

UHELP RESPONDS TO COMMUNITY HEALTH AND ENVIRONMENTAL NEEDS



PREPARED BY

**CENTER FOR ENERGY AND ENVIRONMENTAL POLICY
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INTRODUCTION

The Urban Health and Environment Learning Project (UHELP), is made up of the People's Settlement Association, Henrietta Johnson Medical Center (HJMC) and the Center for Energy and Environmental Policy (CEEP) of the University of Delaware. It was formed in 2001 to help communities in the Wilmington metropolitan area learn more about health and the environmental matters that affect their health.

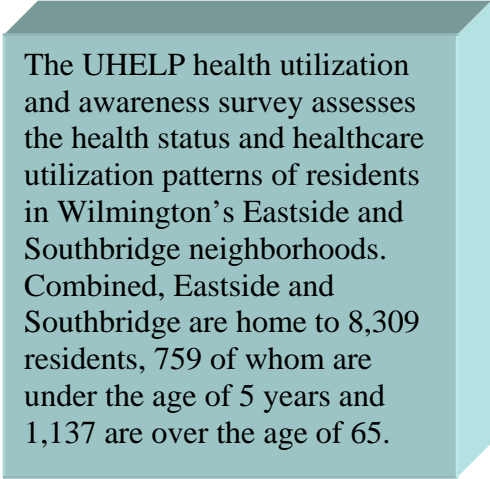
UHELP partners are working on many projects. One of these is a health survey of the community done by CEEP, with the help of the Tau Eta Chapter of Chi Eta Phi Sorority Inc. (an association of registered nurses and nursing students), the University of Delaware's Health Services Policy Research Group and

School of Nursing, and Delaware State University's Department of Nursing. The survey aims to help Eastside and Southbridge communities of Wilmington (Figure 1) learn about and act on health needs and possible environmental factors affecting those needs.

Statistical analysis was used to compare survey responses of Eastside and Southbridge communities to a national and Delaware-level health

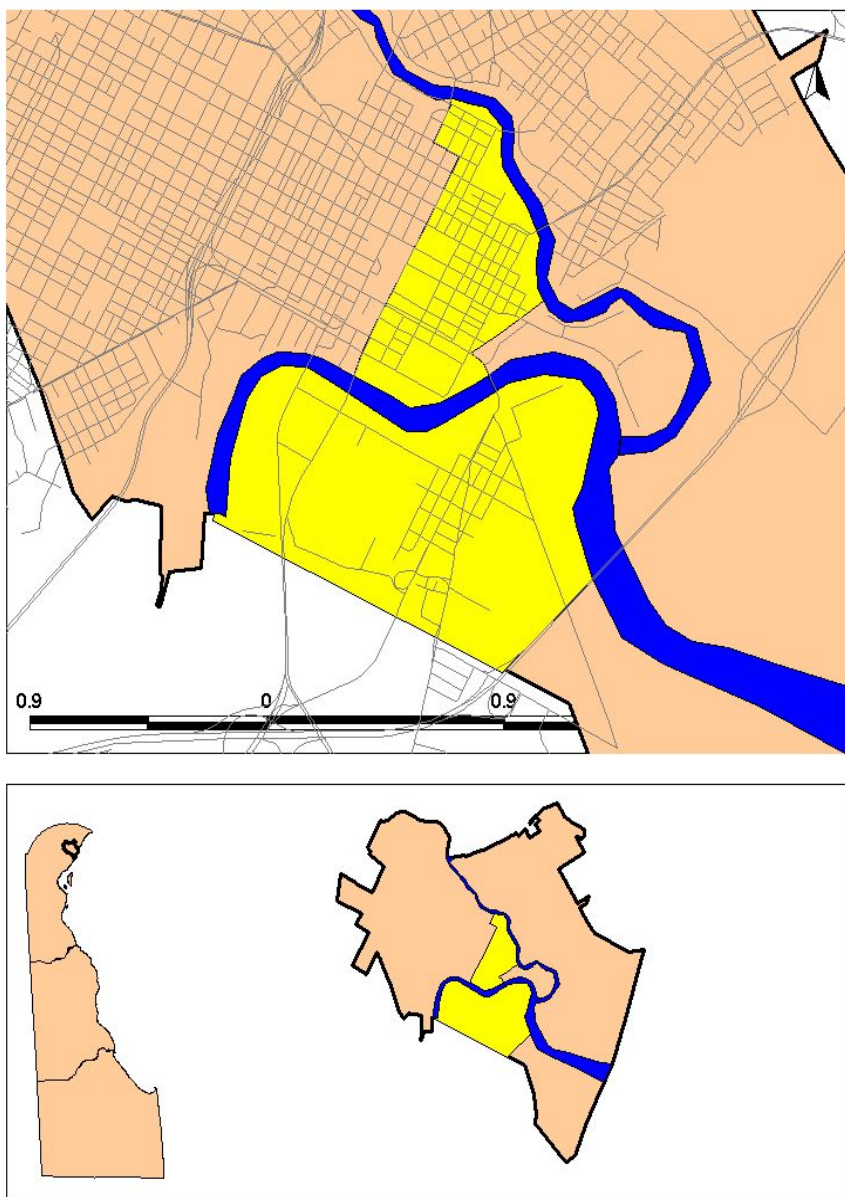
awareness survey, the *Behavioral Risk Factor Surveillance System* (BRFSS).

In addition to the above survey, a computer map of urban environmental risks was created using available state of Delaware Department of Natural Resources and Environmental Control (DNREC) contaminant data.



The UHELP health utilization and awareness survey assesses the health status and healthcare utilization patterns of residents in Wilmington's Eastside and Southbridge neighborhoods. Combined, Eastside and Southbridge are home to 8,309 residents, 759 of whom are under the age of 5 years and 1,137 are over the age of 65.

Figure 1: Wilmington's Eastside and Southbridge Communities



The 2004 UHELP health utilization and awareness survey is focused on the Eastside and Southbridge communities in the city of Wilmington to learn about community health needs and to provide the basis for the formulation of health and environmental intervention strategies.

This information points out the amount of urban health risk from being exposed to possibly harmful contaminants.

This research effort has helped UHELP to do the following:

- 1) Learn about the health status and needs of adults and children in Eastside and Southbridge communities.
- 2) Understand the level of health awareness in these neighborhoods.

- 3) Identify community-based health and environmental service program needs.
- 4) Set priorities as part of UHELP's efforts to serve these communities.

This booklet summarizes what we have learned and is a community environmental awareness tool for identifying key urban health and environmental risks.

UHELP HEALTH SURVEY ASSESSES COMMUNITY HEALTH UTILIZATION AND AWARENESS

A total of 210 in-person interviews were taken by volunteers from three organizations: practicing nurses of the Tau Eta Chapter; senior nursing majors from the University of Delaware's School of Nursing and Delaware State University's Department of Nursing. When student nurses took the survey, they had a member of the Tau Eta Chapter along with them. All the volunteers were trained to take surveys using the same methods as prepared by CEEP's researchers.

This survey documents the health needs and concerns of residents in the two communities and identifies what we do not know and ways to respond. The survey includes 156 questions and produces information on 222 health, demographic, socioeconomic and other factors. Survey questions were taken from well-established surveys conducted by the U.S. Centers for Disease Control and Prevention. It is the

first in-person survey conducted in the two neighborhoods, other than census surveys, in more than 20 years.

The early findings and frequency analysis of the survey results were published in a CEEP technical report called *A Survey of Health Awareness and Health Utilization Among Sampled Residents in Eastside and Southbridge Communities of the City of Wilmington: Initial Frequency Distributions*. When compared to the national and state data our study identified a number of important health concerns for residents of the Eastside and Southbridge communities.

The study found that residents in Wilmington's Eastside and South-bridge neighborhoods are at a higher risk, when compared to the State of Delaware or the nation, for developing the following illnesses and health problems:

- Asthma

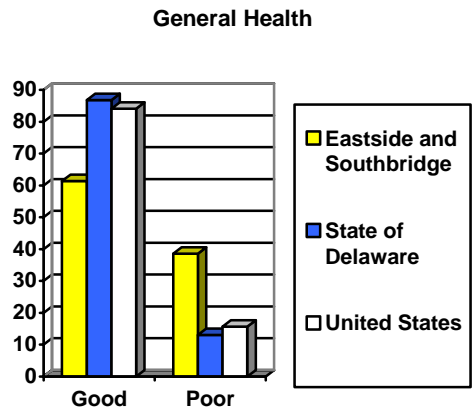
- Diabetes
- High blood pressure
- Physical, mental, or emotional problems
- Pain, aching or stiffness in or around joints
- Arthritis

Also, residents in these neighbor-

hoods were less likely to state their health as “good” compared to the average person living in the state of Delaware or the nation. However, South-bridge and Eastside residents’ rates of ‘high blood cholesterol’ were found to be lower than the rates for the nation as a whole.

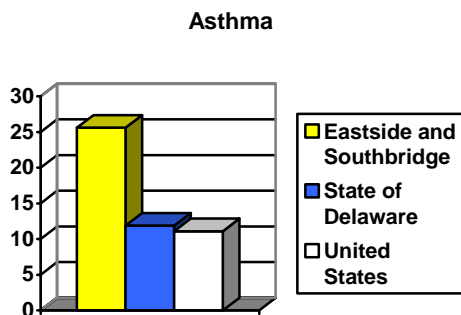
Health Comparisons between the Eastside and Southbridge Communities and the State of Delaware¹

When asked **“What would you say your general health is?”** we found that 61% of the respondents in Eastside and Southbridge reported their health as “Excellent, Very Good or Good,” compared to 87% in the Delaware survey. Further, 39% of our respondents reported their health as “Fair or Poor,” while only 13% respondents rated their general health negatively in the Delaware survey.

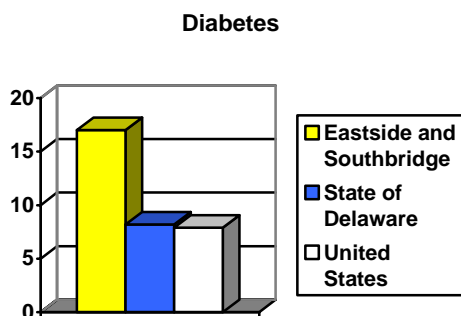


¹ Frequency values for the UHELP survey results are compared to the State of Delaware base population characteristics. The United States Data frequency characteristics represent the U.S. base population.

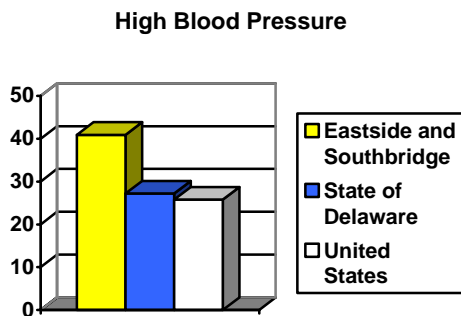
When asked **“Have you ever been told by a doctor, nurse or other health professional that you have Asthma?”** we found that nearly 26% of respondents in Eastside and Southbridge reported “Yes,” compared to 12% in the Delaware survey.



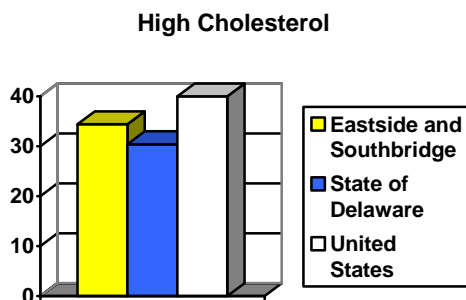
When asked **“Have you ever been told by a doctor that you have Diabetes?”** 17% of respondents in Eastside and Southbridge reported “Yes,” compared to 8% in the Delaware survey.



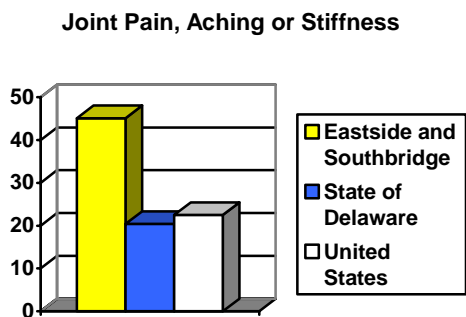
When asked **“Have you ever been told by a doctor, nurse or other health professional that you have high blood pressure?”** we found the 41% of respondents in Eastside and Southbridge reported “Yes,” compared to 27% in the Delaware survey.



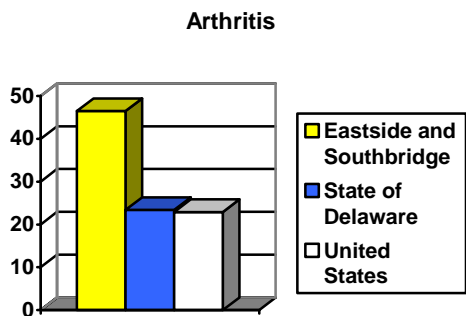
When asked **“Have you ever been told by a doctor, nurse or other health professional that your blood Cholesterol is high?”** 34% of respondents in Eastside and Southbridge reported **“Yes,”** compared to 30% in the Delaware survey.



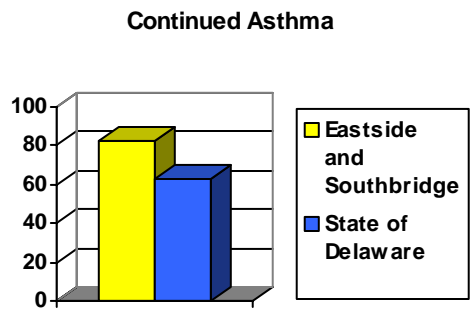
When asked **“During the past 30 days, have you had any symptoms of pain, aching, or stiffness in or around a joint”** we found that 45% of Eastside and Southbridge survey participants reported **“Yes,”** compared to 20% in the Delaware survey.



When asked **“Have you ever been told by a doctor or other health professional that you have some form of Arthritis, rheumatoid Arthritis, gout, lupus, or fibromyalgia?”** 47% of Eastside and Southbridge survey participants reported **“Yes,”** compared to 23% in the Delaware survey.



When respondents who had asthma were asked **“Do you still have Asthma?”** 82% of Eastside and Southbridge surveyed households reported “Yes,” compared to 63% in the Delaware survey.



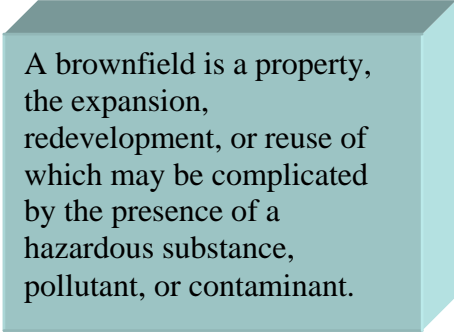
ENVIRONMENTAL RISKS TO COMMUNITY HEALTH

Correct and full information on environmental risks is important for communities to understand health concerns that may be associated with these risks. Giving information on contaminated properties, the extent of the pollution, and ways in which this can be fixed is a useful starting point.

Wilmington's historic legacy as an industrial center brought economic benefits to the

region. But it may also have resulted in contamination that could pose public health risks. Communities living on or near industrial properties need to know if harmful pollutants remain, so they can do something about these possible health risks.

Residents may find it hard to get environmental information that is important to their family's health. When people get the helpful information they can come up



A brownfield is a property, the expansion, redevelopment, or reuse of which may be complicated by the presence of a hazardous substance, pollutant, or contaminant.

with ideas about how to deal with these contamination threats. Department of Natural Resources and Environmental Control (DNREC) has created a computer map to show where the contaminated sites are located. But

this does not help the community much because people may not have access to a computer or know how to use one. In addition, these DNREC maps have some

serious mistakes. For example, points on the DNREC map do not correctly match the real contaminated areas on the ground. Additionally, points do not show the amount of land affected by contamination. Finally, none of the sites have easily available information on the type of contamination, so it is hard to know which sites have the most risk. For example, a study into historic tannery operations in the city showed 53

contaminated sites so far, but only 16 of them are included into the DNREC computer maps.

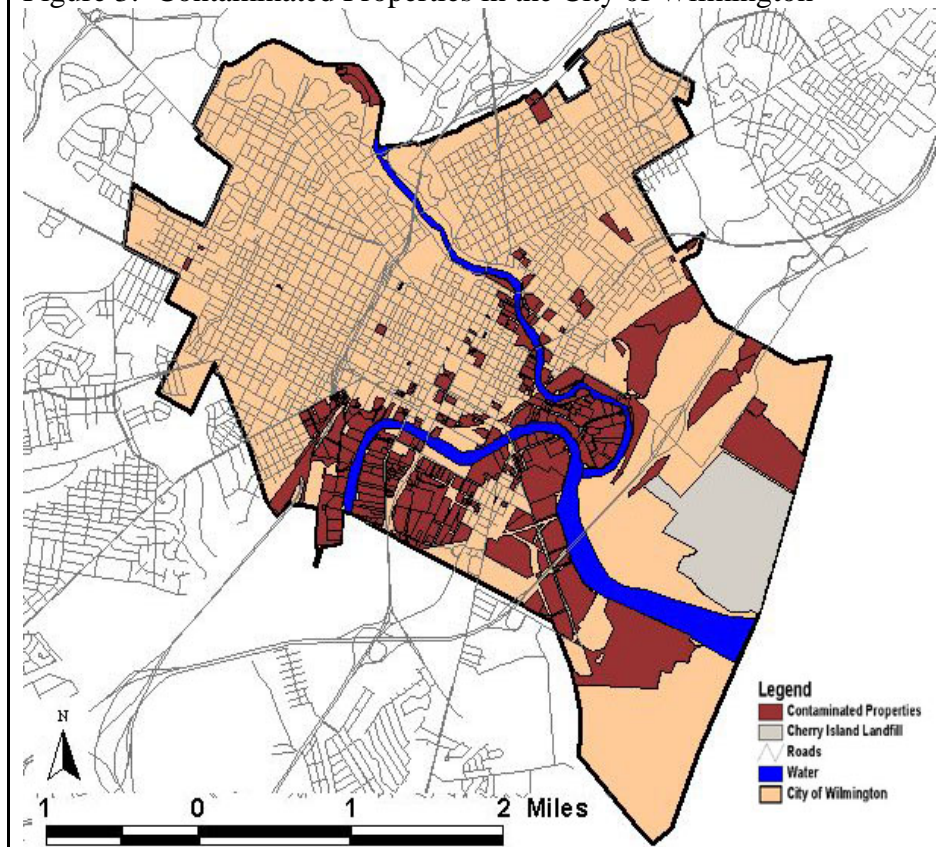
The above problems create conditions where community residents are put at a disadvantage about the environmental policy-making process and cannot join the decision-making that affects the health and economic development of their neighborhoods. In addition, the risks of environmental contamination are hard to measure at the community, household and individual level, when important correct and full information is not available.

To improve the situation, UHELP has made a computer map of Wilmington's brownfields. The EPA defines brownfields as "abandoned, idle, or underused industrial and commercial properties at which real or perceived contamination interferes with efficient expansion or redevelopment efforts". These maps can give the community correct information

and help them to understand where the contamination is located and its risks. By looking at Final Plans of Remedial Action (FPRAs), Remedial Investigation Reports (RIRs) and Voluntary Cleanup Program (VCP) applications, the actual locations of the contaminated parcels were pointed out by CEEP for UHELP. This process helped give better information about how much and types of environmental contamination in Wilmington.

The results of this study are important. This study found a lot of contaminated properties in Wilmington. About 31% of the parcel area in the city has some level of contamination. Also, Wilmington has about 26% of the brownfields in Delaware, but only 9% of the population and 3% of the parcel area (Figure 3). These sites are the result of past industrial uses, including tanneries, shipyards, chemical plants, and railroad operations, as well as old landfills and contaminated fill of wetlands.

Figure 3: Contaminated Properties in the City of Wilmington

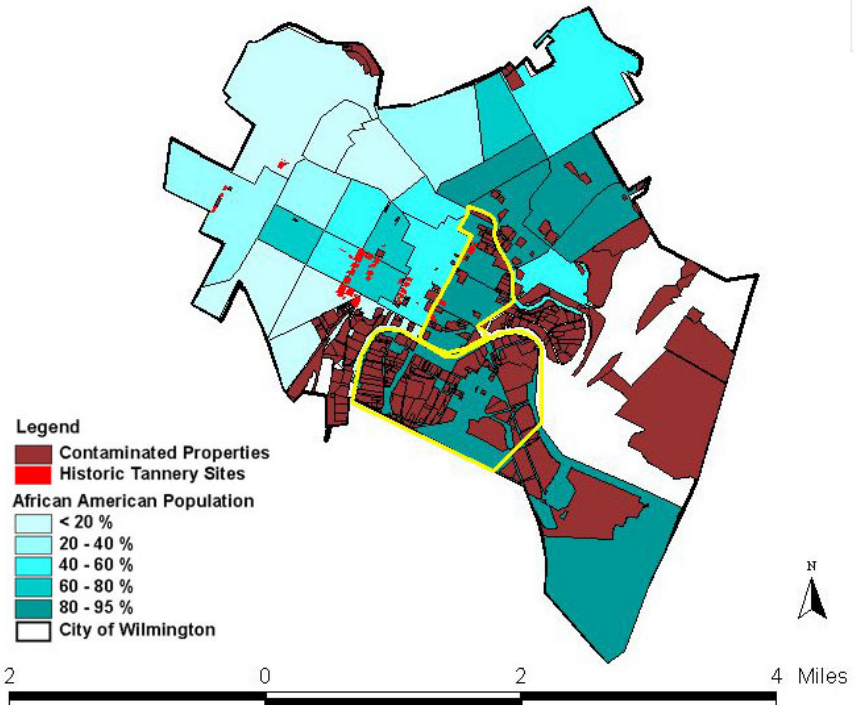


Land contamination is an important environmental and health issue for Wilmington residents. About 31% of the parcel area in the city has some level of contamination. Wilmington contains about 26% of Delaware's total contaminated sites, despite having only 9% of the population and 3% of the parcel area.

Property contamination is not equally distributed across Wilmington. The southern and eastern parts of the city have much more contamination than the northern and western areas. With most of the city's African

American residents, Eastside and Southbridge neighborhoods bear a higher than usual part of the health risk associated with contaminated properties (see Figure 4).

Figure 4: The Proximity of Wilmington's African American Residents to Contaminated Properties

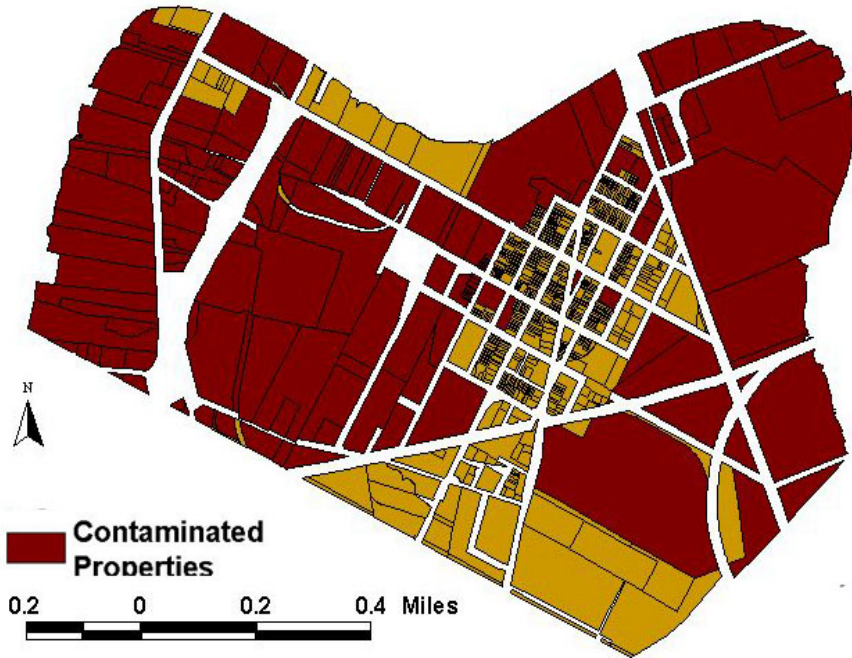


Contaminated land is disproportionately located in communities with a high percentage of African American residents.

Few of the brownfields in Wilmington have been cleaned of their contaminants and returned to normal uses. The neighborhood of Southbridge has been especially burdened by this problem. According to the 2000 census, the Southbridge community (census tract 19) is 82% African American with a median

household income of \$23,563. About 40% of the population lives below the poverty level. The neighborhood is 521 acres in size (excluding roads), and of this area, 399 acres (76%) have been identified as brownfields. These facts underscore that issues of environmental justice are present in Southbridge (see Figure 5).

Figure 5: Contaminated Properties in Southbridge Neighborhood

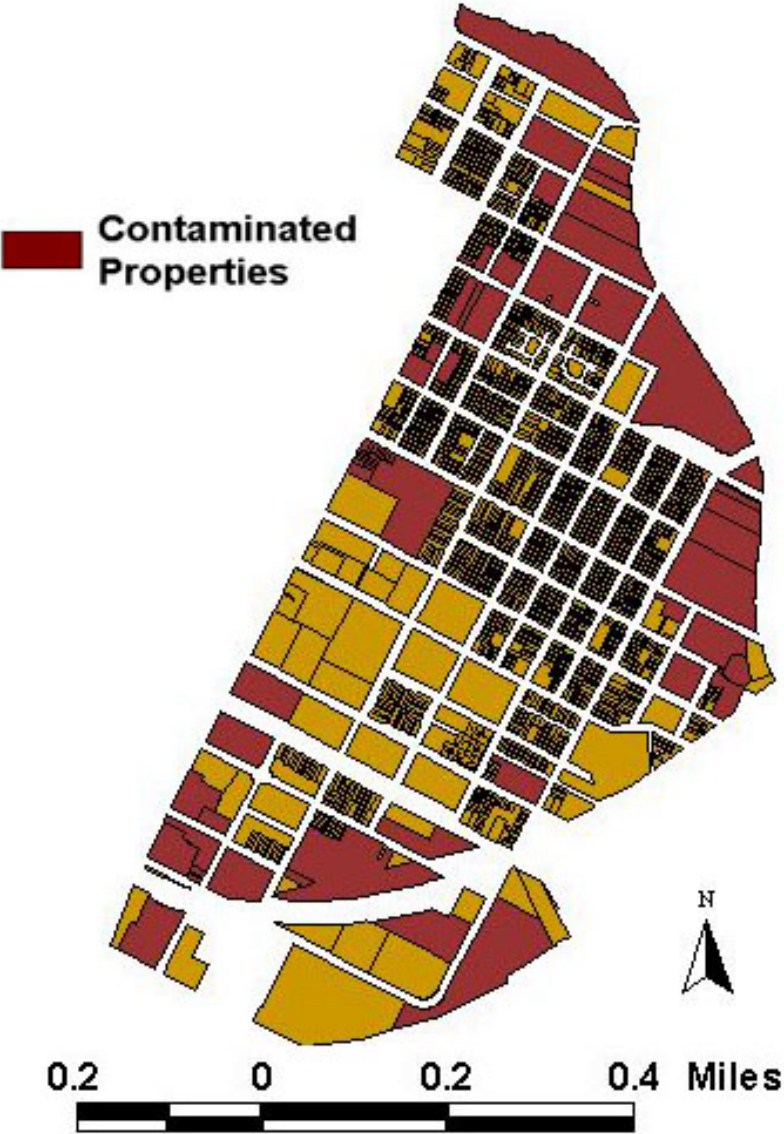


Southbridge has the highest proportion of contaminated property in Wilmington and Delaware, with 76% of the community identified as contaminated. This is a serious burden to community residents who are surrounded by contaminated land that poses possible risks to neighborhood health.

The Eastside community in Wilmington is also burdened by a very high number of brownfields. According to the 2000 census, the Eastside community (census tracts 9, 17 and 20) is home to 5,933 individuals, 90% of whom are African American. They have a median household income of \$22,702 and 34% live below the poverty level. The neighborhood is 179 acres in size (not including roads), and of this area,

79 acres (44%) have been identified as brownfields. Similar to the Southbridge neighborhood, the demographic profile of Eastside shows that environmental justice concerns about the unfairness of this unequal burden of contamination are present. The disproportionate risks of environmental contaminants borne by its residents are evident (Figure 6).

Figure 6: Contaminated Properties in the Eastside Community

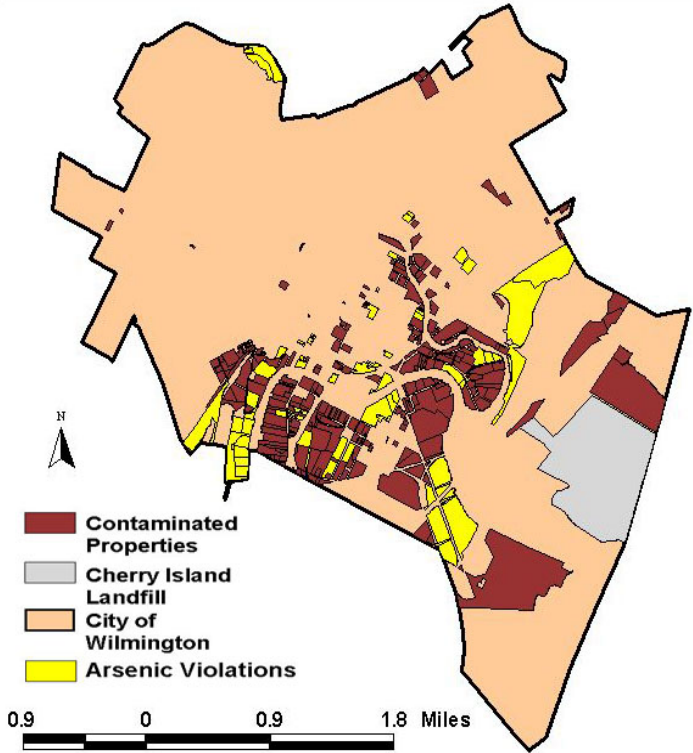


The Eastside neighborhood accounts for a significant portion of the city’s contaminated land. To date, 44% of its parcel area has been designated by the state to be contaminated. Eastside is home to African American families with a median income less than \$23,000.

Specific contaminants in Wilmington’s soils can pose a threat to community residents, especially sensitive populations. Children are especially at risk to environmental contaminants that disturb brain and physiological development. Arsenic from Wilmington’s historic tannery sites, hazardous waste facilities and industrial sites is one of the most important risks to com-

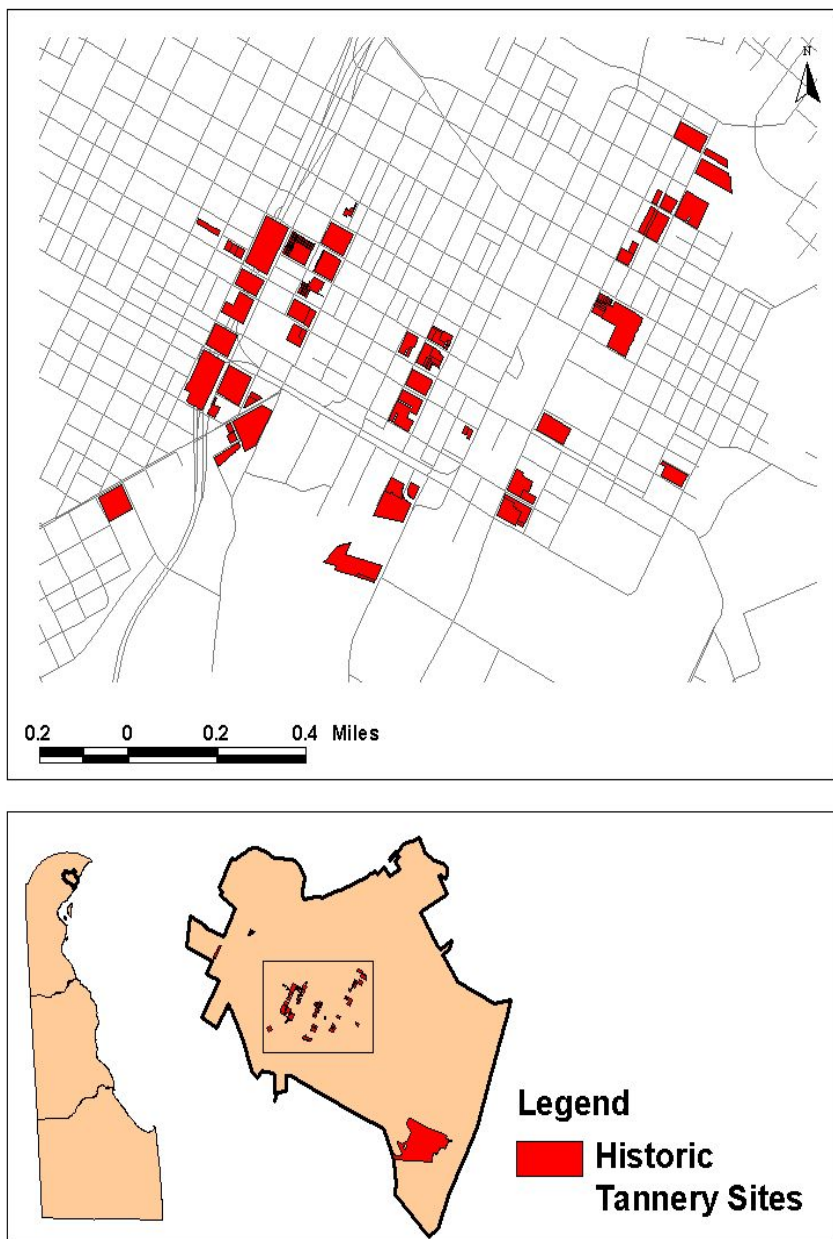
munity and children’s health. Finding out the amount of arsenic contamination in Wilmington’s soils is a problem due to not enough soil sampling. For sites with available test data (about half the sites in the city), 75% violate the Uniform Risk-Based Standard for restricted use for arsenic, and thus require cleaning up even for use in commercial or industrial projects (see Figure 7).

Figure 7: Contaminated Sites that Violate the Uniform Risks-Based Standard for Arsenic



Within the city of Wilmington, 75% of contaminated properties with available data on arsenic concentrations in soil samples violate the Uniform Risk-Based Standard for arsenic.

Figure 8: Historic Tannery Sites that Pose a Risk for Arsenic Contamination and Exposure

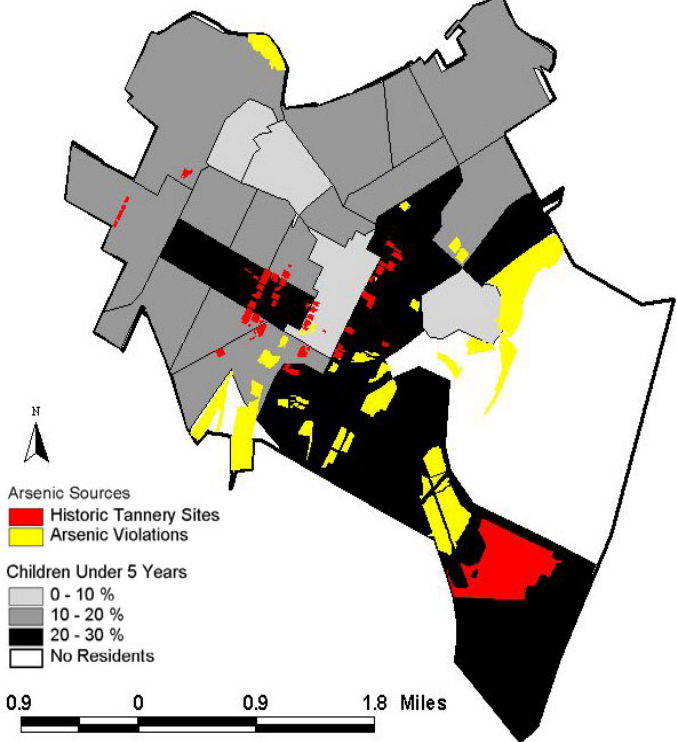


Wilmington's historical prominence as a tanning center has left a legacy of arsenic contaminated soils.

Arsenic can lead to a number of highly disabling health effects. This can range from skin discoloration, redness and swelling, to nausea and vomiting. Mees lines on fingernails are an indicator of arsenic exposure. As well, continued exposure increases the risk of lung, skin, bladder, liver, kidney and prostate cancer.

Children are especially sensitive to arsenic exposure, including dust found in soils and playground dirt. Children’s bodies are less able to remove arsenic with the same efficiency as adults, leading to greater toxicity than one would normally expect for body size when compared to adults.

Figure 9: Contaminated Sites that Violate the Uniform Risks-Based Standard for Arsenic Compared to Child Population



Many of the contaminated properties in Wilmington that threaten community health with high levels of arsenic also have the highest percentages of children. Children are especially at risk for arsenic exposure because their outdoor activities place them in contact with contaminated soils. Other family members, however, are also at risk from breathing dust that comes from the contaminated ground.

Contaminated sites pose serious risks to public health. Within the Eastside and Southbridge communities, the following toxic chemicals are found in contaminated soils:²

Contaminant

- Arsenic
- Mercury
- Tetrachloroethylene
- Toluene
- Vinyl chloride
- Xylenes

Many of these pollutants have widely known bad impacts on human health. The Agency for Toxic Substances and Disease Registry has put together health effects information on a number of these pollutants, in addition to many others.³

Research on health risks due to environmental exposures and the total effects due to exposure to more than one contaminant says that residing on or near hazardous waste sites, contaminated properties and brownfields can be especially dangerous to one's health. Some of the symptoms

associated with exposure to environmental contaminants found in Wilmington include:⁴

- Allergic reactions.
- Asthma
- Cancers
- Fatigue
- Headaches
- Increased blood pressure
- Increased chance for infection
- Motor skill impairments
- Respiratory problems

² A comprehensive list of contaminants can be found in Appendix 1.

³ For a list of contaminants and their health effects as described by the ATSDR, see Appendix 3.

⁴ A descriptive list of these health effects can be found in Appendix 1.

UHELP POLICY GOALS AND INTERVENTION STRATEGIES FOR A HEALTHIER COMMUNITY

UHELP Goals:

1. Improved health and well being of residents in these communities;
2. a livable environment in communities;
3. Increased community awareness about the health and environmental issues that directly affect them;
4. Better understanding of the health and environmental problems and risks experienced by residents in these communities;
5. Decreased prevalence of risk behaviors that directly contribute to the health and environmental problems;
6. A mechanism for these communities to be engaged in addressing their health and environmental issues;
7. An empowered community that can participate in addressing and improving their health and environment;
8. A collaboration with other organizations, businesses and agencies to improve community health and the environment; and
9. The elimination of barriers to participation in addressing health and environmental problems.

Inside the United States, environmental risks and the threats that they cause to human health, are found to be much higher in minority and poorer regions. Unfortunately, this pattern is also found in our local communities in Wilmington. Comparing the findings from our community health survey and location of contaminated properties within

Wilmington shows the relationship between health and environmental risk. It is important to address community health concerns in a way that reduces environmental risks and facilitates community empowerment as a way forward for environmental change.

Of highest importance is protecting children who play in contaminated playgrounds, breathe unhealthy air, and could struggle with asthma, arsenic and lead poisoning.

Reducing environmental risks inside the home

The Centers for Disease Control and Prevention have made many recommendations to reduce exposure to factors inside the home that can trigger asthma. These recommendations include reducing the following indoor air pollutants and allergens:

1. Pets
2. Cockroaches
3. Dust Mites
4. Fungus/Mold
5. Tobacco Smoke
6. Household Cleaners

In keeping with UHELP's goals (see box on next page), intervention in environmental risks involves a multi-pronged approach that addresses:

1. Reducing environmental risks inside the home;
2. Reducing risks outside the home.
3. Protection from future environmental harm

4. Providing access to health and intervention resources for all community members.

Reduction of risks outside the home

CDC research has stressed that it is important to decrease the following:

1. Smog/Exhaust
2. Ozone Action Days
3. Industrial Emissions
4. Brownfields remediation

Protection from future environmental harm

If our communities are to have healthy futures, policies that prevent health risks will be needed. Key goals of a policy agenda should be:

1. Removal of new environmental risks from communities
2. Reduction of existing environmental risks
3. Community involvement in site remediation standards, land use changes, and site remediation

Providing access to health and intervention resources for all community members

Our neighborhoods will also require public health ideas and infrastructure that educate and treat members as part of an overall goal of realizing healthy, well-informed communities:

1. Finding out about community health needs
2. Giving out education materials on health threats and reduction strategies
3. Access to medical treatment for all community members for environmentally-caused health problems, as well as all health concerns. Specifically, asthma, arsenic and lead exposures, as well as other toxic chemicals and hazardous pollutants

APPENDIX 1:

Within the Eastside and South-bridge communities, the following toxic chemicals are prevalent in contaminated soils:

- Contaminant
- (Bis-2) ethyl hexyl phthalate
- 2-methylnapthalene
- Acenaphthene
- Acenaphthylene
- Aldrin
- Aluminum
- Ammonia
- Anthracene
- Antimony
- Arsenic
- Barium
- Benzene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(ghi)perylene
- Benzo(k)fluoranthene
- Benzofluoranthene, 3,4-
- Beryllium
- Bis(2-ethylhexyl) phthalate
- Butylbenzyl phthalate
- Cadmium
- Carbazole
- Carbon disulfide
- Chlordane
- Chlorinated benzenes
- Chloroform
- Chromium (total)
- Chrysene
- Coliform bacteria
- Copper
- Cyanide
- DDT
- DDT metabolite (DDE)
- DDT metabolite (TDE)
- Dibenz(a,h) anthracene
- Dibenzo(a,h)anthracene
- Dichlorobenzene, 1,2-
- Dichlorobenzenes
- Dichloroethane 1,2-
- Dichloroethylene, cis-1,2-
- Dichloroethylene, trans, 1,2-
- Dieldrin
- Endosulfan
- Endrin
- Ethylbenzene
- Fluoranthene
- Fluorene
- Heptachlor
- Heptachlor epoxide
- Hexachlorobenzene
- Indeno(1,2,3-cd)pyrene
- Iron
- Lead
- Manganese
- Mercury
- Methylene chloride
- Napthalene
- Nickel
- N-nitrosodi-n-propylamine

- Polychlorinated biphenyls (PCBs)
- Pentachlorophenol
- Phenanthrene
- Phenol
- Polynuclear aromatic hydrocarbons
- Pyrene
- Selenium
- Silver
- Tetrachloroethylene
- Thallium
- Toluene
- Toxaphene
- Trichloroethylene
- Vanadium
- Vinyl chloride
- Xylenes
- Zinc

Some of the symptoms associated with exposure to environmental contaminants found in Wilmington include:

- Allergic reactions.
- Anemia
- Arthritis
- Asthma
- Balance impairments
- Birth defects
- Blood damage
- Blood in urine
- Blood vessel damage
- Brain damage

- Breast feeding difficulties
- Bronchitis
- Burns in mouth, throat and stomach
- Confusion
- Coordination problems
- Decreased reaction time
- Difficulty concentrating
- Carcinogenic
- Chest pain
- Chest tightening
- Coughing
- Convulsions
- Damage to bone marrow
- Decreased ability to fight infections
- Decreased size of ovaries
- Diarrhea
- Digestive system effects
- Drowsiness
- Excessive bleeding
- Eye irritation
- Hand-eye coordination impaired
- Hearing problems
- Heart damage
- Fatigue
- Fever
- Fragile bones
- Hair loss
- Headaches
- Hyperactivity
- Immune system affects
- Increased blood pressure
- Increased chance for infection

- Irregular menstrual periods
- Irritability
- Jaundice
- Kidney damage
- Liver damage
- Lung irritation
- Lung function reduced
- Memory loss
- Motor skill impairments
- Mouth irritation
- Muscle weakness
- Muscular impairments
- Nasal septum ulcers and holes
- Nausea
- Nerve damage
- Nervousness
- Nervous system affects
- Neurological abnormalities
- Neurological effects
- Nose and throat irritation
- Nose bleeds
- Organ damage
- Premature birth
- Rapid heart rate
- Reaction time delayed
- Red blood cells damaged
- Red urine
- Reproductive system damage
- Respiratory problems
- Runny nose
- Sensation of "pins and needles" in hands and feet
- Sexual dysfunction
- Skin damage
- Skin discoloration
- Skin redness and swelling, sores
- Skin rash
- Skin ulcers
- Skin yellow
- Sleepiness
- Spleen damage
- Stomach irritation
- Stomach pain, cramps
- Stomach ulcers
- Sweating
- Throat irritation
- Thyroid enlargement
- Thyroid damage
- Tingling in fingers and toes
- Tremors
- Unconsciousness
- Uncontrolled muscle movements
- Vision problems
- Vomiting
- Wheezing

APPENDIX 2: Odds Ratios for Wilmington’s Eastside and Southbridge communities compared to the State of Delaware 2000, 2001 and the United States 2001 BRFSS Surveys

Q- What would you say your general health is?

	State of Delaware	United States
Risk	0.6692	0.7212
Lower Bound	0.6135	0.6362
Upper Bound	0.7969	0.8175

Q- Have you ever been told by a doctor, nurse or other health professional that you had asthma?

	State of Delaware	United States
Risk	2.1494	2.3611
Lower Bound	1.6218	1.8154
Upper Bound	2.8486	3.0708

Q- Have you ever been told by a doctor that you have diabetes?

	State of Delaware	United States
Risk	2.1140	2.3036
Lower Bound	1.4690	1.6478
Upper Bound	3.0423	3.2205

Q- Have you smoked at least 100 cigarettes in your entire life?

	State of Delaware	United States
Risk	1.0259	1.1124
Lower Bound	0.8738	0.9575
Upper Bound	1.2043	1.2924

Q- Have you ever been told by a doctor, nurse or other health professional that you have high blood pressure?

	State of Delaware	United States
Risk	1.5064	1.6471
Lower Bound	1.2340	1.3719
Upper Bound	1.8389	1.9775

Q- Have you ever been told by a doctor, nurse or other health professional that your blood Cholesterol is high?

	State of Delaware	United States
Risk	1.1249	1.1250
Lower Bound	0.8566	0.8732
Upper Bound	1.4771	1.4494

Q- Are you limited in any way in any activities because of physical, mental, or emotional problems?

	State of Delaware	United States
Risk	1.9322	1.8403
Lower Bound	1.5007	1.4548
Upper Bound	2.4877	2.3279

Q- Do you have any health problems that require you to use special equipment such as a cane, a wheelchair, a special bed, or a special telephone?

	State of Delaware	United States
Risk	3.7199	3.4322
Lower Bound	2.6299	2.5051
Upper Bound	5.2617	4.7023

Q- During the past 30 days have you had any symptoms of pain, aching or stiffness in or around a joint?

	State of Delaware	United States
Risk	2.1677	1.9823
Lower Bound	1.8058	1.6740
Upper Bound	2.6021	2.3473

Q- Have you ever been told by a doctor or other health professional that you have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia?

	State of Delaware	United States
Risk	1.9754	2.0778
Lower Bound	1.5597	1.6785
Upper Bound	2.5019	2.5722

Q- In the past five years, have you been treated for a sexually transmitted or venereal disease?

	State of Delaware	United States
Risk	3.1256	3.9099
Lower Bound	1.6258	2.0299
Upper Bound	6.0088	7.5311

Q- Do you still have Asthma?

	State of Delaware	United States
Risk	1.3023	1.2475
Lower Bound	1.1200	1.0816
Upper Bound	1.5142	1.4389

APPENDIX 3: Agency for Toxic Substances and Disease Registry (ATSDR, 2004) Health Effects from Environmental Exposures for Contaminants found in Wilmington

Aldrin	Headaches, dizziness, irritability, vomiting, and uncontrolled muscle movements, convulsions and death; affects the liver and decreased ability to fight infections
Aluminum	Respiratory problems, coughing and asthma from breathing dust
Ammonia	Coughing and nose and throat irritation, burns in your mouth, throat, and stomach
Antimony	Irritate eyes and lungs and can cause heart and lung problems, stomach pain, diarrhea, vomiting, and stomach ulcers
Arsenic	Sore throat or irritated lungs, nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels, and a sensation of "pins and needles" in hands and feet. Darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles, and torso. Skin redness and swelling
Barium	Difficulties in breathing, increased blood pressure, changes in heart rhythm, stomach irritation, brain swelling, muscle weakness, damage to the liver, kidney, heart, and spleen
Benzene	Drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness; vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death; harmful effects on the bone marrow and can cause a decrease in red blood cells leading to anemia. It can also cause excessive bleeding and can affect the immune system, increasing the chance for infection; irregular menstrual periods and a decrease in the size of their ovaries
Beryllium	Inflammatory reaction in the respiratory system; make you feel weak and tired, and can cause difficulty in breathing; increase the risk of developing lung cancer in people

Cadmium	Damages the lungs and can cause death, vomiting and diarrhea, kidney disease, lung damage and fragile bones, carcinogen
Chlordane	Affects the nervous system, the digestive system, and the liver, headaches, irritability, confusion, weakness, vision problems, vomiting, stomach cramps, diarrhea, and jaundice, convulsions and death
Chloroform	Dizziness, fatigue, and headache, damage liver and kidneys, sores on skin, carcinogen
Chromium (total)	Irritation to the nose, such as runny nose, nosebleeds, and ulcers and holes in the nasal septum, stomach upsets and ulcers, convulsions, kidney and liver damage, and even death, skin ulcers, severe redness and swelling of the skin
Copper	Irritate your nose, mouth, and eyes, and cause headaches, dizziness, nausea, and diarrhea, vomiting, stomach cramps, liver and kidney damage, death
Cyanide	Breathing difficulties, chest pain, vomiting, blood changes, headaches, and enlargement of the thyroid gland
DDT	Affects the nervous system, carcinogen
DDT metabolite (DDE)	Affects the nervous system; breast feeding difficulties, premature birth, carcinogen
Dichlorobenzene, 1,2-	Very irritating to your eyes and nose, burning and tearing of the eyes, coughing, difficult breathing, upset stomach
Dichlorobenzenes	Very irritating to your eyes and nose, difficult breathing, and an upset stomach.
Dichloroethane 1,2-	Nervous system disorders, liver and kidney diseases, and lung effects
Endosulfan	Central nervous system effects, hyperactivity, nausea, dizziness, headache, convulsions, death
Endrin	Death, severe central nervous system (brain and spinal cord) injury, convulsions, headaches, dizziness, nervousness, confusion, nausea, and vomiting
Ethylbenzene	Dizziness, throat and eye irritation, tightening of the chest, and a burning sensation in the eyes

Fluorene	Irritating to the skin, eyes, and respiratory tract. At high levels, such as may occur through exposure from an industrial accident, hydrogen fluoride may also damage the heart
Heptachlor	Toxic to humans and animals and can damage the nervous system; liver problems
Heptachlor epoxide	Toxic to humans and animals and can damage the nervous system; liver problems
Hexachlorobenzene	Liver disease; red-colored urine, skin sores, change in skin color, arthritis, and problems of the liver, nervous system, and stomach
Lead	Central nervous system damage, damages kidneys and the reproductive system, decrease reaction time, cause weakness in fingers, wrists, or ankles, and possibly affect the memory, damage the male reproductive system
Manganese	Affect motor skills, respiratory problems and sexual dysfunction
Mercury	Damage the brain, kidneys, and developing fetus; irritability, shyness, tremors, changes in vision or hearing, and memory problems, lung damage, nausea, vomiting, diarrhea, increases in blood pressure or heart rate, skin rashes, and eye irritation
Methylene chloride	Dizziness, nausea and a tingling or numbness of your finger and toes, burning and redness of the skin
Napthalene	Damage or destroy red blood cells, hemolytic anemia, fatigue, lack of appetite, restlessness, and pale skin, nausea, vomiting, diarrhea, blood in the urine, and a yellow color to the skin
Nickel	Allergic reaction; chronic bronchitis and reduced lung function
N-nitrosodi-n-propylamine	Effects on the liver, lung, stomach, kidneys, and heart
Polychlorinated biphenyls (PCBs)	Skin conditions such as acne and rashes, liver damage.
Pentachlorophenol	Very high fever, profuse sweating, and difficulty breathing, injury to various organs and tissues, and death; liver effects, damage to the immune system, thyroid damage and reproductive system impairment

Selenium	Nausea, vomiting, and diarrhea, hair loss, nail brittleness, and neurological abnormalities
Silver	Arygria, a blue-gray discoloration of the skin and other body tissues, breathing problems, lung and throat irritation, and stomach pains, allergic reactions
Tetrachloroethylene	Dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death
Thallium	Nervous system effects, such as numbness of fingers and toes; vomiting, diarrhea, temporary hair loss, and effects on the nervous system, lungs, heart, liver, and kidneys; death; birth defects
Trichloroethylene	Headaches, lung irritation, dizziness, poor coordination, and difficulty concentrating, impaired heart function, unconsciousness, and death; nerve, kidney, and liver damage; skin rashes
Vanadium	Lung irritation, coughing, wheezing, chest pain, runny nose, and a sore throat
Vinyl chloride	Dizziness and sleepiness, pass out, death, liver damage, nerve damage, immune reactions, circulation problems
Xylenes	Headaches, lack of muscle coordination, dizziness, confusion, and changes in one's sense of balance; irritation of the skin, eyes, nose, and throat; difficulty in breathing; problems with the lungs; delayed reaction time; memory difficulties; stomach discomfort; and changes in the liver and kidneys; unconsciousness and death
Zinc	Stomach cramps, nausea, and vomiting, decrease the levels of good cholesterol



View of downtown Wilmington, Delaware; 2005

The Mission of the Urban Health and Environmental Learning Project (UHELP) is to be a source of information, education, and referral to the residents of the city of Wilmington on health and environmental topics.

UHELP is a partnership comprised of the following organizations



Peoples Settlement Association



Center for Energy and Environmental Policy
University of Delaware



Henrietta Johnson Medical Center



Tau Eta Chapter of Chi Eta Phi Sorority Inc.

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