

## LESSON:

## Unequal Housing, Unequal Health

**Summary:** Students read the article “Dwelling Disparities: How Poor Housing Leads to Poor Health” to obtain a comprehensive picture of how environmental health relates to the built environment. Students then identify environmental health/built environment issues within their own community and generate real solutions that could be implemented individually or as a class.

**EHP Article:** “Dwelling Disparities: How Poor Housing Leads to Poor Health”  
*EHP Student Edition*, August 2005, p. A310  
<http://ehp.niehs.nih.gov/members/2005/113-5/focus.html>

**Objectives:** By the end of this lesson, students should be able to:

1. identify how issues in the built environment relate to environmental health and specific health outcomes;
2. describe potential resources for solutions to local environmental health/built environment issues; and
3. generate a step-by-step plan to address a local environmental health/built environment issue.

**Class Time:** Section 1: 1.5 hours; Section 2: homework; Section 3: an additional 1–2 hours depending on level of in-class discussion and work assigned to do outside of class

**Grade Level:** 9–12

**Subjects Addressed:** Health, Environmental Science, General Science, Social Studies, Architecture

### ►Prepping the Lesson (40 minutes)

#### INSTRUCTIONS:

1. Obtain a class set of *EHP Student Edition*, August 2005, or download “Dwelling Disparities: How Poor Housing Leads to Poor Health” at <http://ehp.niehs.nih.gov/members/2005/113-5/focus.html> and make copies.
2. Make copies of the Student Instructions.
3. Review the article and lesson.
4. Decide which lesson sections you want the students to complete. If possible, try to incorporate some aspect of “solutions” into the lesson (see Table 1 of the Student Instructions). Focusing on or recognizing solutions can make students feel empowered and have a positive impact on personal, family, or community health.

#### MATERIALS (per student):

- 1 copy of *EHP Student Edition*, August 2005, or 1 copy of “Dwelling Disparities: How Poor Housing Leads to Poor Health”
- 1 copy of Student Instructions

#### VOCABULARY:

- built environment
- dilapidated
- disparity
- lead (Pb)
- remediate
- social isolation
- weatherizing
- zoning



**BACKGROUND INFORMATION:**

The article and answers/guidelines within the lesson should provide sufficient information.

**RESOURCES:**

*Environmental Health Perspectives*, Environews by Topic page, <http://ehp.niehs.nih.gov/topic>. Choose Chemical Exposures, Environment, Health Disparities, Indoor Air Quality, Innovative Technologies, Research Issues and Initiatives, Urban Issues

California Air Resources Board, Formaldehyde in the Home, <http://www.arb.ca.gov/research/indoor/formald.htm>

Global Green USA, Green Building and Cities, <http://globalgreen.org/programs/building.html>

Medline Plus, Lead Poisoning, <http://www.nlm.nih.gov/medlineplus/leadpoisoning.html>

U.S. Green Building Council, <http://www.usgbc.org/>

**▶ Implementing the Lesson**

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**INSTRUCTIONS:**

1. Hand out the article, Student Instructions, and “Dwelling Data” worksheet to the students.
2. Instruct the students to read the article. As they read, they need to complete Section 1 of the worksheet by filling out column 1 (“environmental health/built environment problem”) and column 2 (“describe the potential health problem”). Provide examples as needed and inform the students whether they should research specific health problems (e.g., lead poisoning can cause brain and kidney damage).
3. If the students are completing only Section 1 of the lesson, have them turn in their work for grading. If the students will be doing Sections 2 and/or 3, you may have an intermediate completion check to make sure students do this step of the assignment.
4. After the Section 1 work has been graded or students have completed the table, either as a class or within groups, have them share their information from columns 1 and 2 of the “Dwelling Data” worksheet. The goal of sharing the information is for the students to have a comprehensive list to work from for continuing on to Section 2 and to ensure they understand the potential health problems associated with the variety of environmental health/built environment issues.
5. Review the instructions for Section 2 of the lesson. You may want to review the scoring system with the students (column 3 on the “Dwelling Data” worksheet) and assessment guidelines for their answers to Section 2 questions.
6. Collect the student responses to the questions in Section 2.
7. If you are continuing with Section 3, either assign students to neighborhood groups or work as a class to identify two local environmental health/built environment issues considered by neighborhood group(s) or the class to be important.
8. Review “Table 1: Solutions to environmental health/built environment issues” in the Student Instructions. Discuss that there are many actions large and small that can positively impact personal health, family health, and community health. It is important that students feel empowered and understand that do-able solutions exist.
9. Have students identify potential solutions that can help remedy the local environmental health/built environment issues prioritized by the class.
10. Have students develop a step-by-step action plan to address one of the two environmental health/built environment issues identified by the neighborhood group(s) or class.

**NOTES & HELPFUL HINTS:**

1. If limited class time is an issue, the lesson can be partially implemented by individual sections.
2. The lesson and experience will become particularly meaningful if students actually have the opportunity to implement a solution to help their community. Students will learn about community resources, planning, and empowerment, which are useful, life-long skills.
3. Science and social studies teachers could work together to decrease the impact on class time in one subject or to increase the scope and credit for the project. If your school has service learning, this would be an excellent project.
4. Parent Teacher Associations (PTAs) are an excellent potential resource for funds, organizational assistance, and community referrals to implement solutions.

**▶ Aligning with Standards**

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**SKILLS USED OR DEVELOPED:**

- classification, communication (notetaking, oral, written—including summarization)



- comprehension (listening, reading)
- computation
- critical thinking and response
- observation
- research

**SPECIFIC CONTENT ADDRESSED:**

- built environment
- environmental health

**NATIONAL SCIENCE EDUCATION CONTENT STANDARDS MET:**

Unifying Concepts and Processes Standard

- Systems, order, and organization

Science As Inquiry

- Abilities necessary to do scientific inquiry
- Understanding about scientific inquiry

Life Science Standards

- Interdependence of organisms

Science in Personal and Social Perspectives Standards

- Personal and community health
- Natural resources
- Environmental quality
- Natural and human-induced hazards
- Science and technology in local, national, and global challenges

History and Nature of Science Standards

- Science as a human endeavor
- Nature of scientific knowledge
- Historical perspectives

## ▶Assessing the Lesson

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### SECTION 1

**Step 2:** Using the table on the “Dwelling Data” worksheet, list the environmental health/built environment issues described in the article in column 1. In column 2, describe how that issue can affect human health. If you are not sure how a potential health problem (e.g., lead poisoning) can specifically affect human health, you may need to do additional research.

In the table below are examples of possible answers for columns 1 and 2.

**Step 4:** Students collect data on their neighborhood conditions.

**Step 5:** Students answer the following questions.

- Answers will vary, check for correct computation.
- e) Answers will vary, look for clear logical explanations for their choices. Science is a great opportunity for students to develop their writing skills, they should be encouraged to use correct grammar as much as possible.

### SECTION 3

**Step 8:** Develop a step-by-step action plan to address one of the two environmental health/built environment issues identified by your group or class. Be sure to include the following in your plan:

- Identify the different stages and approximate timeline for the project.
- List which individuals, groups, or organizations you would contact and at what stage of the project. Describe why you would contact that individual/group, or how they would contribute to the project.
- Identify what resources you would need to do the project (e.g., money, physical labor, meeting rooms, do-it-yourself books, number of people, etc.)



1. Environmental health/built environment problem	2. Describe the potential health effects	3. Does this problem exist in your neighborhood? (yes or no) If yes, score the level of the problem in Column 4	4. Score (see Key below) 0 = Problem/issue does not exist 1 = problem/issue exists here and there 2 = problem/issue exists fairly frequently 3= problem/issue exists with high frequency
Lead-based paint (in homes and buildings older than 1978) or lead from solder in pipes	Lead poisoning (brain damage, behavioral problems, kidney damage)	Answers will vary per neighborhood	Answers will vary per neighborhood
No sidewalks, parks, or recreational areas	People stay inside, do not exercise or interact with the community (obesity, more exposure to indoor air pollution, mental health impacts)		
No supermarkets	No fresh fruits and vegetables or access to healthier foods		
Many convenience stores or fast food restaurants	No fresh fruits and vegetables or access to healthier foods		
Many liquor stores or bars	Easy access to liquor, violence, drunken driving nearby		
Residential areas near industrial areas (e.g., auto-repair shops in the neighborhoods)	Air, water, or soil pollution		
Located near a highway	Air and noise pollution		
Dilapidated housing	Mold, dust mites, insects, rodents (asthma triggers, allergies, upper respiratory discomfort, communicable disease)		
Violence, social isolation	Physical and mental health		
No library	Mental health, general health (access to information for help, reading for enjoyment and relaxation)		
No community health center	Lack of access for vaccinations, health maintenance, and illness		



- Identify different jobs your classmates could do to share the work and accomplish the task. Briefly describe each job. Students should be graded on how thoroughly they incorporate each of the above bullet points in the action plan, as well as the feasibility of the plan to address the specific problem. This action is an excellent final assessment, so the students should be encouraged to generate drafts that are revised and to turn in a clean, grammatically correct end product.

### ► Authors and Reviewers

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# Unequal Housing, Unequal Health

## SECTION 1

**Step 1:** Read the article “Dwelling Disparities: How Poor Housing Leads to Poor Health.”

**Step 2:** Using the table on the “Dwelling Data” worksheet, list the environmental health/built environment issues described in the article in column 1. In column 2, describe how that issue can affect human health. If you are not sure how a potential health problem (e.g., lead poisoning) can specifically affect human health, you may need to do additional research.

**Step 3:** Within groups or as a class, share your lists and add any environmental health/built environment issues you may have missed.

## SECTION 2

**Step 4:** Using your completed list, score your neighborhood for these environmental health/built environment issues. Check off the appropriate description/score for each issue. The scoring scale is 0–3, where 0 = problem/issue does not exist, 1 = problem/issue exists here and there, 2 = problem/issue exists fairly frequently, and 3 = problem/issue exists with high frequency.

**Step 5:** Answer the following questions.

- a) What is the average rating for your neighborhood?
- b) Which environmental health/built environment issue do you consider to be of highest concern in your neighborhood? Why?
- c) On whom does solving that issue depend? (circle all that directly apply)  
You  
Your family  
Neighbors  
Neighborhood organization/community group  
Local politicians  
Federal politicians  
Businesses
- d) Of the people/groups you circled, which individual or group do you think is in the best position to begin to solve the problem you identified as the most important? Explain why.
- e) Of the environmental health/built environment issues you ranked in Step 4, which one do you feel would be most easily addressed by actions from you or your family?

## SECTION 3

**Step 6:** Your teacher will either assign you to neighborhood groups or have you work as a class to identify two local environmental health/built environment issues considered to be of highest concern.

**Step 7:** On the next page, Table 1 highlights solutions to some environmental health/built environment issues described in the article. It is important to realize that we are not helpless in our circumstances—there are many actions, small and large, that can have a positive impact on our personal, family, and community health. Review the table and identify any solutions that could help remedy the local environmental health/built environment issues prioritized by the class.



**Table 1: Solutions to environmental health/built environment issues**

Possible solution	How the solution will help
Spatial analysis using a geographic information system	Can help identify trouble spots or areas with concentrated problems.
Community groups	Community groups may have access to supplies, funds, or physical labor to remediate problems. They may also be involved with politics and could initiate change through policy or political pressure. You could also start your own community group about the issue, invite guest speakers to learn about the problem and how to fix it, and get community members working together toward a common goal.
Personal improvement of residence—cleaning, repairing leaks, installing air filters, buying new mattresses, applying integrated pest management, removing old carpet, weatherizing	Such improvements will improve indoor air quality by preventing mold/mildew and eliminating or minimizing pet allergens/dust mites. Please note that if lead paint, lead in soil, or asbestos is a problem, these require trained professionals to remediate. Attempting to remove those items could result in life-threatening or life-long health problems.
Education, classes, libraries	Community members can learn how to control asthma or learn about specific environmental health issues and how to control them or protect themselves.
Contact local agencies such as the local housing authority, health department, environment department, etc.	Researching these local agencies on the Internet (or by calling) could reveal existing programs to help health/environmental health/physical infrastructure issues. Programs may include providing funding or physical labor to correct the problem, classes or presentations on how to address the problem, or individual guidance.
Tenants' right organizations, legal groups	These organizations can provide guidance on legal rights of tenants, and perhaps even free or reduced-fee legal representation. Many states have laws requiring landlords to maintain safe properties. Understanding these laws can be useful in getting a landlord to fulfill his/her maintenance requirements. Tenants' rights organization also have the advantage of organizing people into a unified front.
Business owners or local business organizations	Local business owners may be willing to contribute funds to improve the neighborhood; after all, it may help their business. If a business owner is part of the problem, s/he can be approached and given a chance to contribute to the solution. Local business organizations may have mechanisms for assisting the neighborhood to attract "healthy" businesses, to interpret zoning laws, or to improve the physical infrastructure of the neighborhood (e.g., business members donate goods and services).
Community gardens or local farmers market	Planting a community garden or organizing a local farmers' market can provide physical exercise, beauty, and access to fresh, healthy foods, as well as build community cohesion.
Policy change	Policy change is very broad and can affect things like limiting toxic releases, labeling to educate about adverse health effects, directing funds to pay for infrastructure improvements, etc.
Zoning	Changing zoning is done either with the city or the county, depending on who has jurisdiction over the area. Zoning changes can prevent the placement of homes near industries with toxic releases. They can also encourage clustering of "clean" business, parks, and libraries near residential areas to encourage walking or having access to quality foods.



**Step 8:** Develop a step-by-step action plan to address one of the two environmental health/built environment issues identified by your group or class. Be sure to include the following in your plan:

- Identify the different stages and approximate timeline for the project.
- List which individuals, groups, or organizations you would contact and at what stage of the project. Describe why you would contact that individual/group, or how they would contribute to the project.
- Identify what resources you would need to do the project (e.g., money, physical labor, meeting rooms, do-it-yourself books, number of people, etc.)
- Identify different jobs your classmates could do to share the work and accomplish the task. Briefly describe each job.





**Dwelling Data**

SECTION 1		SECTION 2	
1. Environmental health/ built environment problem	2. Describe the potential health effects	3. Does this problem exist in your neighborhood? (yes or no) If yes, score the level of the problem in Column 4	4. Score (see Key below)

**SCORE KEY:**  
 0 = Problem/issue does not exist  
 1 = problem/issue exists here and there  
 2 = problem/issue exists fairly frequently  
 3 = problem/issue exists with high frequency

