

What is Environmental Health?



How the Environment and Your
Health are Connected

Photos: Stefan Wernli, James Emery



Some examples of the environment impacting health. Are there are any other examples that students can think of?

Environmental Health: All Around Us



"If you want to learn about the health of a population, look at the air they breath, the water they drink, and the places where they live."

– *Hippocrates, the Father of Medicine, in the 5th century B.C.*

Photo: Herzi Pinkl

How do the students think that air, water and where they live can impact their health? Are there any specific examples that they can think of? Perhaps discuss some of the environmental conditions in their school that might impact their health.

Environmental Health



- The health of the environment is connected to the **health of people**.
- Environmental health professionals are working to better understand the environment and its connections to human health.

Photo: Deepwater Horizon Response, Mark Christal

There are additional slides later on in the lesson that address environmental health careers in more detail. There is much to learn about the environment and its connections to human health discussion of some of the key questions and information needed to answer these questions are touched later on in this presentation. Additional information and resources are available in the lesson plan.

What factors influence your health?



- Physical Environment Factors
 - Air and water quality, food availability
- Social Factors
 - Health care, education, race, income
- Individual Factors
 - Behaviors, genetics

Can students think of some factors in each category (physical, social and individual) that can influence their health? Why/how do they think these factors influence their health? Scientists are still learning more about how these factors are linked (i.e., your environment, genetics, education and behavior) to your health.

For more information on the factors influencing your health see:
U.S. Department of Health and Human Services (DHHS) – Healthy People 2020
Determinants of Health
<http://www.healthypeople.gov/2020/about/DOHAbout.aspx>

See lesson plan for additional resources and references

Human Health and the Environment



- An **environmental health hazard** is a substance that has the ability to cause an adverse health event.
- Health effects from the environment can be both short term (**acute**) and longer term (**chronic**).

Photo: Susan Rattner

This photo is of a playground in front of an industrial facility. Would they want to play on this playground? Why not? What other times of environmental health hazards can they think of? How might they avoid exposure to environmental health hazards? What can be done by individuals, government, communities to protect the residents from environmental health hazards?

Acute vs. Chronic



Acute Conditions

- Have a sudden onset
- Symptoms may worsen or change rapidly
- Usually relatively short-lived
- Examples: Cold or flu, food poisoning, heart attack

Photo: Steve Schupe, Sara Jean Smith

Briefly discuss acute vs. chronic conditions. Focus of discussion should be on the differences between acute and chronic, rather than focusing on any specific medical experiences.

Acute vs. Chronic



Chronic Conditions

- Develop or worsen over a long period of time
- May be difficult to determine the specific cause of disease
- Are among the most common and preventable sources of disease in the U.S.
- Examples: asthma, cancer, diabetes

Photo: Shawn Semmes

Discuss differences between acute and chronic exposures. Examples.. Acute a one-time disaster (i.e., explosion, oil spill, food poisoning) versus chronic continuous exposure (i.e., smoking, living near a factory that emits pollution on a daily basis). Can the students think of any examples? If time allows, discuss why it is difficult to determine links between chronic environmental exposures and disease.

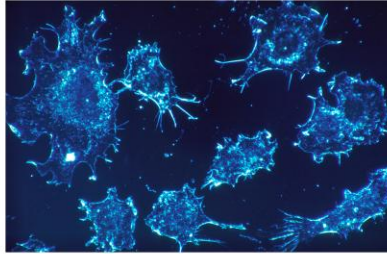
What is in the environment that can affect health?



- Air, water and soil pollution from transportation, agriculture, industry and other sources include:
 - Chemicals
 - Toxic waste
 - Radiation
 - Disease-causing microorganisms and plants
 - Pesticides
 - Heavy metals

What can be done by individuals, industry government and communities to protect the environment? Are these things currently being done? If not, why not? This discussion can be used to introduce ideas for a final project (see lesson plan for evaluation options and resources and references.)

Health conditions possibly linked to the environment

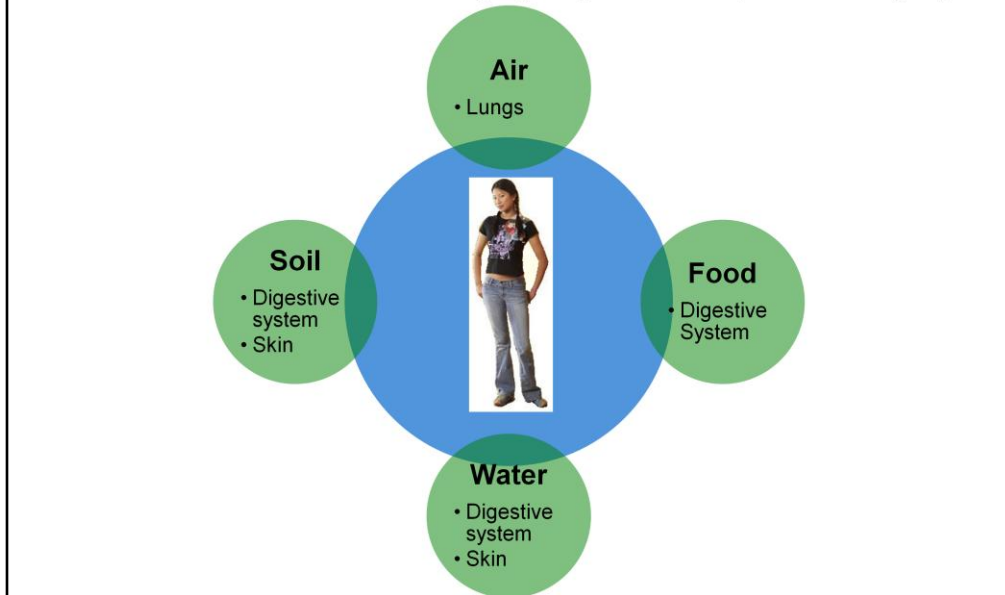


- Certain cancers (i.e., bladder, liver)
- Asthma and other respiratory diseases
- Neurological (related to the nervous system) diseases
- Parkinson's disease, multiple sclerosis, Alzheimer's disease
- Developmental disabilities
- Cerebral palsy, autism
- Birth defects

Photo: NCI

It is believed that these health conditions are linked to the environment, but not completely understood. Scientists continue to work to further understand the environmental connections to these health outcomes. It time allows, perhaps engage students in discussion about what types of information is needed for scientists to learn more. Why do they think it is so difficult to determine environment and health connections?

How substances in the environment can get into the human body (exposure pathways)



Inhalation (breathing), absorption (skin) and ingestion (digestive system). Discuss different exposure pathways and how substances in the environment can get into their bodies. What are specific actions they can do to avoid harmful environmental exposures? What types of actions can government, businesses, and communities do to protect the public's health? This discussion can lead to ideas for final projects (see lesson plan for evaluation options, references and resources for further information).

Population Characteristics and Environmental Health



- Population characteristics (demographics) include age, gender, race, ethnicity and socioeconomic factors such as where people live, income and education level.
- Different population groups can have different rates of disease (for example, people who live in cities tend to have higher rates of asthma).

Photo: Susan Sermonetta

Why do the students think people who live in cities would have higher rates of asthma?
Why are population demographics (age, gender, race, geographic locations) important to further our understanding of human health?

Population Characteristics and Environmental Health



- Scientists study the differences in disease rates among populations to learn more about causes of disease and possible connections between the environment and human health.
- **Epidemiology** is the study of the sources and causes of disease.

Photo: Evert Barnes

What can differences in disease rates among populations teach us about causes of disease and possible connections between the environment and human health? Can students think of any examples?

Population Characteristics and Environmental Health



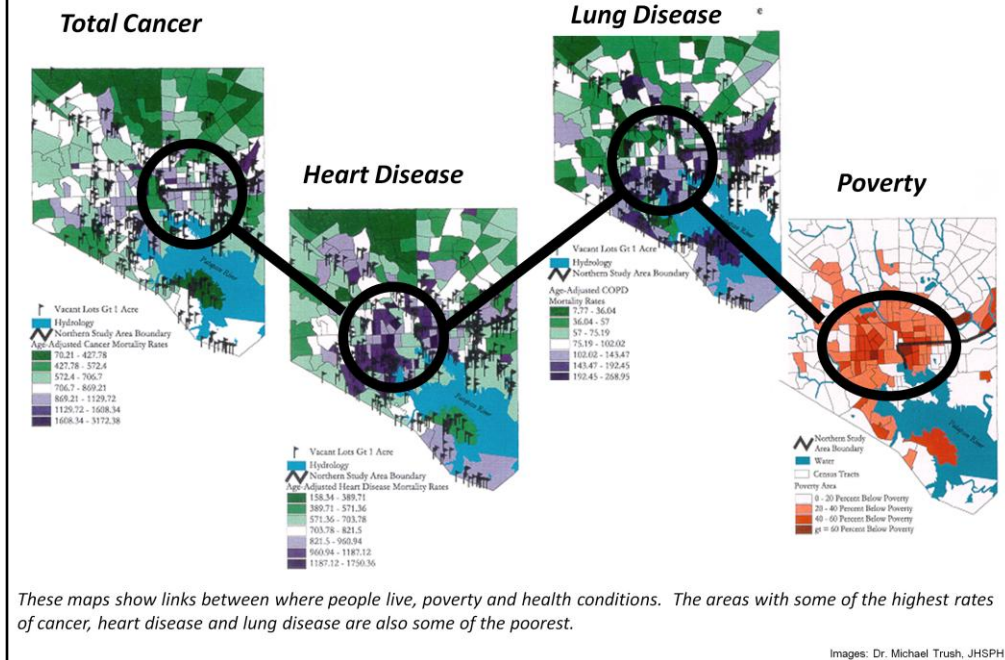
- Low-income groups and minorities may have a greater likelihood of exposure to environmental hazards because they are more likely to live in areas with more pollution and toxic waste.
- **Environmental Justice** recognizes that all people are entitled equal protection from environmental and health hazards.

Photo: Laurence Barnes

Information on health disparities and environmental justice can be found at:
U.S. Department of Health and Human Services Office of Minority Health
<http://minorityhealth.hhs.gov/templates/content.aspx?ID=3559>

U.S. Environmental Protection Agency (EPA) Environmental Justice page:
<http://www.epa.gov/environmentaljustice/index.html>
See the lesson plan for additional resources and references.

Environment and Health in Baltimore



Are the students surprised that rates of cancer, heart and lung disease are higher in the poorest areas? What might be some of the reasons for this?

For more information on links between poverty and health outcomes see:
Robert Wood Johnson Foundation: Poverty's High Cost of Health
<http://www.rwjf.org/pr/product.jsp?id=49868>

Additional resources and references are provided in the lesson plan

Working in the Field



- There are many exciting careers in environmental health!
Some examples include:
 - Public Health/Medicine
 - Science/Research
 - Government
 - Media/Journalism
 - Urban Planning
 - Agriculture
 - Industry
 - Engineering
 - Law

Photo: Marion Doss

If time allows, students can explore environmental health careers and hear directly from environmental health professionals at:

Maryland Environmental Health Career Website:

Meet the Experts: Environmental Health Professionals:

<http://experts.thinkport.org/envirohealth/default.aspx>

Searching for More Answers



- Researchers have linked specific diseases to specific environmental exposures, such as smoking and lung cancer, but there is still so much we do not know about how environment and health are connected.

Photo: U. Saskatchewan

Do students have questions they how the environment and health are connected? What type of information is needed to find the answers? How might they get this information? Additional information and resources are available in the lesson plan.

What more do we need to learn about environment and health connections?



- We are collecting information and data on environmental hazards, human exposure to the hazards, and diseases to learn more about environment and health connections. An example of this is the national environmental public health tracking program.

The Centers for Disease Control and Prevention National Environmental Public Health Tracking Program

<http://www.cdc.gov/nceh/tracking/>

Environmental Public Health Tracking in Maryland

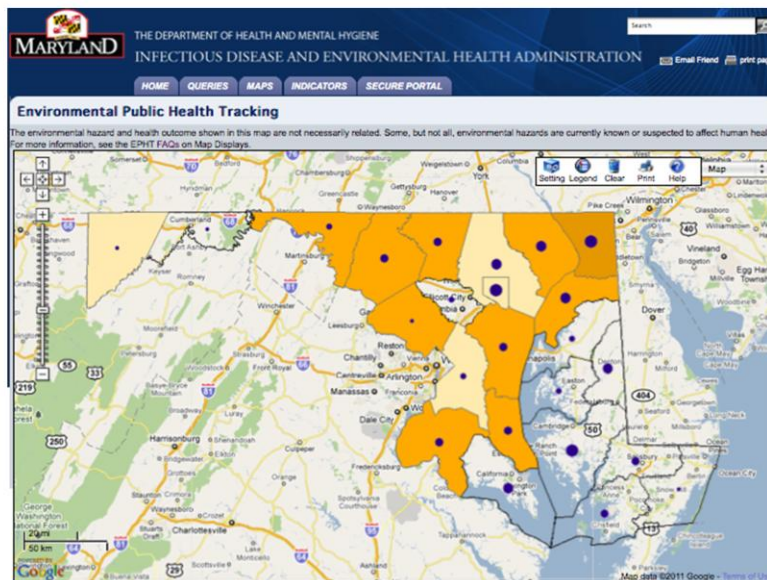


- Maryland is one of the 23 states funded by the Centers for Disease Control and Prevention to collect environment and health data for the public, policymakers, researchers, and government agencies to use to help learn more about environment and health connections.

If time allows, students can peruse the Maryland Environmental Public Health Tracking website. See lesson plan for specific activity and evaluation ideas.

Maryland Environmental Public Health Tracking Program (M-EPHT):
<http://ideha.dhmh.maryland.gov/eh/tracking/Default.aspx>

Maryland Environmental Public Health Tracking *Asthma Rates and Ozone Levels*



Orange shading depicts ozone levels (darker orange indicates higher ozone levels and translucent indicates no data available). The blue dots depict asthma rates (bigger dots indicate higher asthma rates)
What does this map tell them about asthma rates and ozone levels in Maryland?
Are they surprised at any of the information on the map?

Source:

Maryland Environmental Public Health Tracking Program (M-EPHT):

<http://ideha.dhmd.maryland.gov/eh/tracking/Default.aspx>

Example: Maryland Environmental Public Health Tracking Efforts *Birth Defects and Race*

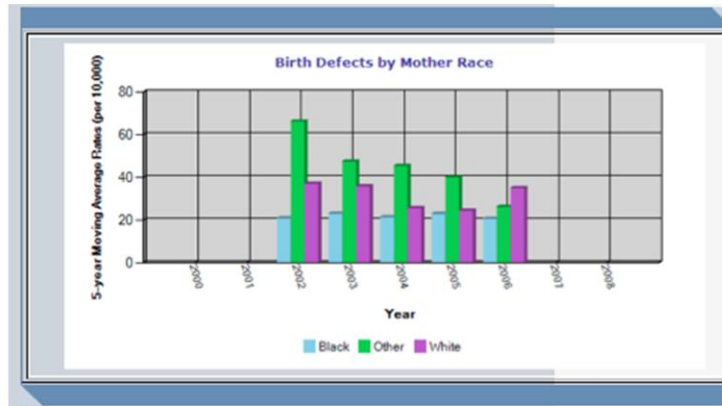


Image: Maryland EPHT

Maryland white population 58.2%, Black 29.4% (U.S. Census 2010)

What information does this graph tell us about birth defects and race in Maryland. It time allows, discuss why having additional detail on “other races” (i.e., birth defect data specific to “other” population groups such as Asian, Hispanic, Native American, etc.) would be helpful to researchers.

Maryland Environmental Public Health Tracking Program (M-EPHT):
<http://ideha.dhmh.maryland.gov/eh/tracking/Default.aspx>

Discussion



- Why is it important to understand connections between the environment and health?
- What environmental health topics are important to you in your life?
- What do you think are the biggest challenges environmental health professionals face?

Photo: Danielle Guana, Neil Smith

What information might they need to learn more about the environmental health topics that are important to them? How might some of the challenges environmental professionals face be addressed? Do they have additional questions? Or interest in doing further research? See the lesson plan for evaluation options as well as additional resources and references.

