

Environmental Health

Course
Health Science

Unit VIII
*Strategies for
the Prevention
of Diseases*

**Essential
Question**
*What is the
impact of
pollution on
people and the
environment?*

TEKS
*130.204 (c) 11D,
12C, 12E*

**Prior Student
Learning**
n/a

Estimated time
3 hours

Rationale

Environmental pollution has an effect on the world population. It is important for the student to understand personal responsibility in environmental health.

Objectives

Upon completion of this lesson, the student will be able to:

- Evaluate a variety of related environmental factors
- Describe the methods used to deal with the classic environmental concerns of clean water and waste disposal
- Describe short- and long-term effects of air, chemical, and noise pollution, and exposure to radiation
- Outline strategies that individuals, communities, and nations can take to preserve and restore the environment

Engage

Ask the class the following questions:

Do you think it is important to be environmentally responsible?

Do you consciously do anything on a regular basis to reduce your carbon footprint or to become "greener"? If yes, what do you do and why do you bother to do so? If not, why not?

Key Points

- I. According to the World Health Organization, Environmental health comprises those aspects of human health, including quality of life, that are determined by physical, chemical, biological, social, and psychosocial factors in the environment. It also refers to the theory and practice of assessing, correcting, controlling, and preventing those factors in the environment that can potentially have an adverse effect on the health of present and future generations.
- II. Benefits of environmental health
 - A. Improved quality of life
 - B. Reduced healthcare costs
 - C. Reduced impact of social health problem
 - D. Enhanced economic status
 - E. Enhanced productivity
 - F. More eco-friendly environment
- III. Environmental management is a line of defense against disease
 - A. Water quality management
 - B. Human waste disposal
 - C. Solid and hazardous waste management

- D. Vector control
 - E. Milk sanitization
 - F. Food quality management
 - G. Occupational health practice
 - H. Interstate and international travel management
 - I. Air pollution control
 - J. Institutional environmental management
 - K. Product safety and consumer protection
- IV. Air, Water, and Land Pollution – These types of pollution are caused by photochemical smog, acid rain, depletion of the ozone layer, untreated sewage, solid garbage, toxic industrial waste, and oil spills.
- V. Increased population causes changes in the land.
- A. Deforestation – destruction of forests
 - B. Desertification – conversion of grasslands, rain-fed cropland, and irrigated cropland into desert-like conditions
 - C. Solid wastes – overabundance
- VI. What you can do
- A. In the Home
 - 1. Learn how you can reduce, reuse, and recycle materials to decrease household waste, including food, paper, electronics, cleaners, pesticides, motor oil, and lawn and garden waste.
 - 2. Also, check out the EPA's shopping tips to learn how to make smart decisions at the store with resource conservation in mind.
 - B. In the Community
 - 1. Identify opportunities to get involved in your community, where you can play a significant role in material management and waste reduction.
 - 2. Discover how to launch new resource conservation initiatives and learn about current programs within your area, state, and region.
 - C. In the Workplace
 - 1. Offices contribute a significant portion of our nation's waste stream.
 - 2. Understand the importance of business involvement in material and waste management, and identify opportunities to engage and motivate employers and employees.
 - 3. Guidance is available for small and large offices, as well as food service organizations and specialized service organizations (e.g. dry cleaners).

- VII. Resource Conservation – Natural resource and energy conservation is achieved by managing materials more efficiently. Choose from the efforts and resources below to learn how to conserve resources at home and at work:
- A. Reduce, Reuse, Recycle – Learn ways to reduce household and industrial waste. Three primary strategies for effectively managing materials and waste are 'reduce, reuse, and recycle'.
 1. Reduce waste by making smart decisions when purchasing products, including the consideration of product packaging.
 2. Reuse containers and products.
 3. Recycle materials ranging from paper to food scraps, yard trimmings, and electronics.
 4. Purchase products manufactured with recycled content.
 - B. Conservation Tools – Tools and programs that promote waste reduction and recycling. Read guidelines for businesses regarding purchasing recycled materials, controlling solid waste management costs, and streamlining and improving operations. Learn about evaluating the effectiveness of recycling in the community.
 - C. Common Waste and Materials – Common materials from the municipal, commercial, and industrial waste streams that have good opportunities for recycling and reuse.
- VIII. Hazardous Waste – Hazardous waste is waste that is dangerous or potentially harmful to our health or the environment. Hazardous wastes can be liquids, solids, gases, or sludges. They can be discarded commercial products, like cleaning fluids or pesticides, or the by-products of manufacturing processes.
- IX. Non-Hazardous Waste – The EPA defines solid waste as any garbage or refuse; sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility; and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from community activities and industrial, commercial, mining, and agricultural operations.
- A. Nearly everything we do leaves behind some kind of waste. In fact, in 2006, U.S. residents, businesses, and institutions produced more than 251 million tons of municipal solid waste, which is approximately 4.6 pounds of waste per person per day. In addition, American industrial facilities generate and dispose of approximately 7.6 billion tons of industrial solid waste each year.

Activity

- I. Complete "The Lorax" Activity.

Teacher Note:

Check out the book or the video, Dr. Seuss: "The Lorax" from your campus library or Regional Education Center. Write out the character names on pieces of paper and have students "draw" the character they will be following. Read the book or show the video, and have students fill out the worksheet. The worksheet and activity may be done individually or in small groups of like characters. Pass out the information sheet on Current Environmental Issues. Below is a list of characters and their Environmental Issue:

- a. Lorax - Biological Diversity
- b. Oncler - Developmental and Environmental
- c. Barbaloots - Tropical Forests
- d. Swamee-Swans - Air, Atmosphere, Climate, Hazardous Substances
- e. Humming Fish - Water, Ocean and Coastal, Freshwater)

Assessment

Successful completion of the Lorax activity.

Materials

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

<http://www.neefusa.org/> – National Environmental Education Foundation

Lorax Activity Sheet

Current Environmental Issues

Dr. Seuss' "The Lorax" video and/or book

Accommodations for Learning Differences

For reinforcement, the student will list environmental pollution problems related to health.

For enrichment, the student will research environmental concerns in a specific region and develop a solution.

National and State Education Standards

National Health Science Cluster Standards

HLC01.01 Academic Foundations

Health care workers will know the academic subject matter required (in addition to state high school graduation requirements) for proficiency within their area. They will use this knowledge as needed in their role.

HLC10.01 Technical Skills

Health Care Workers will apply technical skills required for all career specialties. They will demonstrate skills and knowledge as appropriate.

TEKS

130.204 (c)(11)(D) practice recycling and waste management for cost containment and environmental protection;

130.204 (c)(12)(C) explain the benefits of positive relationships among community health professionals in promoting a healthy community; and

130.204 (c) (12)(E) research alternative health practices and therapies.

Texas College and Career Readiness Standards

English Language Arts

II. B. Understand new vocabulary and concepts and use them accurately in reading writing and speaking.

III. B. Develop effective speaking styles for both group and one on one situations.

IV. A. Apply listening skills as an individual and as a member of a group in a variety of settings.

IV. B. 2. Listen actively and effectively in one-on-one communication situations.

Science

1.E.1. Use several modes of expression to describe or characterize natural patterns and phenomena. These modes of expression include narrative, numerical, graphical, pictorial, symbolic, and kinesthetic.

1.E.2. Use essential vocabulary of the discipline being studied.

3.A.1. Use correct applications of writing practices in scientific communication.

Current Environmental Issues

Population Growth – excessive population growth leads to the deterioration of lands, and drains resources, air, and water.

Developmental and Environmental – increased development destroys land, air, and water.

Food and Agriculture – destruction of usable cropland and excessive use of chemicals

Biological Diversity – habitats of many types of plants and animals will be destroyed as population and development increase.

Tropical Forests – soil erosion, flooding, shortages of fuel and timber, loss of food, and displacement of people

Ocean and Coastal Resources – overfishing, pollution from oil spills, and waste dumping

Fresh Water – pollution from municipal, industrial, and chemical wastes

Energy – use is greater than supply

Air, Atmosphere, Climate – chemicals damage the ozone, warming the earth's climate.

Hazardous Substances – plastics, pesticides, and radioactive wastes contribute to health problems.

Solid Wastes – insufficient space to dispose of wastes