility near Castor and Delaware Avenues, Franklin Smelting and Refining Company, generated a lot of dust from smelting activities, and has since shut down.

$PM_{2.5}$

NAAQS:
Highest Annual Mean Concentration = 15 $\mu g/m^3$
Highest 98th Percentile 24 Hour Concentration = 65 $\mu g/m^3$



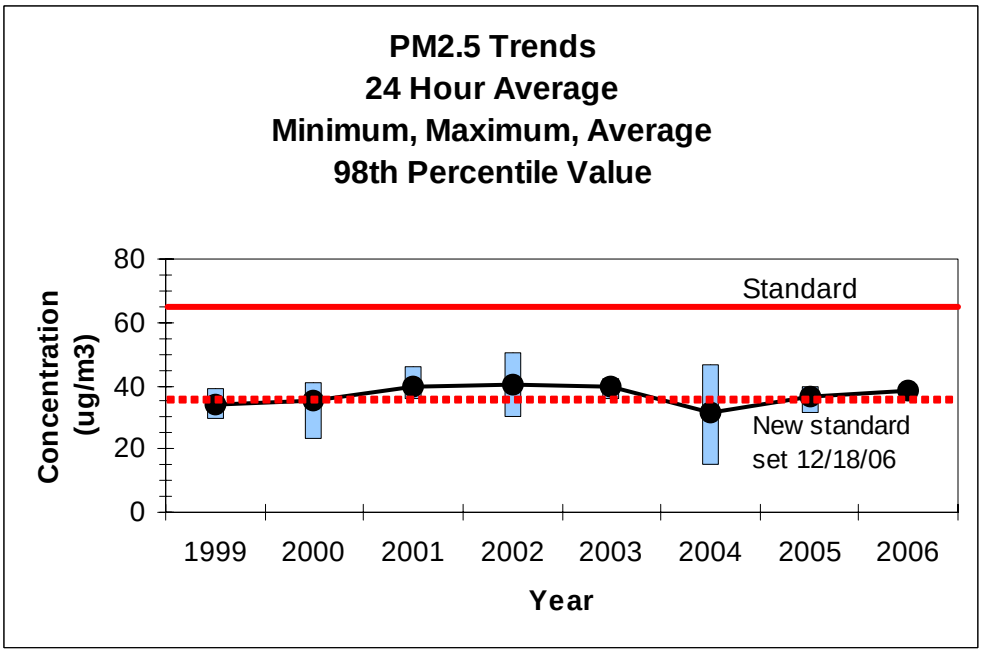
AQS Site Code	AMS Site	Address
421010004	LAB	1501 E. Lycoming
421010024	NEA	Grant & Ashton
421010136	ELM	5917 Elmwood
421010047	CHS	500 S. Broad
421010055	RIT	24th & Ritner
421010056	EWK	2851 Island Ave

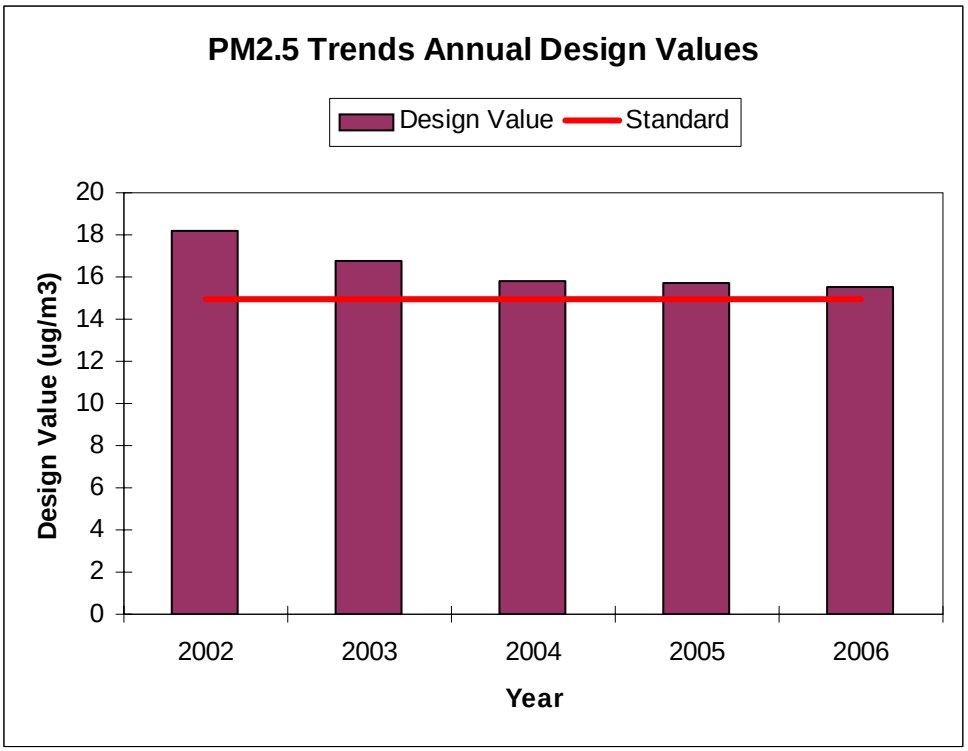
$PM_{2.5}$ consists of those particles that are less than 2.5 micrometers in diameter. They are also referred to as "fine" particles. Fine particles result from fuel combustion from motor vehicles, power generation, and industrial facilities, as well as from residential fireplaces and wood stoves. A significant amount of fine particles are also formed in the atmosphere by the transformation of gaseous emissions such as SO_2, NO_X, VOCs, and ammonia.

Fine particles can accumulate in the respiratory system and are associated with numerous health effects such as premature death, increased respiratory symptoms and disease, and decreased lung functions. Sensitive groups that appear to be at the greatest risk for such effects include the elderly, children, and individuals with cardiopulmonary disease or respiratory ailments such as asthma.

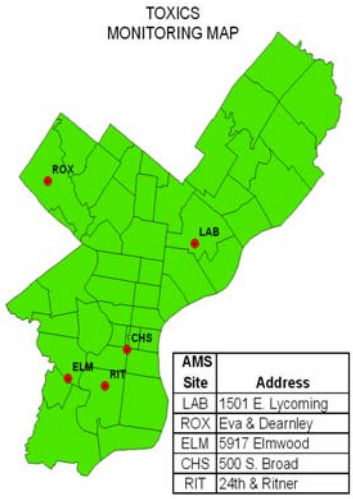
Revisions to the primary (health-based) NAAQS added the two new $PM_{2.5}$ standards, set at 15 $\mu g/m^3$ (annual standard) and initally at 65 $\mu g/m^3$ (daily standard). On December 18, 2006 this value was strengthened to 35 $\mu g/m^3$. Measuring $PM_{2.5}$ requires highly sensitive equipment under tight temperature and humidity control. The charts on the next page show attainment for the 24 hour standard of 65 $\mu g/m^3$ and nonattainment for the annual $PM_{2.5}$ standard. The design value is the highest weighted annual average concentration at any monitoring site in Philadelphia. The 24-hour concentration is the highest concentration of 98th percentile values at any monitoring site in Philadelphia.

In 2005, the Air Management Laboratory replaced all the PM2.5 monitors with new monitors. Due to this, in 2006 there were instrument malfunction issues and data capture issues resulting in a less than 75% capture rate at the CHS station. Plans are underway to correct measures to improve data capture at this site.


PM2.5 Trends
24 Hour Average
Minimum, Maximum, Average
98th Percentile Value
Concentration (ug/m3)
80
60
40
20
0
Standard
New standard set 12/18/06
1999
2000
2001
2002
2003
2004
2005
2006
Year


PM2.5 Trends Annual Design Values
Design Value
Standard
Design Value (ug/m3)
20
18
16
14
12
10
8
6
4
2
0
2002
2003
2004
2005
2006
Year

Air Toxics



AMS Site	Address
LAB	1501 E. Lycoming
ROX	Eva & Dearnley
ELM	5917 Elmwood
CHS	500 S. Broad
RIT	24th & Ritner

Air toxics, also referred to as toxic air pollutants or hazardous air pollutants (HAPs), are substances that cause adverse health effects or environmental damage. The Federal Clean Air Act Amendments (CAAA) of 1990 lists 187 pollutants or chemical groups as HAPs. Examples of air toxics include heavy metals (such as beryllium), organic chemicals (such as formaldehyde), polycyclic organic matter (POM, which are formed primarily by combustion), benzene (which is found in gasoline), and pesticides, fine mineral fibers, and asbestos. HAPs are emitted from stationary sources (large industrial facilities), area sources (dry cleaners and household uses), as well as mobile sources (trucks and buses).

There is less information known about the health impact from the 187 HAPS than there are for criteria pollutants, and no national standards exist for them. However, a number of these pollutants are known or suspected to be carcinogenic, and there is no known "safe concentration." The danger posed by toxics is often referred to in terms of risk. Risk is defined as the likelihood of a negative outcome from a certain level of a specific chemical, or the measure of a chance that health problems will occur. For example, many toxics cause cancer, while others cause respiratory problems, birth defects, neurological or, immune response problems, and other health concerns. Toxics have varying degrees of danger, and some will cause harm with a very small amount of the substance while others require large amounts to have a negative effect. A risk level of 1 in a million implies a likelihood that up to one person, out of one million equally exposed people would contract cancer if exposed continuously (24 hours per day) to the specific concentration over 70 years (an assumed lifetime). This would be in addition to those cancer cases that would normally occur in an unexposed population of one million people.

AMS is helping to reduce HAPs in Philadelphia by enforcing Federal, State, and locally mandated programs that limit emissions from stationary and area sources. Many toxic emissions have been reduced by regulations designed to bring Philadelphia into compliance with the NAAQS for Ozone. In addition, Philadelphia enforces the National Emission Standards for Hazardous Air Pollutants (NESHAP), a program to reduce emissions from existing major and area sources, as well as New Source Performance Standards (NSPS), which limit toxic emissions from new sources.

Since diesel emissions are a significant but unquantified contributing factor to health risks from toxic emissions, AMS continues working to promote voluntary emissions reductions from diesel vehicles and to bring clean diesel technology to the Philadelphia area. The Philadelphia Diesel Difference Working Group, a coalition of diverse stakeholders whose primary purpose is to reduce the air pollutants associated with diesel-powered engines in the greater Philadelphia area, meets on a monthly basis. More information on this program can be found at www.cleanair.org/dieseldifference.

AMS has historically measured toxic pollutants at the Laboratory (LAB) and more recently at the Community Health Services (CHS), Elmwood (ELM), Roxborough (ROX), and Ritner (RIT) monitoring sites as seen on page 22.

As part of EPA's National Air Toxics Assessment (NATA) activities, 177 air pollutants were assessed for either lifetime cancer risk or noncancer hazard due to inhalation. NATA is EPA's ongoing comprehensive evaluation of air toxics in the U.S. These activities include expansion of air toxics monitoring, improving and periodically updating emission inventories, improving national- and local-scale modeling, continued research on health effects and exposures to both ambient and indoor air, and improvement of assessment tools.

The goal of NATA is to identify those air toxics which are of greatest potential concern, in terms of contribution to population risk. The results are used to establish strategies to reduce emissions and these set priorities or programs and the collection of additional air toxics data.

The assessment includes four steps that look at the year 1999.

1. Compiling a national emissions inventory of air toxics emissions from outdoor sources.
2. Estimating ambient concentrations of air toxics across the contiguous United States.
3. Estimating population exposures across the contiguous United States.
4. Characterizing potential public health risk due to inhalation of air toxics including both cancer and noncancer effects.

The 1999 National Air Toxics Assessment (NATA) indicated high health risks in the City. Philadelphia ranked 55th in the country based on average risk. To better understand the air toxic problem and promote actions to reduce the risks caused by these pollutants, the Philadelphia Air Toxic Project was initiated by EPA Region III and Air Management Services to develop a more accurate emission inventory, develop modeling systems, identify sources, identify stakeholders and gather background information so a process can be developed to reduce emissions. Activities associated with the river ports and the airport appear to be a significant source of diesel particulate.

AMS has determined health risks associated with the concentrations of air toxics measured at the City’s air toxic monitoring sites. Annual averages for each of the compounds at each monitoring site were calculated and used to estimate the risk from inhalation exposure to ambient air for cancer and non-cancer health effects.

The risk calculation is based upon the standard methodology used by EPA. The excess lifetime cancer risk for each of the chemical compounds was calculated using unit risk factors (URFs). The URF is the measure of the probability of developing cancer from exposure over a lifetime to a specified concentration of a given chemical. Air toxics that are measured in Philadelphia that show an excess lifetime cancer risk of 1 or more out of a million are:

1,1,2,2-tetrachloroethane (Cas RN 79-34-5) - It is a colorless or pale yellow liquid with a sickly sweet odor. It is used in making other chemicals, insecticides, paints, rust removers, varnishes, and as a solvent.

1,4-dichlorobenzene (Cas RN 106-46-7) - It is a colorless or white crystalline (sand-like) material with a mothball odor. It is used as a fumigant to control mildew and mold, and as an insecticide.

acetaldehyde (Cas RN 75-07-0) - It is a colorless liquid or gas with a fruity odor. It is used to manufacture many other chemicals.

benzene (Cas RN 71-43-2) - It is a colorless liquid with a pleasant odor. It is used mainly in making other chemicals and plastics, as a solvent, and is found in trace amounts of gasoline.

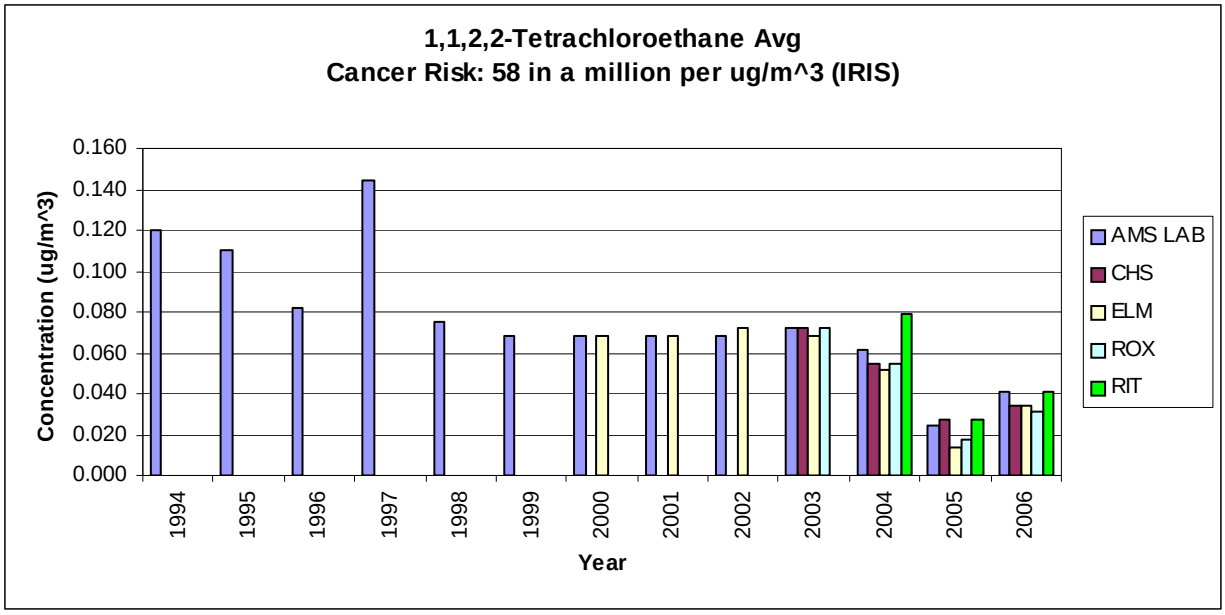
carbon tetrachloride (Cas RN 56-23-5) - It is a colorless liquid with an ether-like odor. It is used as a solvent and in making fire extinguishers, refrigerants, and aerosols.

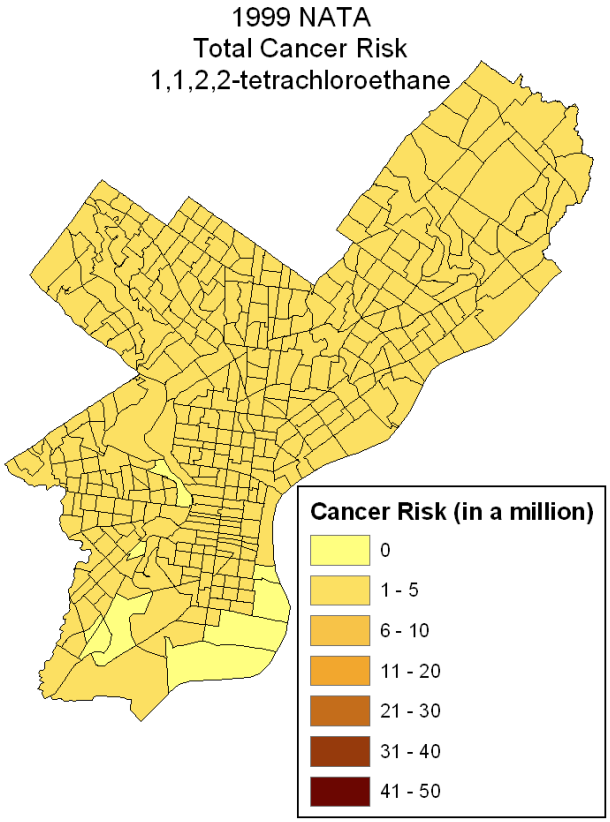
dichloromethane (Cas RN 75-09-2) - It is a colorless liquid with a pleasant chloroform-like odor. It is used in food, furniture and plastics processing, and as a paint remover. Its other common name is methylene dichloride.

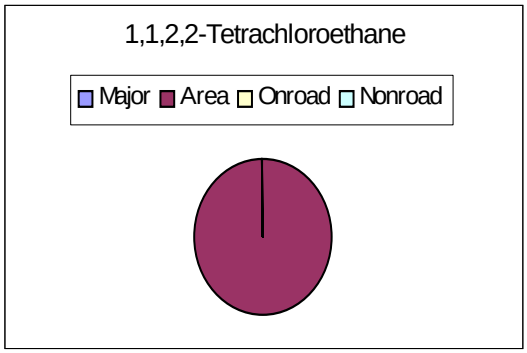
ethylene dichloride (Cas RN 107-06-2) - It is a clear, colorless, oily liquid. It is used to make vinyl chloride, and as a solvent, fumigant, degreaser, and paint remover.

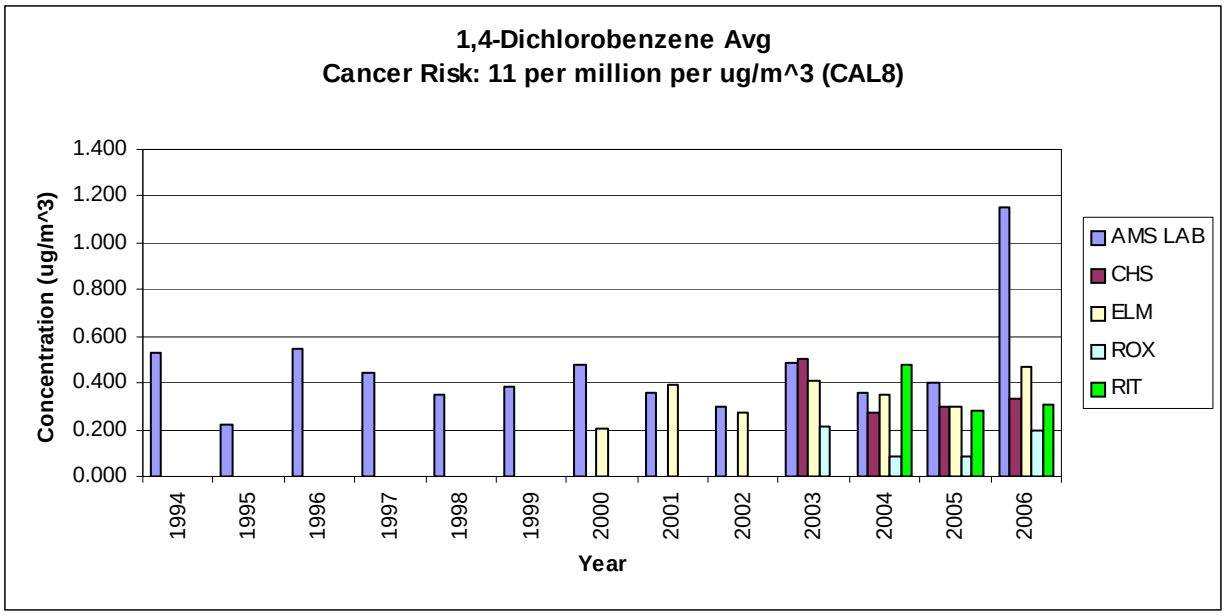
tetrachloroethylene (Cas RN 127-18-4) - It is a clear liquid with a sweet, chloroform-like odor. It is used in dry cleaning and metal degreasing. Its other common name is perchloroethylene.

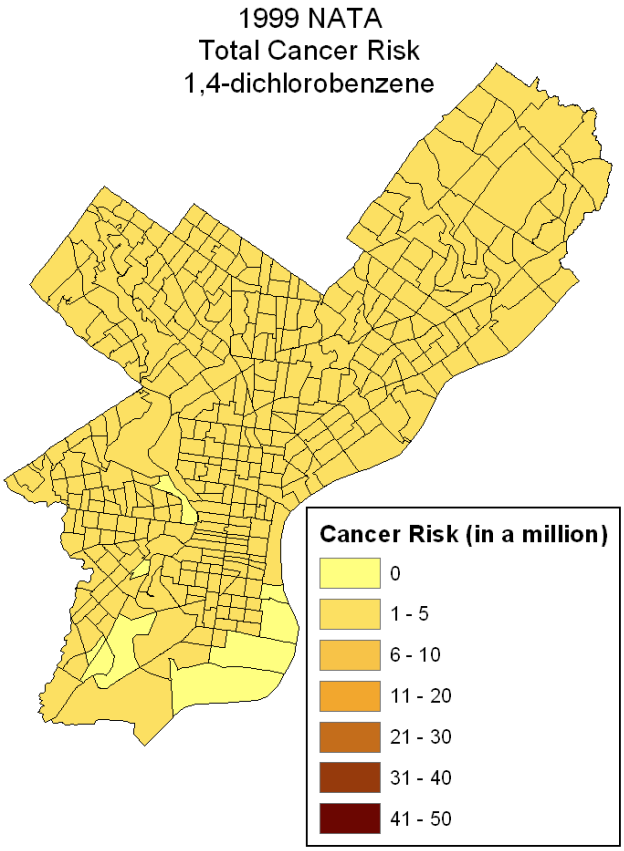
The measured ambient concentrations of these toxic pollutants through 2006 are shown by the graphs on the following pages. Below each graph is a thematic map developed from the 1999 NATA of the estimated level of risk, and a pie chart which shows where emissions come from. **Major** sources are large stationary sources such as refineries, power generating stations, and facilities with large boilers. **Area** sources are small stationary sources not included in the major source inventory such as dry cleaners and auto body shops. **Onroad** sources are automobiles, trucks, etc. that operate on roads and highways. **Nonroad** sources are equipment such as lawn & garden, construction, and airport support. If zero emissions are from major, area, onroad, and nonroad sources, it is assumed all emissions are from background.

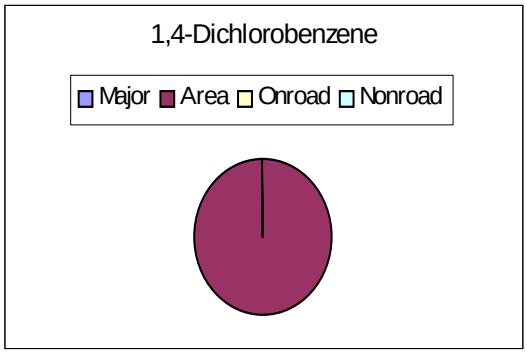

1,1,2,2-Tetrachloroethane Avg
Cancer Risk: 58 in a million per ug/m^3 (IRIS)
Concentration (ug/m^3)
0.160
0.140
0.120
0.100
0.080
0.060
0.040
0.020
0.000
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
Year
AMS LAB
CHS
ELM
ROX
RIT

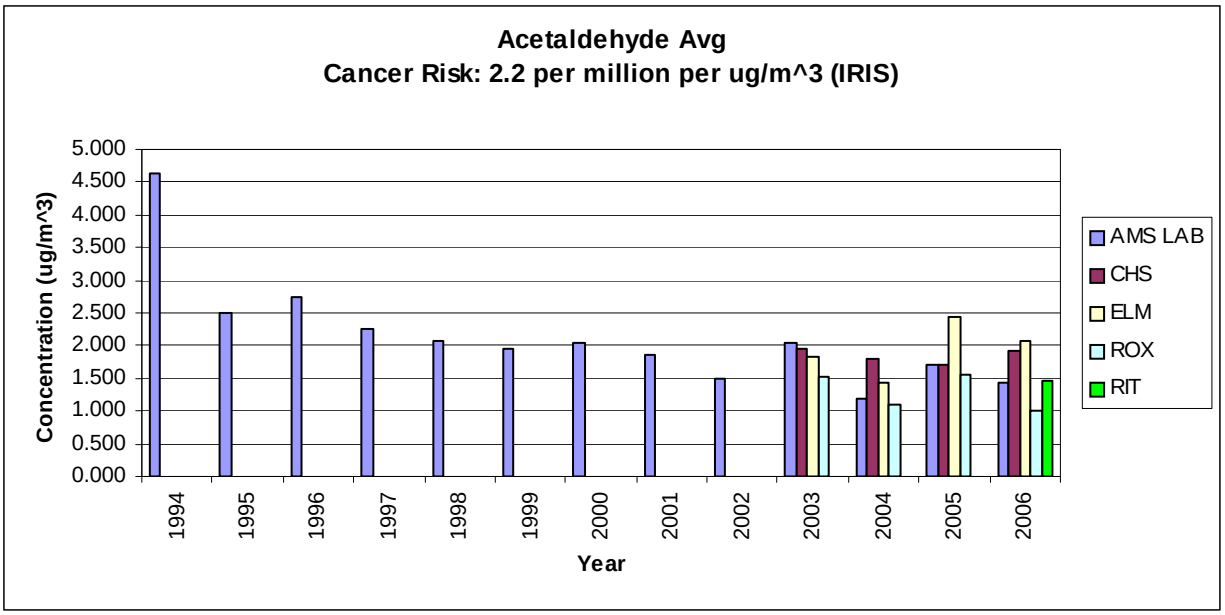

1999 NATA
Total Cancer Risk
1,1,2,2-tetrachloroethane
Cancer Risk (in a million)
0
1 - 5
6 - 10
11 - 20
21 - 30
31 - 40
41 - 50

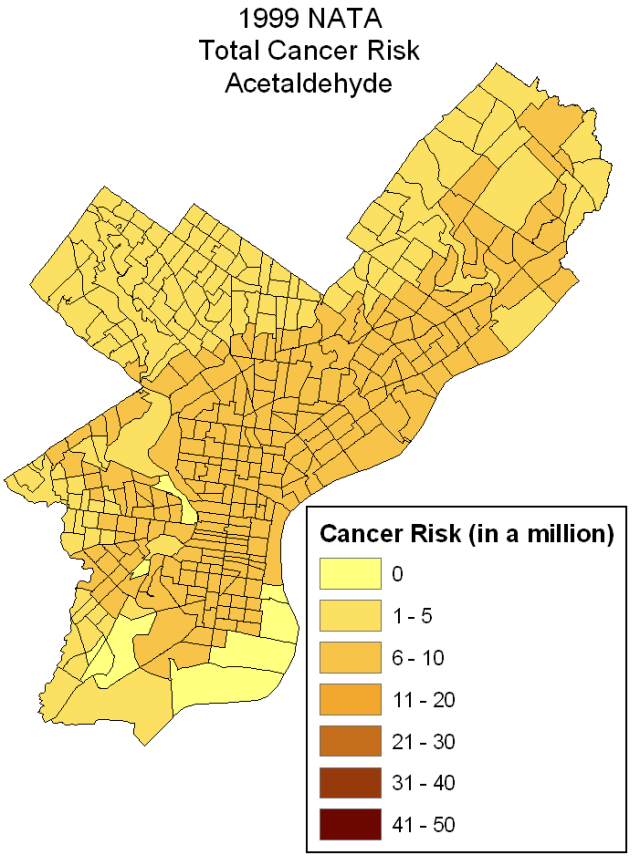

1,1,2,2-Tetrachloroethane
Major
Area
Onroad
Nonroad

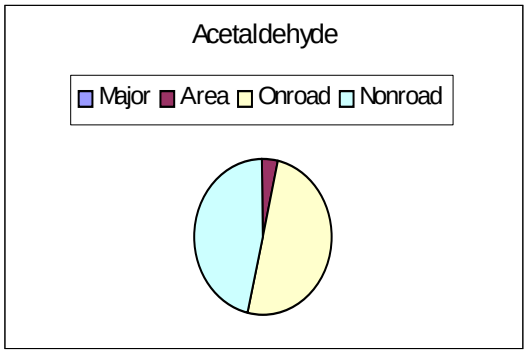

1,4-Dichlorobenzene Avg
Cancer Risk: 11 per million per ug/m^3 (CAL8)
Concentration (ug/m^3)
1.400
1.200
1.000
0.800
0.600
0.400
0.200
0.000
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
Year
AMS LAB
CHS
ELM
ROX
RIT

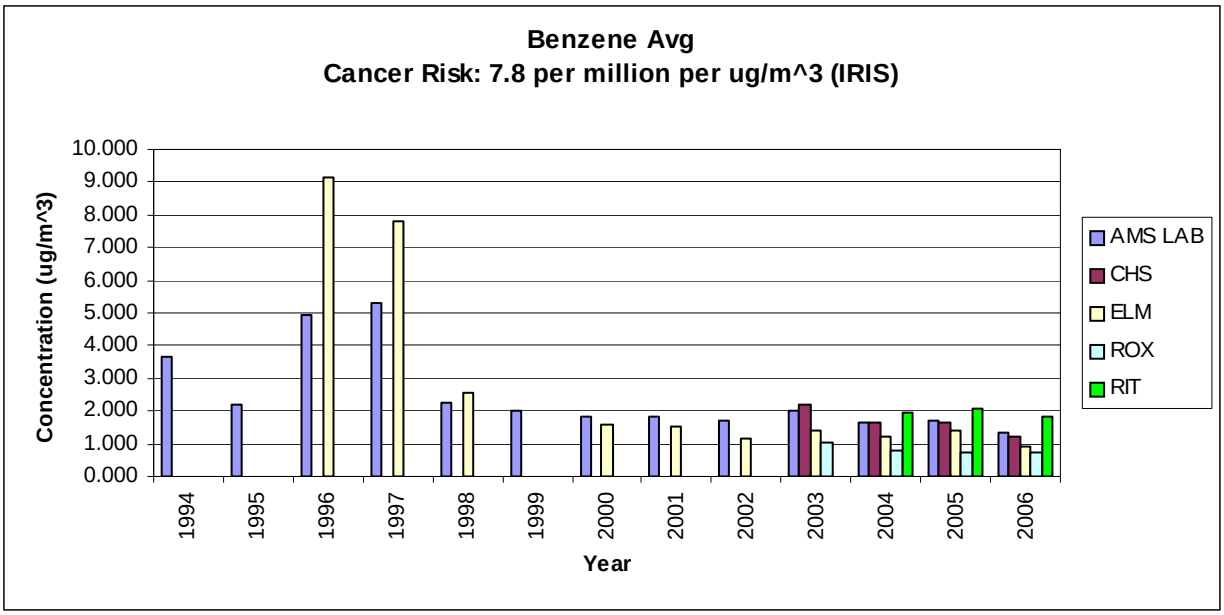

1999 NATA
Total Cancer Risk
1,4-dichlorobenzene
Cancer Risk (in a million)
0
1 - 5
6 - 10
11 - 20
21 - 30
31 - 40
41 - 50

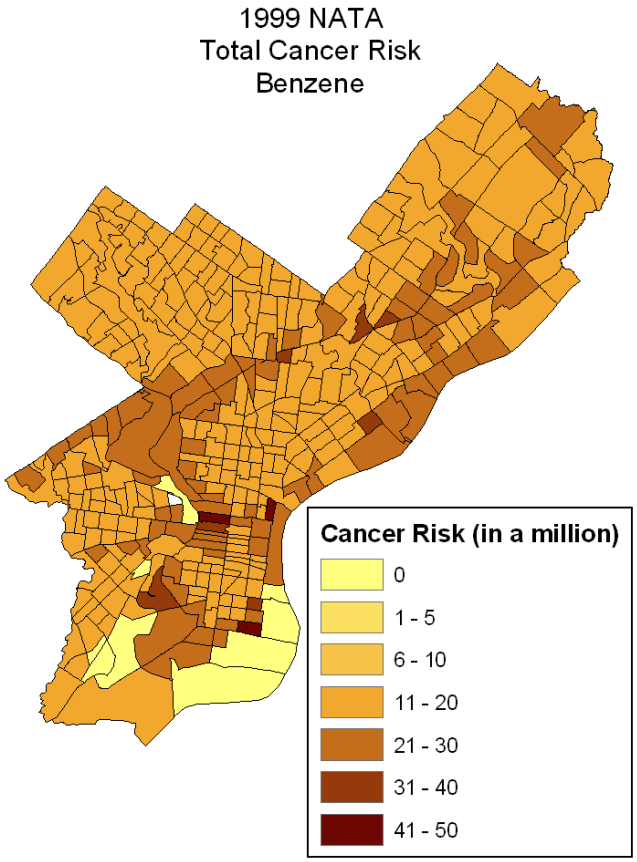

1,4-Dichlorobenzene
Major
Area
Onroad
Nonroad

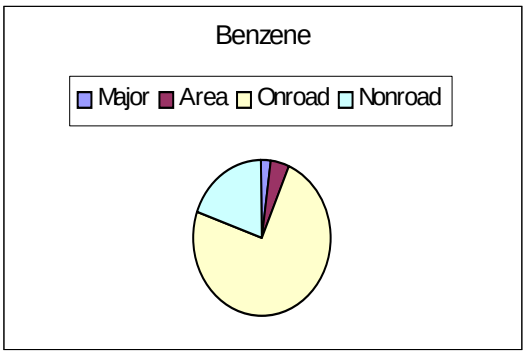

Acetaldehyde Avg
Cancer Risk: 2.2 per million per ug/m^3 (IRIS)
Concentration (ug/m^3)
5.000
4.500
4.000
3.500
3.000
2.500
2.000
1.500
1.000
0.500
0.000
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
Year
AMS LAB
CHS
ELM
ROX
RIT

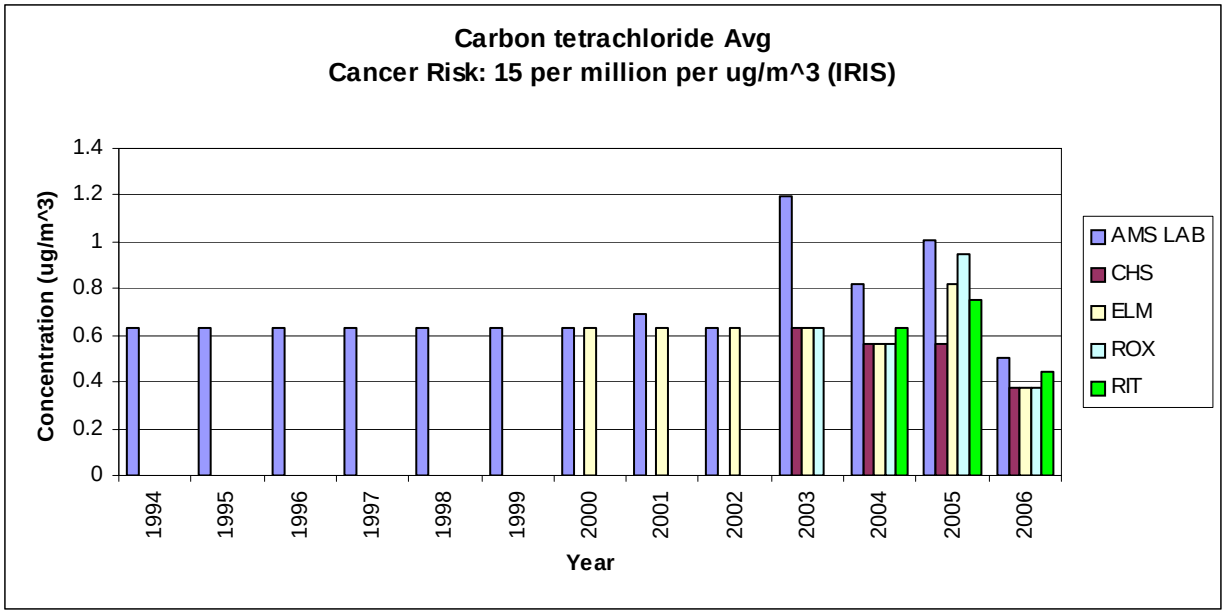

1999 NATA
Total Cancer Risk
Acetaldehyde
Cancer Risk (in a million)
0
1 - 5
6 - 10
11 - 20
21 - 30
31 - 40
41 - 50

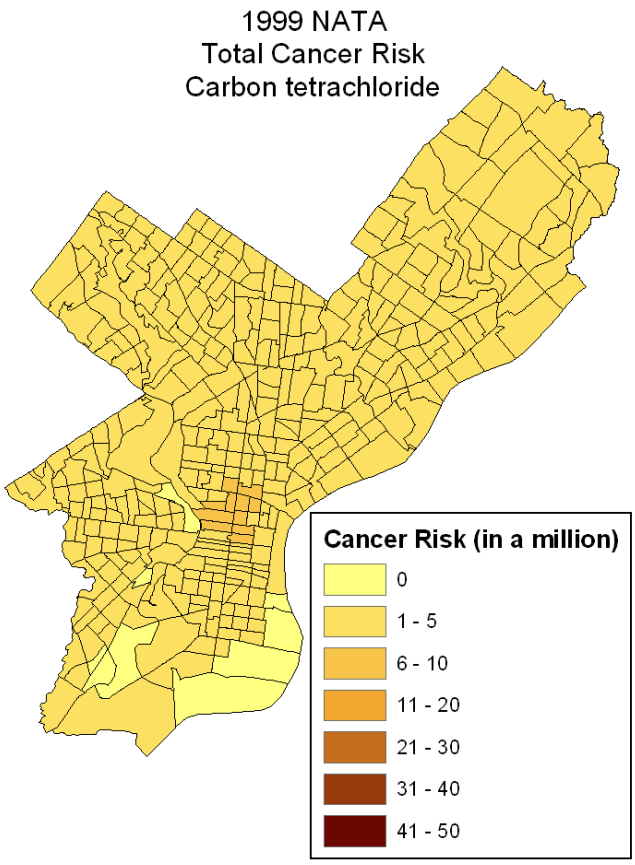

Acetaldehyde
Major
Area
Onroad
Nonroad

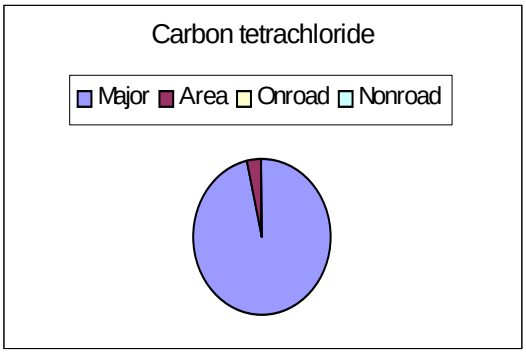

Benzene Avg
Cancer Risk: 7.8 per million per ug/m^3 (IRIS)
Concentration (ug/m^3)
10.000
9.000
8.000
7.000
6.000
5.000
4.000
3.000
2.000
1.000
0.000
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
Year
AMS LAB
CHS
ELM
ROX
RIT

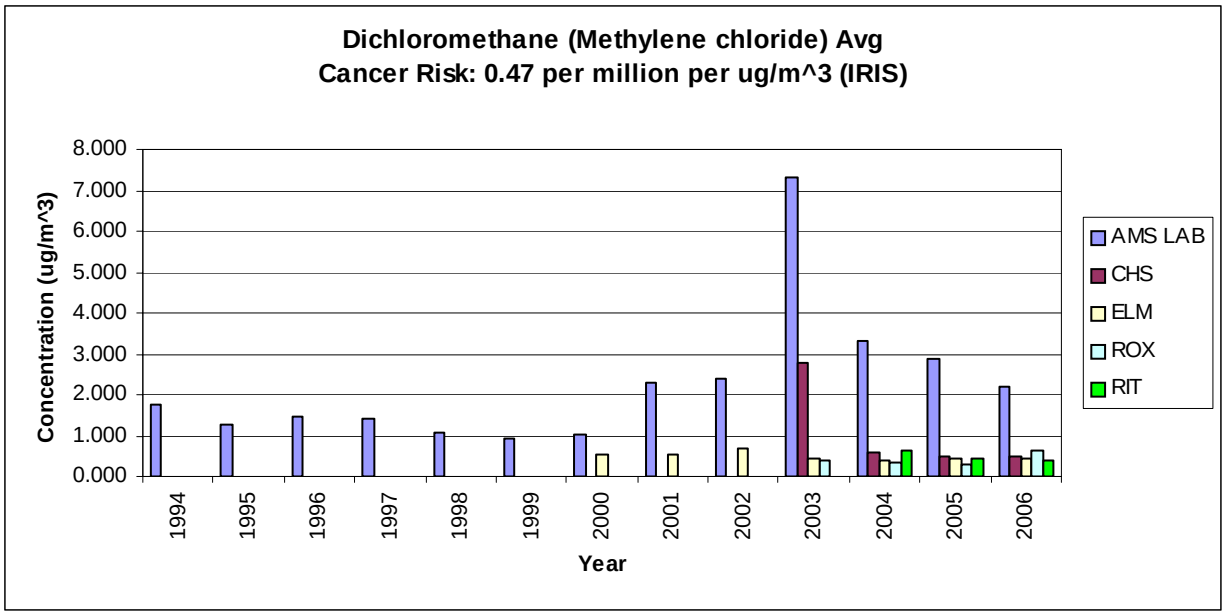

1999 NATA
Total Cancer Risk
Benzene
Cancer Risk (in a million)
0
1 - 5
6 - 10
11 - 20
21 - 30
31 - 40
41 - 50

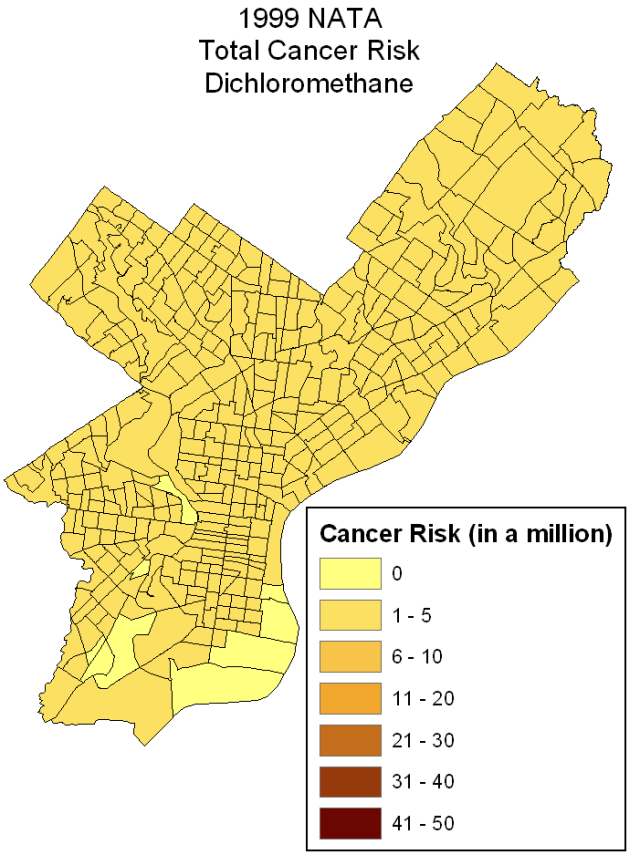

Benzene
Major
Area
Onroad
Nonroad

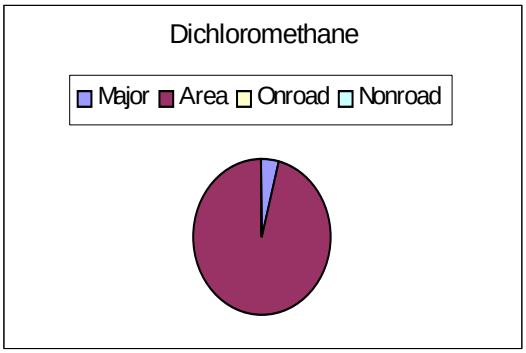

Carbon tetrachloride Avg
Cancer Risk: 15 per million per ug/m^3 (IRIS)
Concentration (ug/m^3)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
Year
AMS LAB
CHS
ELM
ROX
RIT

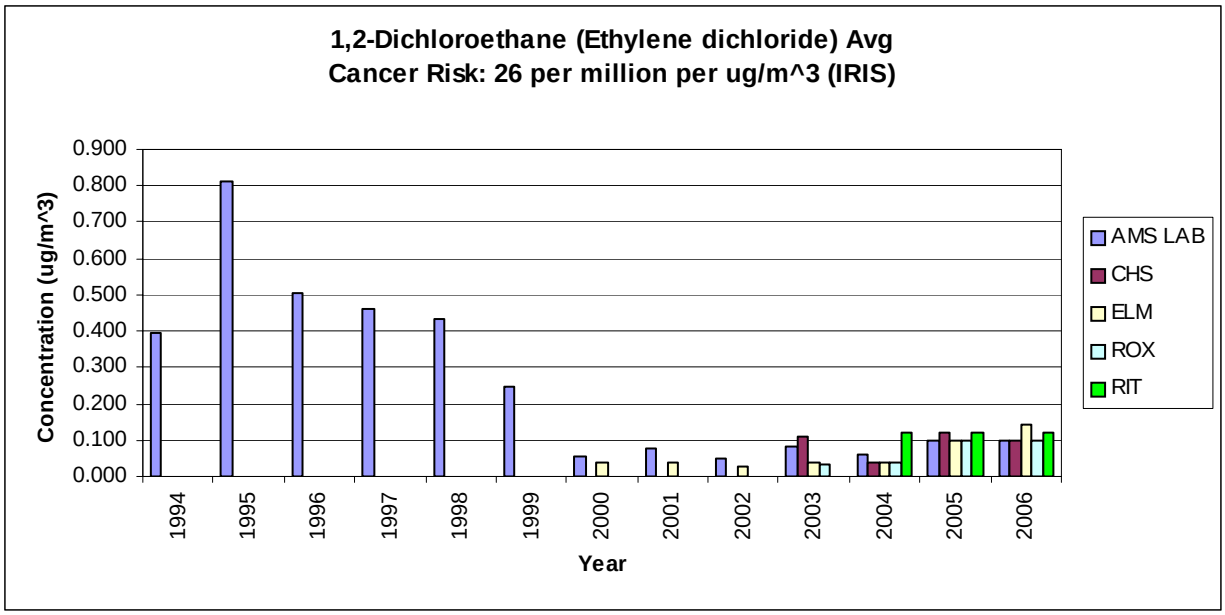

1999 NATA
Total Cancer Risk
Carbon tetrachloride
Cancer Risk (in a million)
0
1 - 5
6 - 10
11 - 20
21 - 30
31 - 40
41 - 50

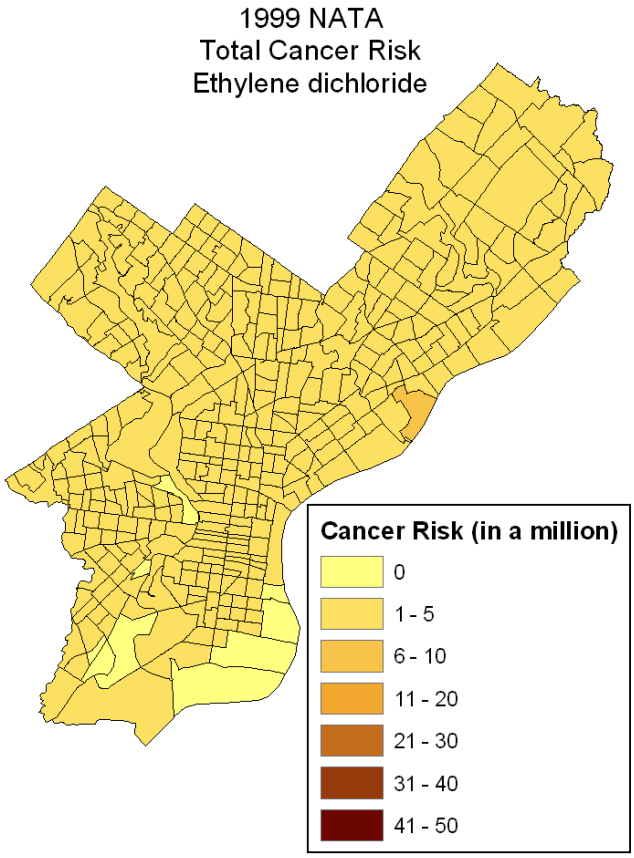

Carbon tetrachloride
Major
Area
Onroad
Nonroad

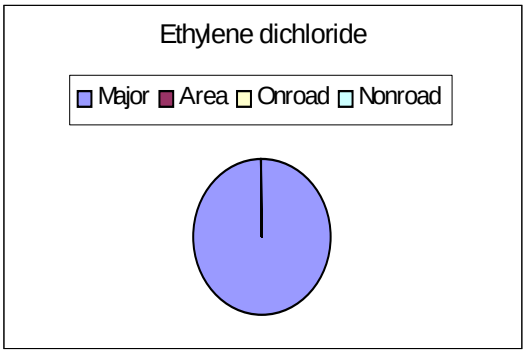

Dichloromethane (Methylene chloride) Avg
Cancer Risk: 0.47 per million per ug/m^3 (IRIS)
Concentration (ug/m^3)
8.000
7.000
6.000
5.000
4.000
3.000
2.000
1.000
0.000
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
Year
AMS LAB
CHS
ELM
ROX
RIT

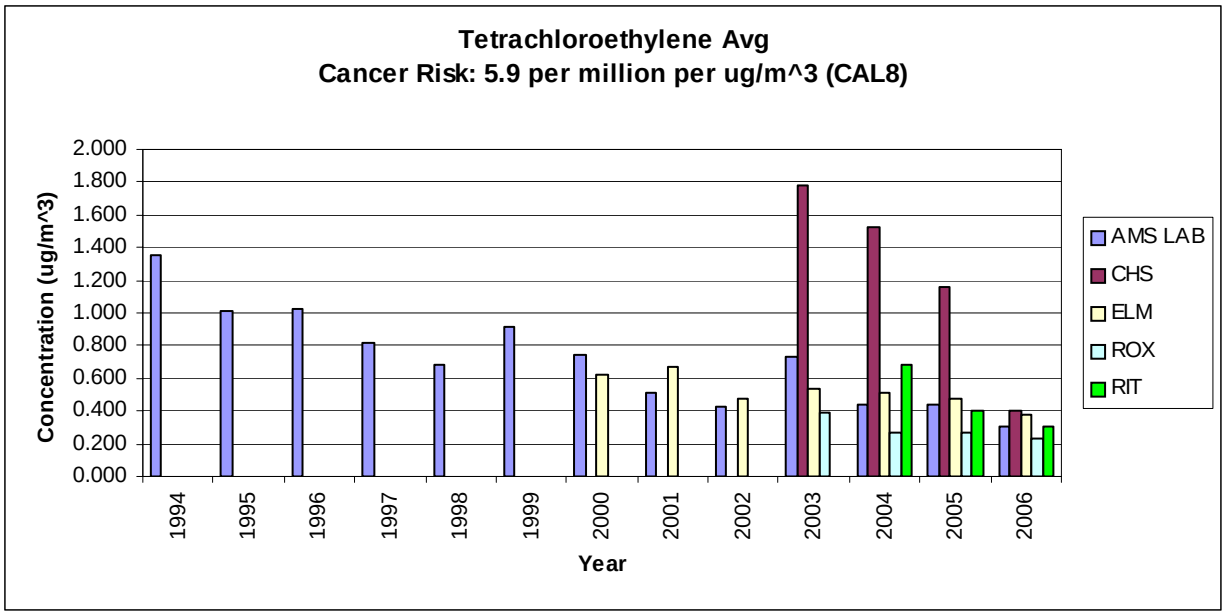

1999 NATA
Total Cancer Risk
Dichloromethane
Cancer Risk (in a million)
0
1 - 5
6 - 10
11 - 20
21 - 30
31 - 40
41 - 50

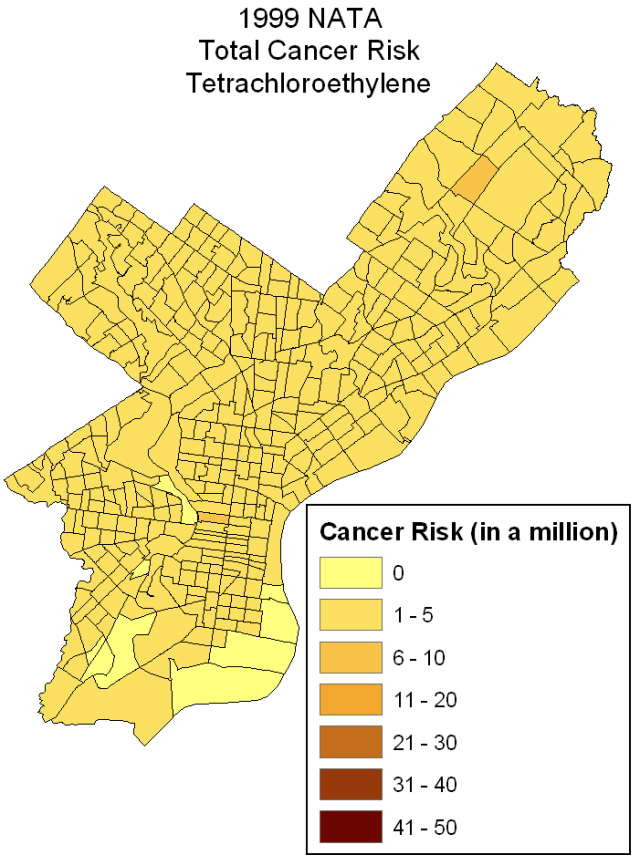

Dichloromethane
Major
Area
Onroad
Nonroad

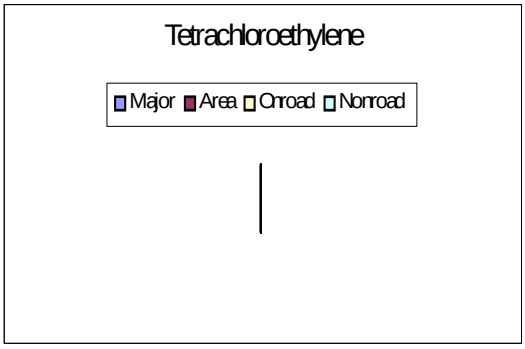

1,2-Dichloroethane (Ethylene dichloride) Avg
Cancer Risk: 26 per million per ug/m^3 (IRIS)
Concentration (ug/m^3)
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
Year
AMS LAB
CHS
ELM
ROX
RIT


1999 NATA
Total Cancer Risk
Ethylene dichloride
Cancer Risk (in a million)
0
1 - 5
6 - 10
11 - 20
21 - 30
31 - 40
41 - 50

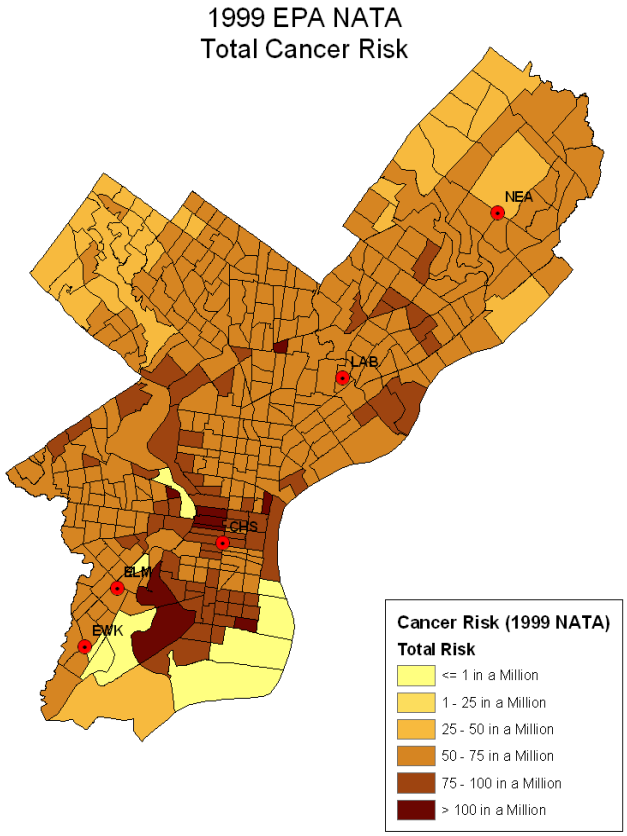

Ethylene dichloride
Major
Area
Onroad
Nonroad


Tetrachloroethylene Avg
Cancer Risk: 5.9 per million per ug/m^3 (CAL8)
Concentration (ug/m^3)
2.000
1.800
1.600
1.400
1.200
1.000
0.800
0.600
0.400
0.200
0.000
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
Year
AMS LAB
CHS
ELM
ROX
RIT

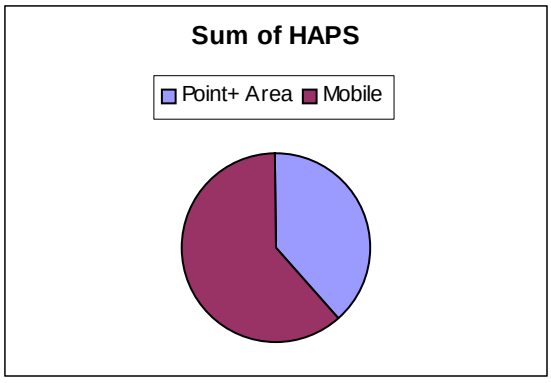

1999 NATA
Total Cancer Risk
Tetrachloroethylene
Cancer Risk (in a million)
0
1 - 5
6 - 10
11 - 20
21 - 30
31 - 40
41 - 50


Tetrachloroethylene
Major
Area
Onroad
Nonroad

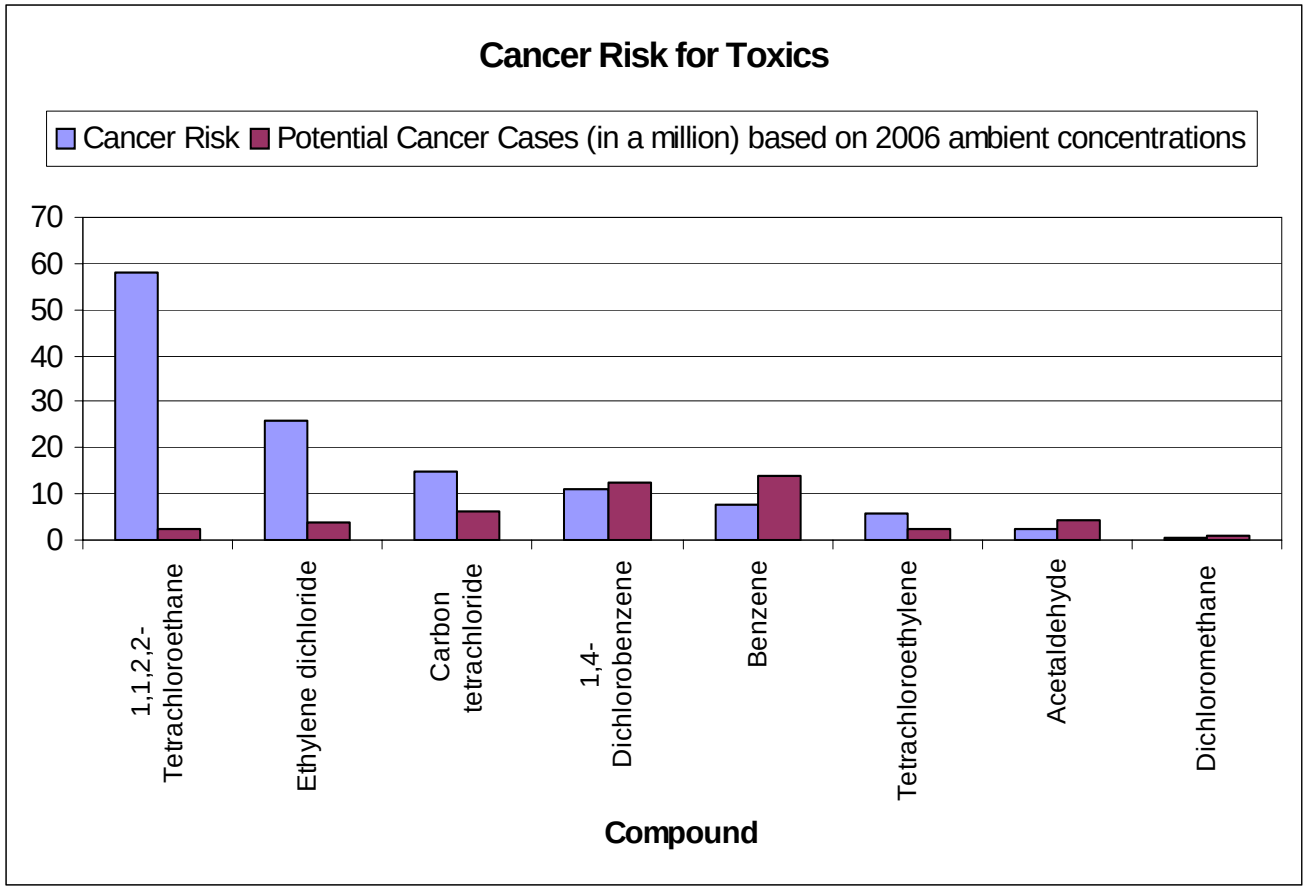
The map below shows the total cancer risk for Philadelphia based on the 1999 NATA data. Included on the map are the locations of air monitors that measure toxics in Philadelphia.



The NATA study indicates emissions in Philadelphia for the HAPS in this report came mostly from mobile sources as seen in the pie chart below.



The following chart shows the cancer risk for the toxics that we monitor as seen on the previous pages. It displays what the likely rate of risk is among a million people over a lifetime per microgram per cubic meter of a toxic in the blue and displays the potential cancer cases among a million people over a lifetime based on 2005 ambient air values monitored in the City of Philadelphia in the red.



Appendix A: Consequences of Air Pollution

Health Effects
Air pollution contributes to health problems such as asthma, lung disease, and respiratory tract infections. It also can aggravate cardiovascular disease. This concern is greatest in sensitive populations, especially those with lung disorders, young children, and the elderly.

Acid Rain
Acid rain occurs when sulfur dioxide and nitrogen oxides are released into the air, and combine with rain, snow or fog. Acid rain's effects include harming fish, plants, animals, and crops, and eroding building surfaces and national monuments. The effects of acid rain can be offset by reducing the amount of sulfur dioxide released into the air.

Visibility
Haze is caused when particles and gases in the atmosphere scatter or absorb light. The same particles that affect our health also limit our ability to see our surroundings. This affects our quality of living and the beauty of the City of Philadelphia by obscuring many of the national treasures and landmarks that we value.

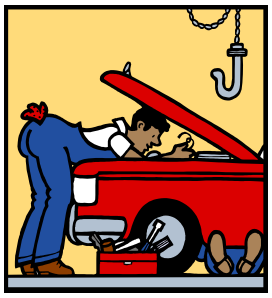
Climate Change
Global warming refers to an increase in the Earth's temperature, which has the effect of causing climate change. The emission of certain pollutants into the atmosphere which hold onto heat energy have sped this process along. Some of the expected long-term changes are a rise in sea level, damage to coastal areas, a variation in precipitation, and other local climate changes. These changes have the potential for altering forests, crop yields, wild life, and water supplies. In 2006, the City worked on a Local Action Plan for Climate Change, finalizing a greenhouse gas emission inventory for 1990, 1997, 2006 and forecasted to 2010. In 2006, the City joined an international group of major cities committed to reduce urban carbon emissions and adapt to climate change. This initiative is supported by the Clinton Climate Initiative (CCI) of the William J. Clinton Foundation.

Appendix B: What AMS is Doing to Reduce Air Pollution

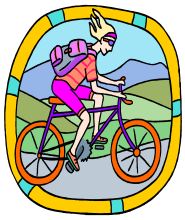
- AMS monitors the air for pollutants at many stations throughout the City.
- AMS actively reviews construction and operating permits and ensures that regulatory limits concerning air pollution are followed. Operators of facilities that emit or have the potential to emit air contaminants must apply for a permit. The permit includes information on permit applicable limits and what plans the source has to measure the pollution they emit. Sometimes AMS will perform modeling as part of the permit review to assess the impact of new equipment on air quality. Permit applications are located on our website at www.phila.gov/health/units/ams/index.html. In addition, permits are available to the public. You may contact AMS for information on access to these documents.
- AMS inventories stationary sources of emissions such as factories and other businesses to obtain a current, comprehensive listing of air pollutant emissions for a specific time interval.
- AMS has various responsibilities including inspecting facilities that may cause air pollution or create an air pollution nuisance, meeting with and assisting facility personnel to achieve compliance, investigating noise and vibration nuisance sources, and responding to citizen complaints and requests for information.
- Although AMS uses education and consultation assistance to ensure compliance with air standards, there are occasions when additional measures are necessary. To carry out its responsibilities to protect the public health, AMS has the authority to issue Notices of Violation (NOVs) for sources that are not in compliance, assess and collect penalties in response to NOVs, initiate orders to abate sources of air pollution, negotiate compliance schedules and agreements to achieve compliance, and refer cases to the Law Department for additional legal remedies including injunctive actions, court orders and consent decrees.
- AMS provides information on economic incentives for cleaning up pollution. Gasoline refiners can get federal emission credits if they produce cleaner gasoline than required by law.
- AMS provides information on offsets. If an owner of a major source wants to release more of a criteria air pollutant, an offset (a reduction of the criteria air pollutant by an amount somewhat greater than the planned increase) must be obtained. For example, a company might purchase emission credits from another facility, change its production method to pollute less, or plant trees to reduce environmental impacts.
- AMS provides industry workshops concerning permitting and emission inventory submittals, assistance and training to owners and operators of auto body shops on reducing emissions, and training to asbestos contractors on workplace standards. AMS also provides outreach to educate the public about air quality. Staff attend fairs, speak at meetings, and visit schools throughout the City.
- AMS is also active in non-regulatory (voluntary) programs. The Philadelphia Diesel Difference is a program that educates owners and operators of diesel engine vehicles about clean diesel technologies such as alternative fuels, anti-idling equipment and diesel engine retrofit devices.

Appendix C: Protecting Yourself and the Environment

If you care about your health, and the health of your neighbors and loved ones, you should also care about the health of the environment. What you do everyday can have a significant impact on the air.



- Avoid overfill, or "topping off" your car's gas tank
- Keep your car's engine tuned up and the proper pressure in the tires
- When you need to drive, plan ahead so you don't make extra trips
- Avoid high speeds—fuel efficiency decreases significantly at speeds over 55 mph
- Drive smoothly—to save gas and lower vehicle emissions
- Avoid lengthy idling—idling wastes gas
- Don't rev the engine—it also wastes gas
- Minimize drag—heavy tow loads, and even driving with the windows open, can create "drag'" which reduces fuel efficiency
- Keep tires properly inflated—under inflated tires decrease gas mileage and shorten tire life. Check the tire pressure in all four tires every two weeks
- Avoid rough roads and potholes—they're hard on tire and wheel alignment and can also reduce fuel efficiency



- Use alternative forms of transportation whenever possible, such as car pooling, biking, mass transit, or walking
- Avoid oil-based paints. Latex paints are much friendlier to the environment, and usually work just as well
- Conserve energy
- Don't overheat or overcool your home

- Turn off lights and appliances when not in use
- Wash clothes and dishes in full loads
- Choose Energy Star appliances whenever possible
- Recycle
- Report air pollution violations when you become aware of them
- Take part/respond to hearings/public notices for cleaning up air pollution
- Learn about local air quality efforts and issues and consider becoming involved in a group that addresses these issues
- Let your government representatives know that you care about the quality of the air
- Consider switching to wind power or using green building technologies like high-efficiency lighting

Appendix D: Frequently Asked Questions About Air Quality

What is a criteria pollutant?

A criteria pollutant is one of the six pollutants that are regulated under standards provided by the US Environmental Protection Agency (EPA) to protect the public health and welfare. The criteria pollutants are: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead.

How are pollutants measured?

Monitors are set up at various locations in the City, and data is collected from these points to show the concentrations of pollutants in the air. A number of the monitors provide us with pollutant levels every hour. Ozone is one of the pollutants measured this way. Other pollutants, such as lead, require sampling the air over a 24-hour period and performing a chemical analysis to determine levels.

What does nonattainment mean?

Nonattainment refers to a violation of the ambient air quality standards set for a criteria pollutant. The final designation for nonattainment is given by the EPA after it reviews the recommendations of the State's governor and looks at air quality data for an area. A designation of nonattainment obligates the state or local air agency to identify the causes of pollution, create and implement a strategy that will improve air quality to the point that it meets the standard.

What is an air toxic?

Hazardous Air Pollutants (HAPs), commonly referred to as air toxics or toxic air pollutants, are substances in the air that cause adverse health effects or environmental damage at sufficient concentrations and exposure. The Federal Clean Air Act Amendments of 1990 list 187 pollutants or chemical groups as HAPs. HAPs that are of greatest concern are those that are released to the air in large enough amounts to create a risk to human health.

Who do I contact if I have a complaint about air quality?

Contact the Philadelphia Department of Public Health, Air Management Services, at: 215-685-7580. If you need assistance during non-business hours, contact the City switchboard at: 215-686-1776.

Why is the ozone layer in the atmosphere considered good, and ozone at ground level considered a health risk?

High in the atmosphere, ozone provides a protective covering for the earth from the sun's ultraviolet (UV) rays, which are harmful. However, ozone low to the ground is formed when certain chemicals and sunlight interact, and is the chief ingredient in smog. It is a strong irritant to the upper respiratory system and eyes, and can cause damage to crops.

What are Primary and Secondary Pollutants?

Scientists distinguish between primary and secondary pollutants. These terms do not refer to their relative importance, but to how pollutants come to exist in the atmosphere. Primary pollutants are compounds such as sulfur dioxide that come directly from their sources. Particles such as soil and soot are also primary pollutants. Secondary pollutants are not emitted directly, but are either formed or modified in the atmosphere. Ozone, for example, is a secondary pollutant that forms as a result of reactions involving primary pollutants. Essentially no ozone is emitted directly into the atmosphere. Sulfate is a secondary particulate pollutant; it is the product of the transformation of a primary pollutant, sulfur dioxide, in the atmosphere.

What should I do if there is unhealthy air quality?

Consider limiting strenuous activity outdoors, especially if you are a member of a sensitive group (the elderly, children, and those with heart or lung problems). Limit the use of your car during daylight hours, and avoid using lawn or garden equipment that requires gasoline. See page 40 for additional suggestions.

Are there differences in various areas of the City of Philadelphia with regard to air quality?

Depending on the pollutant, there may be variations. Generally, airborne pollutants are fairly evenly distributed throughout the City. However, the presence of certain industries or other sources of pollutants in areas may result in higher levels of certain pollutants nearby.

Appendix E: Resources

WEBSITES

www.phila.gov/health/units/ams - Philadelphia Department of Public Health, Air Management Services
www.dep.state.pa.us - Pennsylvania Department of Environmental Protection
www.epa.gov - U.S. Environmental Protection Agency
www.epa.gov/air/data/index.html - AirData presents annual summaries of air pollution data from two EPA databases: the AQS (Air Quality System) database provides air monitoring data - ambient concentrations of criteria air pollutants at monitoring sites, primarily in cities and towns and the NEI (National Emission Inventory) database provides estimates of annual emissions of criteria and hazardous air pollutants from all types of sources.
www.epa.gov/echo - Use ECHO (Enforcement & Compliance History Online) to determine whether compliance inspections have been conducted by EPA or state/local government, violations were detected, enforcement actions were taken, and penalties were assessed in response to environmental law violations.
www.epa.gov/airnow - The AQI (Air Quality Index) tells you how clean the air is and whether it will affect your health. Through *AIRNow*, EPA, NOAA, NPS, state, and local agencies work together to report current and forecast conditions for ozone and particle pollution.
www.airqualitypartnership.org - Ground Level Ozone and Particle Pollution Forecasts
www.cleanair.org - Clean Air Council
www.atsdr.cdc.gov - Agency for Toxic Substances and Disease Registry: Public health statements on specific toxics and the effects of exposure
www.lungusa.org - American Lung Association website: Information on lung health, air pollution, and related matters
www.aafa.org - Asthma and Allergy Foundation of America
www.scorecard.org - Detailed information on toxics
www.howstuffworks.com - For simple to read answers to a wide variety of science questions, including air pollution, acid rain, and ozone
www.cleanair.org/dieseldifference - Philadelphia Diesel Difference
www.dieselforum.org - Diesel Technology Forum
www.dvgbc.org - Delaware Valley Green Building Council

CONTACTS

Philadelphia Department of Public Health, Air Management Services	215-685-7580
During non-business hours, contact the City Switchboard	215-686-1776
U.S. Environmental Protection Agency, Region III	215-814-5000
Pennsylvania Department of Environmental Protection	484-250-5900
Asthma Center Pollen and Mold Count	1-800-476-5536
Clean Air Council	215-567-4004