

# STATE HEALTH IMPROVEMENT PLAN

HEALTHY PENNSYLVANIANS 2010 AND BEYOND

## STATE OF THE STATE

# **CHAPTER 13**

## ENVIRONMENTAL HEALTH



**Chapter  
13**

**Environmental Health**

**ENVIRONMENTAL HEALTH**

According to the World Health Organization, “In its broadest sense, environmental health comprises those aspects of human health, disease, and injury that are determined or influenced by factors in the environment. This includes the study of both the direct pathological effects of various chemical, physical, and biological agents, as well as the effects on health of the broad physical and social environment, which includes housing, urban development, land-use and transportation, industry, and agriculture.”<sup>1</sup> The interrelationships between the environment and human health are intrinsic to the quality of our daily living. Necessities such as the air we breathe, the food we eat and the water we drink are aspects of environmental health that can frequently be taken for granted.

Environmental health has an impact on all levels of society. A shift is occurring that requires monitoring and awareness of the environment in all aspects of society, from local to global communities. Environmental health has grown from the prevention or control of diseases and deaths that result from interactions between people and their environment to the incorporation of public health safety preparedness to ensure vulnerable areas of our environment are protected from accidental or intentional contamination or destruction.

KEY ISSUES ADDRESSED IN THIS CHAPTER:	
WHAT ARE THE MAIN ENVIRONMENTAL FACTORS THAT AFFECT HEALTH?	
WHAT ARE THE ECONOMIC COSTS FROM ENVIRONMENTAL POLLUTANTS?	
WHAT ARE SOME HEALTH DISPARITIES CREATED BY THE ENVIRONMENTS IN WHICH PENNSYLVANNIANS LIVE?	
WHERE CAN I GET MORE INFORMATION ON ENVIRONMENTAL HEALTH?	

**HP2010 LEADING HEALTH INDICATOR – ENVIRONMENTAL QUALITY**

**Health Issues - Environmental Quality**

In practical terms, the monitoring of environmental health typically looks at indoor and outdoor air quality, water quality, and toxic waste, and their effects on such conditions as asthma and other respiratory diseases, cancer, birth defects, organ damage and premature death.

**Outdoor Air Pollution**

Exposure to air pollution can cause burning eyes and nose and an itchy, irritated throat, as well as trouble in breathing. Some chemicals found in polluted air cause cancer, birth defects, brain and nerve damage and long-term injury to the lungs and breathing passages. Some air pollutants are so dangerous that accidental releases can cause serious injury or even death. Air pollution exposures due to residence in exposure zones of hazardous and other waste sites have also been associated with statistically increased risks of birth defects, breast cancer, and leukemia and bladder cancer.<sup>2</sup> Trees, lakes and animals also have been harmed by air pollution. Air pollutants have thinned the protective ozone layer above the Earth. This loss of ozone could cause changes in the environment as well as increase skin cancer and eye damage in people.

Toxins from hazardous waste can be released into the environment and pollute the air and water:

- Approximately 160 million tons of air pollution was released into the air in the United States in 2002; 146 million people in the United States lived in counties that did not meet EPA standards.<sup>3</sup>
- According to the Pennsylvania Department of Environmental Protection, a total of 414,104 tons of hazardous waste was managed in Pennsylvania in 2001.<sup>4</sup>
- To date, more than 300 illegal dumpsites have been identified throughout Pennsylvania. Since the program's inception, 248 sites have been cleaned through the efforts of more than 2,400 volunteers. These cleanups have resulted in the removal of more than 2,900 tons of household trash, 27,900 tires, 400 tons of scrap metal and 600 tons of concrete.<sup>5</sup>
- Mercury is a naturally occurring element that is found in air, water and soil. Mercury is found in many rocks including coal. When coal is burned, mercury is released into the environment. Coal-burning power plants are the largest human-caused source of mercury emissions to the air in the United States, accounting for about 40 percent of all domestic mercury emissions.<sup>6</sup> Mercury exposure at high levels can harm the brain, heart, kidneys, lungs, and immune system of people of all ages. Research shows that most people's fish consumption does not cause a health concern. However, it has been demonstrated that high levels of methyl mercury in the bloodstream of unborn babies and young children may harm the developing nervous system, making the child less able to think and learn.<sup>7</sup>

According to DEP, a total of 414,104 tons of hazardous waste was managed in Pennsylvania in 2001.

### Indoor Air Quality

Indoor air is becoming more of a concern to people across the nation. In the last several years, a growing body of scientific evidence has indicated that the air within homes and other buildings can be more seriously polluted than the outdoor air in even the largest and most industrialized cities. Other research indicates that people spend approximately 90 percent of their time indoors. Thus, for many people, the risks to health may be greater due to exposure to air pollution indoors than outdoors.<sup>8</sup> Sources of indoor air pollution include oil, gas, kerosene, coal, wood, and environmental tobacco smoke, and building materials and furnishings such as asbestos-containing insulation, damp carpets, household cleaning products, and lead-based paints. Other pollutants include mold, radon, and carbon monoxide. Environmental tobacco smoke, radon and asbestos have been found to contribute to such health issues as lung cancer while the most common symptoms of carbon monoxide poisoning are nausea, tiredness, headaches and dizziness. Death can result from high levels from carbon monoxide. Radon, the second leading cause of lung cancer, is a radioactive gas that comes from the natural breakdown of uranium in soil and rock and gets into the air. It moves through the ground and into homes through cracks and other holes in the foundation where it can accumulate to unsafe levels.

Molds have the potential to cause health problems. Molds produce allergens (substances that can cause allergic reactions), irritants, and in some cases, potentially toxic substances (mycotoxins). Inhaling or touching mold or mold spores may cause allergic reactions in sensitive individuals. Allergic responses include hay fever-type symptoms, such as sneezing, runny nose, red eyes, and skin rash (dermatitis). Allergic reactions to mold are common. They can be immediate or delayed. Molds can also cause asthma attacks in people with asthma who are allergic to mold. In addition, mold exposure can irritate the eyes, skin, nose, throat, and lungs of both mold-allergic and non-allergic people.

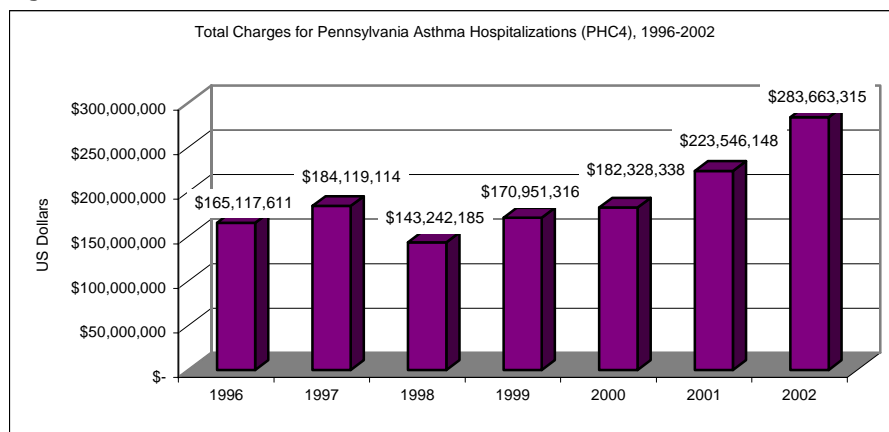
## Water Quality

In addition to air quality, water quality can have a strong effect on health. Most Americans get their drinking water from large-scale municipal water systems that rely on surface water sources such as rivers, lakes and reservoirs. However, millions of Americans depend on private water sources such as wells and aquifers. In either case, the United States enjoys one of the cleanest drinking water supplies in the world. The Environmental Protection Agency (EPA) regulates the quality of the nation's drinking water by issuing and enforcing safe drinking water standards. EPA also protects the nation's drinking water by safeguarding our watersheds and regulating the release of pollutants into the environment. In partnership with local authorities and community groups, the Agency encourages water conservation. EPA also works with these partners to develop contingency plans for source contamination and other water emergencies.

### Economic Considerations - Environmental Quality

- Four disease outcomes with evidence that suggests they may be related to environmental factors – diabetes, Parkinson's disease, neurodevelopmental effects and hypothyroidism, and deficits in intelligence quotient – cost the United States and Canada between \$57 billion and \$397 billion per year.<sup>9</sup>
- Evidence suggests that pollution prevention activities have the potential to create new employment opportunities in the manufacturing, transportation, and utility industries. Research that ranks state economic performance with environmental measures has consistently found that states that promote a healthy environment have sound economies.<sup>10</sup>

**Figure 13-1**



Source: PADOH Bureau of Chronic Diseases and Injury Prevention, and PADOH Bureau of Epidemiology'

'Data Source: PHC4 (Pennsylvania Health Care Cost Containment Council)'

The Pennsylvania Health Care Cost Containment Council released a research brief detailing avoidable hospitalizations. This report focused on 109,169 preventable hospitalizations that occurred in Pennsylvania for total charges of over \$2.8 billion dollars.<sup>11</sup>

- In November 2004, the Pennsylvania Health Care Cost Containment Council released a research brief detailing avoidable hospitalizations. In this report, preventable hospitalizations of pediatric and adult asthma totaled 19,490 admissions at a cost of over \$278 million.<sup>11</sup>
- The number of hospitalizations for asthma and the average length of stay per hospitalization have remained fairly constant over the past several years in Pennsylvania, whereas the average charge per asthma hospitalization (not including physician fees) and total asthma hospitalization charges (not

including physician fees) have increased. Asthma represents a large economic burden for the Commonwealth and its residents. According to data from the Pennsylvania Health Care Cost Containment Council (PHC4) and analyzed by the PADOH, Bureau of Epidemiology, average hospitalization charge in 2003 was \$15,139 per asthma hospitalization.<sup>12</sup>

**Environmental Quality in Pennsylvania Trends and Disparities**

**PENNSYLVANIA HEALTHY PEOPLE 2010 DATA – TRACKING PROGRESS**

Healthy People 2010 uses the following two objectives to monitor environmental quality.

- **HP2010 Objective 8-1a.** Reduce the proportion of persons exposed to air that does not meet the U.S. Environmental Protection Agency’s health-based standards for ozone.
- **HP2010 Objective 27-10.** Reduce the proportion of nonsmokers exposed to environmental tobacco smoke.

Pennsylvania currently collects data for objective 8-1a only.

**Table 13-1**  
**Objective 08-01a-g % persons exposed to harmful air pollutants\*<sup>13</sup>**  
**1999-2003**

	2010 Goal	PA 2003	PA 2002	PA 2001	PA 2000	PA 1999
<b>Ozone</b>	0**	81.4	75.5	26.3	28.9	56.0
<b>Particulate matter (PM<sub>10</sub>)</b>	0***	0	0	0	12.4	0
<b>Particulate matter (PM<sub>2.5</sub>)</b>	0***	35.3	59.7	22.5 <sup>#</sup>	0 <sup>#</sup>	11.2 <sup>#</sup>
<b>Carbon monoxide</b>	0	0	0	0	0	0
<b>Nitrogen dioxide</b>	0	0	0	0	0	0
<b>Sulfur dioxide</b>	0	0	0	0	0	0
<b>Lead</b>	0	0	0	0	0	0
<b>Any pollutant (as listed above)</b>	0	83.2	77.2	36.7	28.9	60.8

\*percent of state residents living in counties with air monitoring stations that did not meet U.S. EPA standards.

\*\* target set for 2012 \*\*\*target set for 2018

<sup>#</sup>Allegheny and Philadelphia Counties excluded in calculation for PM<sub>2.5</sub>. 1999 data were incomplete.

NOTE: Not all counties have air monitoring stations. Those counties without air monitoring stations were counted as meeting EPA standards.

Source: Pennsylvania Department of Health, Bureau of Health Statistics and Research,

Given that over three fourths of Pennsylvania’s residents are exposed to any of the pollutants listed in the Healthy People 2010 objective, substantial air pollution reductions will need to occur in order to reach the 2010 goal of zero.

Other data reinforce the challenge of improving air quality in Pennsylvania:

- According to the 2004 report released by the American Lung Association, the cities of Philadelphia, Harrisburg and Pittsburgh were among those most affected by the poorest air quality in the United States.<sup>14</sup>

Pennsylvania power plants topped the list for highest Mercury emission rates.<sup>15</sup>

Pennsylvania has a serious radon problem. There are estimated 860-3,800 lung cancer deaths per year in Pennsylvania due to residential radon exposure. An estimated 40% of Pennsylvania homes have radon levels above EPA’s action guideline of 4 pCi/l.<sup>16</sup>

By looking at the data for three conditions – West Nile Virus, lead poisoning, and asthma – Pennsylvania’s environmental health challenges come into better focus. People of color and low-income individuals continue to face greater exposure to environmental hazards and greater risks to their health than the general population.<sup>17</sup> Unequal environmental protections based on race, color, national origin, or income issues affect the health of communities. Environmental justice should be utilized in identifying disparities in “at risk” populations in Pennsylvania.

- Solid waste companies have been charged with using race and income as factors in identifying facility sites, counting on the probability that poor, disadvantaged communities would lack access to information on long-term health risks, economic consequences, and appropriate compensation.<sup>18</sup>
- In Pennsylvania there are 268 Superfund Sites<sup>19</sup>. A Superfund site is any land in the United States that has been contaminated by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment. The superfund sites in Pennsylvania are particularly concentrated in urban areas where a large number of minority populations reside.
- Cotinine is a metabolite of nicotine that tracks exposure to environmental tobacco smoke (ETS) among nonsmokers. Higher cotinine levels indicate more exposure to ETS, which has been identified as a known human carcinogen. According to national data, from 1991-1994 to 1999-2000, cotinine levels decreased 58% for children, 55% for adolescents, and 75% for adults. However, in 1999-2000, cotinine levels in children were more than twice those of adults. Non-Hispanic blacks had levels more than twice those of Mexican Americans and non-Hispanic whites. Although efforts to reduce ETS exposure during the 1990s were successful, ETS exposure remains a major public health concern, particularly for children and Non-Hispanic blacks.<sup>20</sup>



Few would dispute that we should keep track of the hazards of pollutants in the environment, human exposures, and the resulting health outcomes—and that this information should be easily accessible to public health professionals, policy-makers and the public. Yet even today we remain surprisingly in the dark about our nation’s environmental health.

—CDC: America’s Environmental Health Gap.

Other vulnerable population groups that may disproportionately experience the ill effects of environmental hazards include children, pregnant women, migrant and seasonal farm workers, and immigrants from countries with minimal environmental standards.



## PENNSYLVANIA PRIORITIES: OTHER ENVIRONMENTAL HEALTH ISSUES

### Asthma

Asthma is a disease that affects lungs. It causes repeated episodes of wheezing, breathlessness, chest tightness, and nighttime or early morning coughing. It is known that family history contributes to susceptibility, but it is not well known what causes the disease to develop, and there is no cure for asthma. Environmental exposures, such as house dust mites, environmental tobacco smoke, and outdoor air pollution can trigger an attack.

An examination of Pennsylvania Healthy People 2010 data for asthma reveals notable disparities, particularly for females, Blacks, and Hispanics.

Table 13-2

**Objective 24-01c Asthma Death Rate  
Per 1,000,000 ages 15-34<sup>21</sup>**

	<b>2010 Goal</b>	<b>PA 2001-03</b>	<b>PA 2000-02</b>	<b>PA 1999-01</b>	<b>PA 1998-00</b>	<b>PA 1997-99</b>
<b>Persons 15 to 34</b>	2.0	5.2	5.0	4.3	4.8	5.4
<b>Males 15 to 34</b>	2.0	5.2	5.7	4.2	6.2	6.9
<b>Females 15-34</b>	2.0	5.3	4.4	4.4	3.3	3.9
<b>Whites 15-34</b>	2.0	4.0	3.4	3.0	3.3	3.9
<b>Blacks 15-34</b>	2.0	<b>19.0</b>	19.0	15.6	17.4	17.3
<b>Hispanics* 15-34</b>	2.0	DSU	DSU	DSU	DSU	DSU

\*Hispanics can be of any race

Source: PA Department of Health, Bureau of Health Statistics and Research

The 2000-2002 asthma death rate for females aged 35 to 64 was nearly twice the rate for males and the Healthy People 2010 goal. The asthma death rate for Blacks in this age group was more than six times the White rate.

Table 13-3

**Objective 24-01d Asthma Death Rate  
Per 1,000,000 ages 35-64<sup>22</sup>**

	<b>2010 Goal</b>	<b>PA 2001-03</b>	<b>PA 2000-02</b>	<b>PA 1999-01</b>	<b>PA 1998-00</b>	<b>PA 1997-99</b>
<b>Persons 35 to 64</b>	9.0	12.9	12.6	11.3	12.2	14.7
<b>Males 35 to 64</b>	9.0	9.7	8.6	7.5	8.5	10.2
<b>Females 35 to 64</b>	9.0	<b>15.9</b>	16.5	14.9	15.8	18.9
<b>Whites 35 to 64</b>	9.0	9.6	8.6	8.2	8.0	10.4
<b>Blacks 35 to 64</b>	9.0	<b>47.0</b>	54.2	45.9	56.4	60.0
<b>Hispanics* 35 to 64</b>	9.0	38.8	DSU	DSU	DSU	DSU

\*Hispanics can be of any race

Source: PA Department of Health, Bureau of Health Statistics and Research

The 2000-2002 asthma death rate for Blacks aged 15 to 34 was 5.5 times higher than the White rate and almost 10 times greater than the Healthy People 2010 goal of 2.0.

The 2000-2002 asthma death rate for females aged 65 and over was more than twice the rate for males and the death rate for Blacks aged 65 and over was more than twice the White rate. Blacks are the only group that has not reached the Healthy People 2010 goal of a rate of 60.0 or below.

Table 13-4

**Objective 24-01e Asthma death rate  
Per 1,000,000 ages 65+<sup>23</sup>**

	<b>2010 Goal</b>	<b>PA 2001-03</b>	<b>PA 2000-02</b>	<b>PA 1999-01</b>	<b>PA 1998-00</b>	<b>PA 1997-99</b>
<b>Persons 65+</b>	60.0	42.8	45.7	45.8	55.6	62.2
<b>Males 65+</b>	60.0	26.1	25.7	25.0	34.7	42.0
<b>Females 65+</b>	60.0	<b>54.0</b>	59.0	59.5	69.3	75.4
<b>Whites 65+</b>	60.0	40.5	42.8	44.3	52.8	59.3
<b>Blacks 65+</b>	60.0	<b>81.5</b>	87.7	63.9	86.4	93.2
<b>Hispanics* 65+</b>	60.0	DSU	DSU	DSU	DSU	DSU

\*Hispanics can be of any race

Source: PA Department of Health, Bureau of Health Statistics and Research

- Black children under the age of 5 had an asthma hospitalization rate more than five times the White rate and Hispanic children had a rate that was more than three times the White rate in 2002.

Table 13-5

**Objective 24-02a Hospitalization rate for asthma (children under 5)<sup>24</sup>**  
**Per 10,000 under 5**

	<b>2010 Goal</b>	<b>PA 2003</b>	<b>PA 2002</b>	<b>PA 2001</b>	<b>PA 2000</b>	<b>PA 1999</b>
<b>Children under 5</b>	25	60.7	50.4	56.9	50.3	54.1
<b>Males under 5</b>	25	<b>76.9</b>	63.6	72.5	64.5	69.6
<b>Females under 5</b>	25	43.7	36.5	40.4	35.4	37.8
<b>Whites under 5</b>	25	33.7	28.4	32.5	29.0	29.1
<b>Blacks under 5</b>	25	<b>174.6</b>	145.6	164.3	149.6	151.6
<b>Hispanics* under 5</b>	25	117.2	93.9	102.4	77.7	93.7

\*Hispanics can be of any race

Source: PA Department of Health, Bureau of Health Statistics and Research

The 2002 asthma hospitalization rate for females aged 5 to 64 was nearly twice the male rate. Racial and ethnic disparities were even more pronounced. Blacks in this age group had a hospitalization rate that was five times the White rate and Hispanics had a rate that was over 3 ½ times the White rate.

The 2002 asthma hospitalization rate for Hispanics aged 65 and over was almost four times the White rate and nearly seven times the Healthy People 2010 goal of 11.0.

Table 13-6

**Objective 24-02b Hospitalization rate for asthma (persons 5 to 64)<sup>25</sup> per 10,000 ages 5-64**

(age-adjusted to 2000 std population)	<b>2010 Goal</b>	<b>PA 2003</b>	<b>PA 2002</b>	<b>PA 2001</b>	<b>PA 2000</b>	<b>PA 1999</b>
<b>Persons 5-64</b>	7.7	14.7	13.3	13.2	13.3	14.1
<b>Males 5-64</b>	7.7	11.0	9.1	9.4	9.2	10.1
<b>Females 5-64</b>	7.7	<b>20.5</b>	17.2	16.9	17.2	18.0
<b>Whites 5-64</b>	7.7	10.0	8.4	7.9	7.6	8.1
<b>Blacks 5-64</b>	7.7	<b>52.9</b>	44.2	42.5	38.8	42.9
<b>Hispanics* 5-64</b>	7.7	34.1	31.6	25.4	25.2	29.9

\*Hispanics can be of any race

Source: PA Department of Health, Bureau of Health Statistics and Research,

Table 13-7

**Objective 24-02c Hospitalization rate for asthma (persons 65+)<sup>26</sup> per 10,000 65+**

(age-adjusted to 2000 std population)	2010 Goal	PA 2003	PA 2002	PA 2001	PA 2000	PA 1999
<b>Persons 65+</b>	11	25.8	21.6	19.6	18.4	19.6
<b>Males 65+</b>	11	16.8	13.8	12.3	9.7	12.5
<b>Females 65+</b>	11	<b>31.8</b>	26.7	24.5	23.1	24.2
<b>Whites 65+</b>	11	23.0	19.3	15.8	15.3	15.3
<b>Blacks 65+</b>	11	53.2	43.7	40.8	32.6	32.8
<b>Hispanics* 65+</b>	11	<b>89.8</b>	74.9	61.8	58.4	62.1

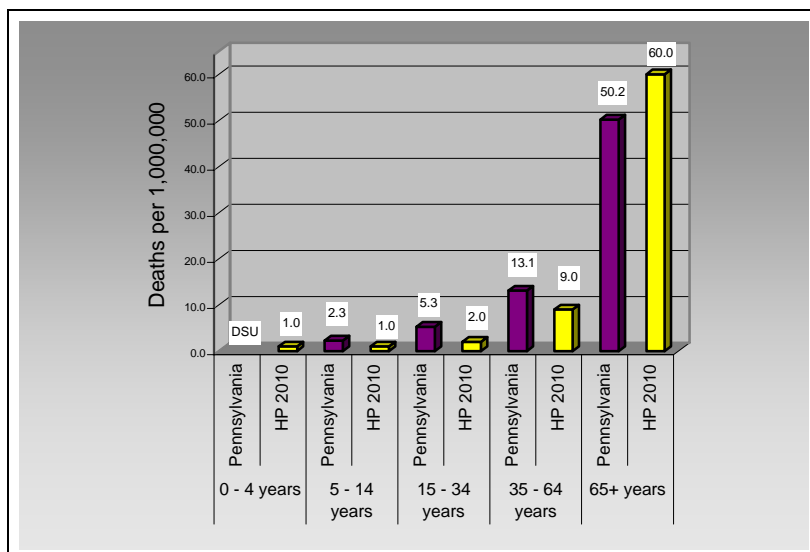
\*Hispanics can be of any race

Source: PA Department of Health, Bureau of Health Statistics and Research,

Pennsylvania Observations:

- In 2004, non-age adjusted Pennsylvania BRFSS data estimated that more than one million Pennsylvania adults aged 18 years and older reported currently having asthma. Pennsylvania rates for current asthma prevalence are similar to those of the United States as a whole. Pennsylvania BRFSS data for adults aged 18 years and older indicate that African-Americans, females, young adults, persons with low income, and persons with limited education are disproportionately burdened by asthma.<sup>27</sup>
- Several Pennsylvania counties, most notably Philadelphia county, appear to be particularly burdened by asthma, with concentrations of increased prevalence, morbidity, and mortality in the Southeast and Southwest regions of the Commonwealth.<sup>28</sup>
- During the school year 2001-2002, 8.6 % of students enrolled in 577 school districts in Pennsylvania were reported to have asthma.<sup>29</sup>
- In 2004, 13 % of Pennsylvania adult population reported that they were ever told that they had asthma.<sup>30</sup>
- The Pennsylvania hospitalization rate for pediatric asthma was almost double that for adult asthma.<sup>31</sup>

**Figure 13-2**  
**Comparison of Pennsylvania Asthma Mortality Rates (Vital Statistics) vs. HP 2010 Goals, 1998-2003, 6 Year Average Rates**<sup>32</sup>



Pennsylvania age-adjusted rates for asthma mortality are similar to those of the United States as a whole. The Pennsylvania age-specific rates exceed the Healthy People 2010 goal for all age groups shown in figure 13-2 except for those aged 65+.

Source: Chart / Figure Sources: Pennsylvania Department of Health, Bureau of Chronic Diseases and Injury Prevention; and Pennsylvania Department of Health, Bureau of Epidemiology  
 Data Source: Pennsylvania Department of Health, Bureau of Health Statistics and Research  
 DSU Data Statistically Unreliable

## Lead Poisoning

- People are exposed to lead by breathing air, drinking water, eating food, or swallowing or touching dust or dirt that contains lead. People can be exposed if they live near a hazardous waste site, live or work in buildings that contain deteriorated lead-based paint, or use lead in their jobs or hobbies. The most common source of children's exposure to lead is contaminated dust from older homes that contain lead-based paint. Children get this dust on their hands and toys through normal hand-to-mouth activity. Children can also be exposed to lead by eating paint chips that contain lead or by playing in lead-contaminated dirt. The EPA estimates that 20 percent of human exposure to lead is attributable to lead in drinking water.<sup>33</sup>
- In 2001, among 45,738 Pennsylvania children aged under 6 who were tested for blood lead level, 9.31% were confirmed to have the level above 10 µg/dL.
- In calendar year 2002, 9,721 children under age 16 (13.5 percent of the total screened) were reported to have blood lead level 10 µg/dL or higher in Pennsylvania.<sup>34</sup>
- According to the Centers for Disease Control and Prevention, Pennsylvania was ranked fifth in the United States for the estimated number of children with elevated blood lead levels, and four of Pennsylvania's cities were in the top 129 cities with numbers of children with elevated blood lead levels: Philadelphia was 5<sup>th</sup>; Pittsburgh was 28<sup>th</sup>; Erie was 96<sup>th</sup>; and Allentown was 129<sup>th</sup>.<sup>35</sup>
- Of all the United States, Pennsylvania ranks second in the number of housing units built prior to 1950, with 40 percent of all residential units falling into this category. Pre-1979 housing carries a chance of containing lead-based paint, which may be more concentrated and widespread as homes age. Eighty percent of all housing in the state was built before 1980.<sup>36</sup>

### West Nile Virus

When tires are illegally stockpiled or dumped, they can pose a hazard to human health and the environment. Tire piles are prone to fires that are very hard to extinguish and emit noxious pollutants into the air, water and soil. They also act as breeding grounds for rats and mosquitoes. Stagnant water in tires is where most mosquitoes breed. Mosquitoes can become infected with West Nile Virus (WNV) by feeding on birds infected with WNV. The infected mosquitoes then transmit WNV to humans and animals through their bite.

In 2003, West Nile Virus activity occurred in 46 states and caused illness in over 9,800 people. Less than 1% of infected people develop more severe illness that includes meningitis or encephalitis.<sup>37</sup> Since 1999, WNV human, bird, veterinary or mosquito activity have been reported from all states except Hawaii, Alaska, and Oregon.<sup>38</sup>

Table 13-8

United States and Pennsylvania WNV Cases for 2003 and 2004

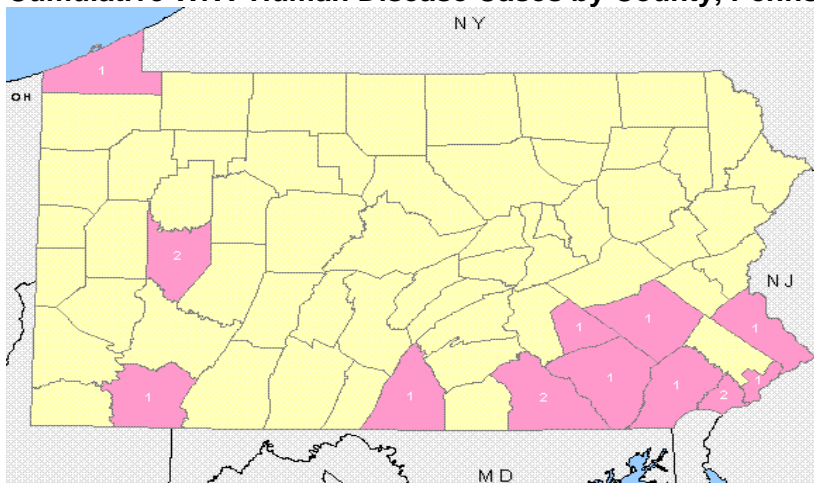
	Neuro-invasive disease	Fever	Other Clinical/ Unspecified	Total Human Cases Reported to CDC	Deaths
<b>Pennsylvania 2003</b>	<b>145</b>	<b>90</b>	<b>2</b>	<b>237</b>	<b>8</b>
<b>USA Total 2003<sup>39</sup></b>	<b>2866</b>	<b>6830</b>	<b>166</b>	<b>9862</b>	<b>264</b>
<b>Pennsylvania 2004</b>	<b>9</b>	<b>5</b>	<b>1</b>	<b>15</b>	<b>2</b>
<b>USA Total 2004<sup>40</sup></b>	<b>900</b>	<b>1017</b>	<b>553</b>	<b>2470</b>	<b>88</b>

Neuroinvasive Disease refers to severe disease cases, particularly West Nile meningitis and West Nile encephalitis. **West Nile fever** refers to milder disease cases that show no evidence of neuroinvasion. West Nile fever is not currently on the list of nationally notifiable diseases, and therefore it is optional whether or not state health departments report these cases to CDC. **Other Clinical** includes persons with clinical manifestations other than WN fever, WN encephalitis or WN meningitis, such as acute flaccid paralysis. Unspecified cases are those for which sufficient clinical information was not provided.

Source: U.S. Geological Survey,

Figure 13-3

Cumulative WNV Human Disease Cases by County, Pennsylvania, 2004<sup>41</sup>



<b>Armstrong County</b>	<b>2</b>
<b>Berks County</b>	<b>1</b>
<b>Bucks County</b>	<b>1</b>
<b>Chester County</b>	<b>1</b>
<b>Delaware County</b>	<b>2</b>
<b>Erie County</b>	<b>1</b>
<b>Fayette County</b>	<b>1</b>
<b>Franklin County</b>	<b>1</b>
<b>Lancaster County</b>	<b>1</b>
<b>Lebanon County</b>	<b>1</b>
<b>Philadelphia County</b>	<b>1</b>
<b>York County</b>	<b>2</b>

Source: U.S. Geological Survey

## RESOURCES

### Pennsylvania's Public Health Efforts – Environmental Quality

Environmental health in Pennsylvania is primarily a shared responsibility of the Departments of Health and Environmental Protection. In the Department of Health the **Division of Environmental Health Epidemiology** directs a multi-disciplinary environmental health program involved in the investigation of diseases, conditions, or deaths that result from interactions between people and their environment.

More information is available at

<http://www.dsf.health.state.pa.us/health/cwp/view.asp?a=171&q=199923>

Environmental fact sheets on lead, mercury, mold and other environmental hazards are available at <http://www.dsf.health.state.pa.us/health/cwp/browse.asp?a=171&bc=0&c=38405>

- The Department of Health also operates programs that address conditions related to environmental triggers, such as asthma and lead poisoning.
- The Department's Bureau of Family Health houses the **Lead Poisoning Prevention and Control Program**, which had developed a Lead Elimination Plan for the state. More information is available at <http://www.dsf.health.state.pa.us/health/cwp/view.asp?a=179&Q=201197&healthPNavCtr=|#4666>
- The Department's **Asthma Program** is in the process of developing a strategic plan to address asthma in the state. The target date for release is Spring 2006. More information on asthma is available at <http://www.dsf.health.state.pa.us/health/cwp/view.asp?a=174&q=240411&healthPNavCtr=|#4627>
- The Department's **Asthma Program** is in the process of developing a Burden Report to address asthma in the state. The target date for release is Spring 2006.
- The **Asthma School Project** is a small-scale and short-term demonstration project that was conducted during the 2004-05 school year, and will be conducted for the upcoming school year (2005-06) in two school districts in Pennsylvania:
  - **Year 1** (2004-05) Bradford Area (McKean County) and Oley Valley (Berks County)
  - **Year 2** (2005-06) Oley Valley (Berks County) and Apollo-Ridge (Armstrong County)

The goals of this Asthma School Project are to validate annually reported data, and to implement an Environmental Health Tracking and Surveillance Project for the study of asthma in Pennsylvania school children.

The purpose of this Asthma School Project is to initially conduct asthma surveillance and health tracking for asthmatic students in the two school districts with the highest prevalence of reported asthma, based upon the data reported annually to Pennsylvania Department of Health (PADOH) Division of School Health by individual school districts throughout Pennsylvania.

The PADOH emphasis for this Asthma School Project will be to conduct environmental health surveillance as it relates to the disease outcomes of asthma (asthma exacerbations). Education, outreach, and public health intervention will be major aspects of this Asthma School Project.

The overarching goals for this Asthma School Project are to enhance surveillance of asthma, to help understand the role environmental hazards/exposures play in the disease outcome of asthma, and to help reduce the burden of asthma in Pennsylvania, especially regarding school children.

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**The Environmental Public Health Tracking (Surveillance) Program** investigates the linkages between environmental exposures and health effects. It deals specifically with chronic diseases and other non-infectious health effects that may be related to exposure to chemicals, physical agents, biomechanical stressors, or biological toxins in the environment. It is also involved with planning, capacity building, and developing or enhancing health effect, exposure, and/or hazard surveillance systems that can be integrated into a statewide and national environmental health public health tracking network. A critical part of this program is biomonitoring. Biomonitoring is the assessment of exposure to toxic substances in humans by the laboratory measurement of these substances (or their metabolites) in specimens, such as blood and urine. Representatives from the Hilltop Community Healthcare Partnership in Pittsburgh and the Tioga County Partnership for Community Health were members of the advisory group that helped to develop the program.

The Department of Health's **Office of Public Health Preparedness** is involved in several activities aimed at improving the state's ability to respond to potential emergency events brought about due to natural disasters or potential health threats that might follow a terrorist or biological attack. These efforts are a collaboration of federal, state and local levels. Public Health Safety Preparedness activities encompass mitigation, preparedness, response, and recovery related to any kind of disaster, whether natural, technological, or national security. Public Health Safety Preparedness is the ongoing preparation for all kinds of emergencies. It is the enhancement of our abilities to respond in a time of crisis to save lives and property, and to help a community, city or the State return to a *safe and healthy environment* after a disaster occurs. More information on the Department's Office of Public Health Preparedness is available at [http://www.dsf.health.state.pa.us/health/CWP/view.asp?A=333&QUESTION\\_ID=229813](http://www.dsf.health.state.pa.us/health/CWP/view.asp?A=333&QUESTION_ID=229813)

The **Department of Environmental Protection** operates a wide array of environmental programs that encompass air quality, water quality, radon, radiation, waste management, and mineral resources.

For more information, on *air quality* -

<http://www.dep.state.pa.us/dep/deputate/airwaste/aq/default.htm>

Information on the *State Water Plan and Water Resources* can be found at <http://www.dep.state.pa.us/dep/deputate/watermgt/wc/act220/default.htm>.

The Water Resources Planning Act (Act 220 of 2002) requires the Pennsylvania Department of Environmental Protection update the State Water Plan in five years and have updates every five years thereafter. It also requires the Creation of Critical Area Resource Plans that will assess water quality and water quantity issues.<sup>42</sup> In 2003, 94 percent of Pennsylvanians were receiving safe drinking water from community water systems – one percent shy of the Healthy People 2010 goal of 95 percent. Additionally, since 2001, Pennsylvania has only had one waterborne disease outbreak from a community water system.

The DEP's *Radon* Division conducts an aggressive outreach program that is primarily funded through an EPA State Indoor Radon Grant. Activities include:

- **Newborn Program** assists parents of newly born infants to identify and address potential levels of elevated radon gas in their homes. This program was set up in 1994. Currently 51 hospitals participate in the program. The hospitals dispense an information packet that informs parents about the health hazards associated with elevated levels of radon, and contains a coupon for a free radon test kit. Approximately one third of the test results are in excess of the EPA recommended action level of 4 pCi/L.
- **Development of courses** for builders, local government officials, teachers, school district maintenance and administrative personnel, and Realtors.

**Development and distribution** of public service announcements

[http://www.dep.state.pa.us/dep/deputate/airwaste/rp/Radon\\_Division/Radon\\_Homepage.htm](http://www.dep.state.pa.us/dep/deputate/airwaste/rp/Radon_Division/Radon_Homepage.htm)

**Indoor Air Quality Program:**

Pennsylvania Dept of Health  
Division of Environmental Health Epidemiology  
PO Box 90  
Harrisburg, PA 17108  
(717) 787-1708  
(717) 772-6975 (fax)  
Contact: Ralph Scalan (717) 787-6548

**PA's Mold page** <http://www.dsf.health.state.pa.us/health/cwp/view.asp?a=171&q=231318>

**National and Other State Agency Resources - Environmental Quality**

**Growing Greener Program**

<http://www.growinggreener2.com>

**The Partnership for Safe Water**

[http://www.dep.state.pa.us/dep/deputate/watermgt/WSM/WSM\\_DWM/Complian/PartSafWatr.htm](http://www.dep.state.pa.us/dep/deputate/watermgt/WSM/WSM_DWM/Complian/PartSafWatr.htm)

**Pollution Prevention Partnership and Environmental Responsibility In Erie (P3ERIE)**

<http://www.dep.state.pa.us/dep/deputate/pollprev/p3erie/p3erie.htm>

**The United States Environmental Protection Agency (EPA)** has a "Tools for Schools" program that provides schools and school districts with information and guidance regarding environmental factors and air quality issues that may be possible asthma triggers.

<http://www.epa.gov/iaq/schools/tfs/guidec.htmlwww.epa.gov/iaq/schools/tfsawards/pennsylvania.html>

**EPA – Information on Drinking Water**

<http://www.epa.gov/ebtpages/watedrinkingwater.html>

**United States Geological Survey Water Resources of Pennsylvania**

<http://pa.water.usgs.gov>

**Providing Safe Drinking Water in America: 2002 National Public Water Systems Compliance Report**

<http://www.epa.gov/compliance/resources/reports/accomplishments/sdwa/sdwcom2002.pdf>

**National Environmental Health Association**

<http://www.neha.org/index.shtml>

**National Radon Proficiency Program**

<http://www.radongas.org/>

**Asthma and Allergy Foundation of America**

<http://www.aafa.org/>

**Agency for Toxic Substances and Disease Registry, CDC**

888-442-8737

<http://www.atsdr.cdc.gov>

**United States Environmental Protection Agency - Office of Air and Radiation**

<http://www.epa.gov/oar/>

**Information Resources Center (IRC)**

U.S. Environmental Protection Agency

202-260-5922

<http://www.epa.gov/natlibra/hqirc/about.htm>

**Centers for Disease Control and Prevention's (CDC) Indoor Air Quality Information by state -**

[http://www.cdc.gov/nceh/airpollution/indoor\\_air.htm](http://www.cdc.gov/nceh/airpollution/indoor_air.htm)

**EPA Map of Radon Zones for Pennsylvania**

<http://www.epa.gov/radon/zonemap/pennsylvania.htm>

**Indoor Air Quality Information Clearinghouse**

U.S. Environmental Protection Agency

800-438-4318 (IAQ hotline)

800-SALUD-12; (725-8312) Spanish

<http://www.epa.gov/iaq/iaqinfo.html>

**Local Government Environmental Assistance Network (LGEAN)**

Provides environmental management, planning, funding, and regulatory information for local government elected and appointed officials, managers and staff. Located at <http://www.lgean.org>, LGEAN also manages a toll-free telephone service (877/865-4326).

## Partnership Activities - Environmental Quality

### **Asthma Initiative, Bethlehem Partnership for a Healthy Community**

The Bethlehem Partnership for a Healthy Community is a collaborative initiative of a wide range of local business, government, educational and community organizations. It is believed that through community ownership and shared responsibility, the physical, mental, emotional and spiritual wellness of individuals and communities can be achieved, thereby improving the quality of life for all. The partnership's asthma initiative includes the participation of schools and families, public awareness and education, and monitoring and evaluation. More information is available at <http://www.slhn-lehighvalley.org/body.cfm?id=55>

### **Regional Environmental Health Data**

In an effort to provide local BRFSS data, the Department instituted the Pennsylvania BRFSS Over Sampling Program in 2002. Participation in the program is open to Pennsylvania's State Health Improvement Plan (SHIP)-affiliated partnerships and assures the collection of local or regional data that will be comparable to state and national BRFSS data. The SHIP Northcentral Local Advisory Council, which consists of community health partnerships, healthcare and human service agencies, and other community representatives, participated in the 2004 Behavioral Risk as a region to have a wider area surveyed. About 1,200 households were surveyed in the rural Northcentral Health District's 12-county area. Some of the supplemental questions included questions on environmental health issues, such as the usage of on-lot septic systems, private wells and the presence of radon in homes. The Department of Health covered over two-thirds of the cost of the survey, with the remaining support provided by the Pennsylvania Department of Environmental Protection, the Tioga County Partnership for Community Health, the Northcentral District AIDS Coalition, the Northcentral Pennsylvania Area Health Education Center and Blue Cross of Northeastern Pennsylvania's Blue Ribbon Foundation. Local BRFSS data reports are available from the Department's Bureau of Health Statistics and Research at [www.health.state.pa.us/stats/](http://www.health.state.pa.us/stats/).

### **Philadelphia Allies Against Asthma Coalition**

The Philadelphia Allies Against Asthma Coalition (PAAA) is a 40-member community group consisting of academic institutions, health systems, managed care organizations, and public health and school programs in Philadelphia. PAAA addresses pediatric asthma, especially the low-income minority population, in ten high-risk census tracts in Philadelphia. <http://www.hpcpa.org/paaa.html>

### **American Lung Association**

Pennsylvania is home to three chapters of the American Lung Association of Pennsylvania (ALA PA) that coordinate activities in the east, central and western areas of the Commonwealth. ALA PA directs service to the local branches and provides patient and provider education, along with "Asthma Camps" for children in each of the 67 counties. In addition, ALA PA sponsors Open Airways for Schools throughout the Commonwealth, an evidenced based train-the-trainer program proven to reduce asthma episodes when promoted in schools. <http://www.lunginfo.org/>

### **American Respiratory Alliance of Western Pennsylvania**

American Respiratory Alliance of Western Pennsylvania (ARA WPA) is also very successful with increasing patient asthma management skills along with conducting "Asthma Camps" for children in Erie and Allegheny Counties. Currently, ARA WPA is spearheading an initiative called the Western Pennsylvania Asthma Consortium (WestPAC). This new non-profit venture in Western Pennsylvania links available resources in order to provide a more comprehensive and integrated approach for asthma case management and care. <http://www.healthylungs.org/>

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