

What is Environmental Health? 8th Grade Lesson Plan

Maryland Core Learning Goals: *Goal 6: Environmental Science, Expectation 6.3*

6.3 The student will analyze the relationships between humans and the earth's resources.

Core Objectives: In a 30 to 50-minute lesson, instructor will introduce 8th grade students to Environmental Health and familiarize them with how environmental conditions are linked to human health. Key concepts include environmental hazards, sources of environmental exposures, exposure pathways, acute and chronic conditions and the Maryland Environmental Public Health Tracking program (M-EPHT).

Options are provided to modify and/or extend the module based on time available, as well as student interests and abilities.

Following the lesson, students should be able to:

- Define environmental health
- Recognize that the health of the environment is connected to the health of people
- Understand how substances in the environment can get into the human body through inhalation, absorption and ingestion (exposure pathways)
- Appreciate the need for data on environmental and health indicators

Additional Objective: Use the Maryland Environmental Public Health Tracking Program website to explore environmental health data, as well as discuss uses of this data to advance our understanding of the relationship of environmental conditions to human health.

Vocabulary:

Core: Environmental health, environmental hazard, chronic and acute conditions, exposure pathways, , inhalation, absorption, ingestion, surveillance

Additional: epidemiology, demographics, socioeconomic status, environmental health tracking, environmental justice, Maryland Department of Health and Mental Hygiene, Maryland Department of Environmental Protection, Environmental Protection Agency, Centers for Disease Control and Prevention, Maryland Environmental Health Tracking Program

Materials

- *What is Environmental Health?* PowerPoint presentation
- Maryland Environmental Public Health Tracking Network Site (M-EPHTN) <http://ideha.dhmh.maryland.gov/OEHFP/EH/tracking/SitePages/Home.aspx> and computers with Internet access for students to explore the site. *Note: depending on teacher's preference and computer availability, the lesson can be adapted for use with one computer projected for the class to see or multiple computers for small group or individual student work.*
- Handouts: vocabulary sheet and slide notes page

- **Videos:**

- CDC Introduction to the National Environmental Public Health Tracking Network: Working Toward a Healthier Planet for Healthier People (1 min. 44 secs.):
<http://www.youtube.com/watch?v=J42CLZH1NIE&feature=related>
- Maryland Environmental Health Careers site with video interviews of professionals in the state working in various environmental health roles:
<http://experts.thinkport.org/envirohealth/default.aspx>

ENGAGE

Pre-assessment and Introduction

Assess students' knowledge on how the environment impacts human health with questions, discussion, and/or student activity. Ask students to share or write down some examples of the environment impacting health. Examples could include the Gulf Oil spill, the earthquake/tsunami/nuclear disaster in Japan, or another timely example from the local, national, regional or international level that the students may be familiar with). The short video from the Centers for Disease Control and Prevention's Tracking Network is another resource for introducing the topic to students.

Students may likely be familiar with environmental issues such as recycling, the Chesapeake Bay or endangered species. The focus of this lesson expands beyond these environmental concepts to how environmental conditions impact human health. The environment can impact human health as a result of a one-time (acute) event such as a natural disaster, an unplanned event such as an oil spill, or from longer-term (chronic) exposures that may be more difficult to notice and link directly to an environmental condition (i.e., asthma and air quality, cancer and chemicals).

EXPLORE

Introduce environmental health issues associated with the environment, explain how substances in the environment can enter the human body (exposure pathways), as well as the need for and use of environmental data. Using the materials and additional resources provided, teachers should intersperse a short lecture with class discussion and student activities as the instructor desires and time allows.

EXPLAIN

Provide an overview of why it is valuable to understand environmental health conditions and exposure pathways and how this can help us improve human health. This may be a good opportunity for small group discussion about ways the environment impacts the students' health and specific ways that substances in the environment can get into their bodies. What are specific actions they can do to avoid harmful environmental exposures? What types of laws and rules could be enacted by the government, their school, and their community to help protect their health?

ELABORATE

Discuss the importance of learning more about the environment and having data on environmental and human health conditions. How can having this information make a difference to improve environment and health conditions? If time allows, students can explore environmental health careers and hear directly from environmental health professionals at the website for environmental health careers provided in the videos section above.

If the instructor desires, this activity could serve as a springboard to invite environmental health professionals to present to the class or at a school career day about their work and future environmental health career opportunities.

If time allows, students can also peruse the Maryland Environmental Public Health Tracking (M-EPHT) website, in particular the maps and queries section. Giving students time to navigate the M-EPHT site (perhaps in pursuit of a specific piece of information, for example using the maps section of the site to identify asthma rates for their county in a particular year) can help them develop their own questions about the website and the value of the information available.

EVALUATE

Evaluation options:

- Respond to several brief constructed response (BCR) questions.
Examples:
 - Define environmental health and provide at least two specific examples of environment and health connections.
 - Identify at least two environmental health topics you are concerned about and explain why?
 - What are at least two activities that you or the government, your school or community can do to help protect the environment and their health?
- Compose a short essay relating information learned about environmental health and how it can impact your health.

Individual or Group Project Options:

- Write a letter to the governor or a state or local representative, discussing a specific environmental health and suggest actions or request support (funding/attention/more research) to address the problem.
- Develop an environmental health education campaign (perhaps in the form of a video, poster, PowerPoint presentation, or brochure) about the environment and its connections to human health.
- Prepare a response to an environmental health case study question (some examples are provided in the Resources and References section but may need to be modified by the instructor based on time, as well as class interest and ability.).

Building on the concepts from the lesson, formulate questions to identify potential causes of the problem and a list of suggested actions.

- Create an environmental health profile of their county or state (using the M-EPHT website and other resources listed). Describe current environmental health conditions, presenting hypotheses of what things in the environment might impact the community's health, as well as suggestions to help protect the residents' health.

Resources and References:

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

<http://ideha.dhmh.maryland.gov/OEHFP/EH/tracking/SitePages/Home.aspx>

Centers for Disease Control and Prevention (CDC) National Environmental Public Health Tracking Program:

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

CDC Introduction to the National Environmental Public Health Tracking Network: Working Toward a Healthier Planet for Healthier People (1 min. 44 secs.):

<http://www.youtube.com/watch?v=J42CLZH1NIE&feature=related>

U.S. Department of Health and Human Services (DHHS) – Healthy People 2020

Determinants of Health: <http://www.healthypeople.gov/2020/about/DOHAbout.aspx>

U.S. Environmental Protection Agency (EPA) Teaching Resources

<http://www.epa.gov/teachers/health.htm>

EPA My Environment Query Tool:

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

EPA Environmental Justice :

<http://www.epa.gov/environmentaljustice/index.html>

U.S. Department of Health and Human Services Office of Minority Health

<http://minorityhealth.hhs.gov/templates/content.aspx?ID=3559>

Robert Wood Johnson Foundation: Poverty's High Cost of Health

<http://www.rwjf.org/pr/product.jsp?id=49868>

Maryland Environmental Health Career Website:

Meet the Experts: Environmental Health Professionals:

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

National Institute of Environmental Health Sciences (NIEHS) Curricular Material:

<http://www.niehs.nih.gov/health/scied/teachers/curricular/index.cfm>

Enviro Health Connections: Curriculum Resources:

<http://www.thinkport.org/CLASSROOM/CONNECTIONS/general/other.tp>

Additional materials for possible evaluation activities:

More introductory level:

Learn about Chemicals Around Your House:

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

Natural Resources Defense Council's Green Squad: Kids Taking Action for Safer, Greener Schools:

<http://www.nrdc.org/greensquad/>

More advanced level:

Environmental Health Hazards, Toxic or Not:

http://peer.tamu.edu/curriculum_modules/Environ_Hazard/index.htm

Dioxin Contaminated Chicken: An Environmental Health Disaster Scenario

<http://www.bu.edu/bahec/index.html>

Oregon State Environmental Health Sciences Center:

<http://ehsc.oregonstate.edu/downloadactivities>