

LESSON: Mapping the Effects of War

Summary: In this exercise, students read the Focus article and choose an area of conflict mentioned in the article. Using some of the sources mentioned in the article, students create a poster depicting the geographic region affected by the conflict and the major environmental health effects of the conflict.

EHP Article: "Battle Scars: Global Conflicts and Environmental Health"
EHP Student Edition, March 2005:A994–A1003
<http://ehp.niehs.nih.gov/members/2004/112-17/focus.html>

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

1. Explain how war can lead to environmental health crises.
2. Identify several regions with severe environmental degradation resulting from conflict.
3. Use the computer to gather background information, maps, photos, and data.
4. Describe the changes over time in environmental health factors from a region of their choosing.

Class Time: 3–5 hours in class, with outside time for research

Grade Level: 10–12

Subjects Addressed: Environmental Health, Social Science, History

►Prepping the Lesson (15 minutes)

INSTRUCTIONS:

1. Obtain a class set of *EHP Student Edition*, March 2005, or download articles at <http://ehp.niehs.nih.gov/science-ed/> and make copies.
2. Make copies of the student instructions.

MATERIALS (per student):

- 1 copy of *EHP Student Edition*, March 2005, or 1 copy of the article, "Battle Scars: Global Conflicts and Environmental Health" (page A994)
- 1 copy of the student instructions

VOCABULARY:

Alpha emitter
Chemotoxicity
Decommissioning
Eradication
Humanitarian
Internally displaced persons (IDPs)
Particulate matter
Potable water
Protocols
Refugees
Repatriation
Toxicologist
Typhoid

BACKGROUND INFORMATION:

The article provides an in-depth overview of the impact of war on environmental health. For further background, see "Global Resources: Abuse, Scarcity, and Insecurity," *EHP* 112:A168–A175 (2004). Other resources for further research are listed below.



RESOURCES:

International Campaign to Ban Landmines, <http://www.icbl.org>
Save the Children, <http://www.savethechildren.org>
UN Environment Programme, <http://www.unep.org>
Office of the UN High Commissioner for Refugees, <http://www.unhcr.ch>
UN World Food Programme, <http://www.wfp.org>
Nobel Foundation Conflict Map, <http://www.nobelprize.org/peace/educational>
National Geographic Society, <http://www.nationalgeographic.com>

Implementing the Lesson

INSTRUCTIONS:

- 1 Hand out copies of *EHP Student Edition*, March 2005, and refer your students to the article "Battle Scars: Global Conflicts and Environmental Health" or hand out article copies.
- 2 Hand out the student instructions.
- 3 Review the instructions with the students, calling their attention to the need to choose a region for their poster.
- 4 Have the students read the article and highlight and/or take notes as needed.
- 5 Lead a discussion listing the important environmental health consequences resulting from war.
- 6 Divide students into groups of four. Have each group select a region mentioned in the article to use as the subject of their poster.
- 7 Help students begin the research process using computers with Internet access.
- 8 Have groups present their posters to the class.

NOTES & HELPFUL HINTS:

- Several days should be allowed for the gathering of background and geographic information. Maps can be drawn by hand or copied, and can be illustrated by hand or with properly credited photographs.
- The issue of depleted uranium does not lend itself to geographic study given the limited data on where exposures occurred. The issues of refugees/IDPs, industrial contamination, oil well fires, and landmines are all more easily depicted on a map, and are therefore better choices.
- Students can present their work as time allows and even post their work in a school common area if desired.
- Research materials may be specific to the region or conflict, but much information is available on the websites of the nongovernmental organizations and humanitarian groups combating a given problem. See *Resources* section for websites of the groups mentioned in the article.
- A larger issue to raise with students when discussing this topic is the underlying cause of much of the environmental damage and human suffering described in the article: the use of violence to solve political or economic problems. Violence is a major public health issue in its own right, whether that violence is committed on an individual level (i.e., gun violence) or by groups (i.e., war).
- The environmental health sciences, including epidemiology, use mapping as a tool to identify patterns in disease incidence, spread, and exposure. These maps can range from neighborhood to regional scales. If students have access to enough detailed information, they may consider creating their map(s) to emphasize this application.

Aligning with Standards

SKILLS USED OR DEVELOPED:

Communication (note taking, oral, written—including summarization)
Comprehension (reading)
Creating maps
Reading maps and legends
Research
Tables (creating and reading)

SPECIFIC CONTENT ADDRESSED:

Environmental health, refugees, war, landmines, industrial contamination, depleted uranium, pesticides



NATIONAL SCIENCE EDUCATION STANDARDS MET:**Content Standards:**

Unifying Concepts and Processes Standard

- Systems, order, and organization.
- Evidence, models, and explanation.
- Change, constancy, and measurement.
- Evolution and equilibrium.

Science in Personal and Social Perspectives Standards

- Personal and community health
- Population growth
- 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

Teaching Standards:

Plan an inquiry-based science program

- Develop student understanding and nurture community of science learners
- Work within and across disciplines and grade levels

Guide and facilitate learning

- Support inquiries when interacting with students
- Orchestrate discourse among students about scientific ideas

Create learning environments that provide time, space, and resources for learning science

- Structure time to allow extended investigations
- Make tools, materials, media, and resources available to students
- Use resources outside of the school

Develop communities of science learners that reflect the intellectual rigor of scientific inquiry as well as attitudes and social values conducive to scientific learning

Nurture collaboration among students

▶Assessing the Lesson

Students' posters must indicate a clear understanding of the link between war and environmental health crises. Their choice of country and time period should represent an important example of environmental degradation due to human conflict. Posters should reflect one factor and one specific period detailed in the timeline. The title should indicate the country or region, the main environmental health factor(s), and the time period depicted. An excellent poster may include one main and several contributing factors (e.g., movement of refugees and subsequent deforestation). Indicators of change over time may include color gradations, arrows, or other means. A static map of the area does not fulfill the assignment.

The reference page should use a recognized format (MLA or other) and should include at least four sources for general reference material and credits for maps (if copied), timeline data, and photos. Students should be encouraged to make their posters colorful and visually interesting. Ideally, time should be allotted for students to present their work to their peers, and points should be given for clear and compelling explanations of their work.

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STUDENT INSTRUCTIONS: Mapping the Effects of War

Step 1: Read the article "Battle Scars: Global Conflicts and Environmental Health," *EHP Student Edition*, March 2005.

Step 2: Choose a conflict-torn country mentioned in the article and identify its main environmental health problem (s).

Step 3: Research the environmental consequences of war in this region using the Internet or the library.

Step 4: Create a poster displaying the following information:

- A map of the main country of interest and all its borders.
- A graphic depiction on this map of changes over time with respect to the main environmental health factor(s) affecting the region (for example, movement of refugees across borders)
- A timeline of major events influencing the environmental health factor(s) for your country.
- No poster is complete without:
 - A title, which includes time period
 - The scale used for the map
 - Labels for all countries and major geographic features
 - A legend showing the meaning of any symbols or colors used
 - Indicators of change over time
- Posters may be illustrated and include photos

Step 5: A separate sheet should be used for references, including credits for photos or maps. At least four sources should be cited as general reference material.

