- The by-products of industrialization and energy generation have often been disposed of randomly and haphazardly. Some of the most seriously contaminated toxic waste sites in the United States have been identified by the Environmental Protection Agency, and are known as Superfund sites. Assign groups of students to research and evaluate several Superfund sites in your state and prepare a report for the class. As a follow-up, students may contact an EPA administrator to obtain updates on the site's cleanup status. More information may be found at this web site: www.epa.gov/superfund/sites/
- Recent scientific evidence from the World Meteorological Organization shows that the 1990s were the warmest decade and the 1900s the warmest century during the last 1000 years. Ask students to research global temperatures since the 1860s and create a chart showing what years and decades were the warmest. Students can determine for themselves if, based on the data they obtain, they detect a warming trend.
- With only about 5% of the global population, the United States uses approximately 25% of the world's energy. The U.S. energy policy has sparked strong international criticism, as many in the global community fear that America's focus on using more fossil fuels puts the goals of the Kyoto Protocol out of reach. Research the current administration's energy policy. Who supports it, who is against it and why? Pair students from opposing groups together and ask them to "face off" in an imaginary dialogue. The teacher should provide prompts as starting points for the dialogue between those who support and oppose this energy policy. After the exercise, ask students to write summaries of what they learned from their partners over the course of their conversations. America's National Energy Policy may be found at this web site: www.whitehouse.gov/energy/
- Less than 3% of the Earth's water is fresh, and much of it is in polar ice or deep underground and difficult to reach. The United Nations recently warned that almost three billion people will face severe water shortages by the year 2025 if the world continues to consume water at the current rate. Although this problem is currently felt most strongly in semi-arid regions of sub-Saharan Africa and Asia, at least 120 million people in Europe lack access to clean water and sanitation. Break students into small groups and assign each group a country on a different continent to research. Students should identify their country's main source of fresh water and evaluate the overall health of their nation's water supply and population. As a follow-up, students may convene a mock U.N. and recommend a resolution to the global water crisis.

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Suggested Internet Resources

Periodically, Internet Resources are updated on our web site at www.LibraryVideo.com

- **www.ipcc.ch/**
  The Intergovernmental Panel on Climate Change attempts to offer objective analysis about the risks, impacts and solutions associated with global climate change.
- **youthxchange.e-meta.net/**
  The United Nations Educational, Scientific and Cultural Organization presents a program called youthXchange to help students learn about sustainable lifestyles and responsible consumption.
- **unfccc.int/resource/convkp.html**
  The Convention and Kyoto Protocol site provides the full text of the agreement and ratification updates.
- **www.un.org/popin/wdtrends.htm**
  The United Nations Population Division's World Population Trends presents a wealth of data on world population issues and trends.

Suggested Print Resources

- Bowden, Rob. *Overcrowded World? Our Impact on the Planet.* Raintree-Steck Vaughn, Austin, TX; 2002.
- Fridell, Ron. *Global Warming.* Franklin Watts, New York, NY; 2002.
- Morgan, Sally. *Alternative Energy Sources.* Heinemann Library, Chicago, IL; 2003.

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GLOBAL ISSUES for Students™

GLOBAL ENVIRONMENTAL ISSUES

Grades 9 & up

This guide is a supplement designed for teachers to use when presenting programs in the series, *Global Issues for Students*.

While science and technology have improved the standard of living for many people in the past fifty years, the global community has not been able to find solutions to major issues such as genocide, persistent poverty and environmental degradation. While the current wave of globalization has brought people in closer contact than ever before, it has also heightened our awareness of the tremendous gap in standards of living between the developed and developing worlds. *Global Issues for Students* will help viewers understand the historical causes, enduring effects and possible solutions to complex world problems. Students will increase their awareness of global issues that directly impact their lives, and in learning about these issues from a more global perspective, will become more knowledgeable citizens in our increasingly interconnected world.

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Program Summary

The challenge of how to balance global economic needs with protecting and preserving the environment has existed throughout human history. Many people believe the environmental challenges facing the world today are greater than ever before, with industrialization causing severe water and air pollution and with greenhouse gas emissions strongly linked to accelerated global warming. With world population totals at six billion, and with some projecting that number to double in the next fifty years, natural resources will become increasingly strained. Developed nations use a majority of the world's fossil fuels, but many developing nations like China are rapidly industrializing and crave the material possessions of the modern world — with possibly dire consequences for the global environment.

To address this issue, the United Nations sponsored the Kyoto Protocol in 1997, which set hard deadlines for reducing emissions of greenhouse gases. The ratification of Kyoto is a major global issue, as countries such as the United States reject the treaty's conditions, arguing that it places an unequal burden on them to reduce emissions while developing countries face no restrictions.

Complicating the global environmental debate even further is the fact that, while few disagree that the Earth is warming, many wonder whether human activity is solely to blame, or even whether the consequences will be so dire. Despite the strong nature of the debate and much uncertainty about the future, it is clear that balancing economic development with environmental needs is still a major challenge, and will remain so for generations to come.

Vocabulary

sustainable development — The type of development that balances current and future resource needs.

pesticides — Any material that is used for the purpose of repelling or killing weeds, rodents or other pests.

fossil fuels — Fuels such as oil, gas and coal that feed industrialization and economic development, but send pollution and greenhouse gas emissions into the atmosphere.

aqueduct — A channel or structure that carries water to cities. The ancient Romans used aqueducts to provide people with water.

Bubonic plague — A disease caused by a bacterium usually spread to people from infected rat fleas. In the Middle Ages in Europe, millions of people died from the plague. Outbreaks still occur in rural communities and cities.

The Industrial Revolution — The process of using machine power to replace people and animal power that began in England during the 18th century.

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PCBs — Also called polychlorinated biphenyls, a group of organic compounds that were originally produced for purposes such as electrical insulation. Since they are highly toxic, PCBs are no longer produced in the United States, yet PCB residue still affects marine environments.

greenhouse gases — Molecules in the Earth's atmosphere that absorb energy from the sun and warm the Earth's surface. Important greenhouse gases include carbon dioxide, water vapor and methane. Human activities increase the amount of these gases and are thought to lead to global warming.

Chernobyl — A town in Ukraine where a major nuclear accident occurred in 1986, from which radioactive contamination continues to plague the region.

global warming — An accelerated increase in the surface temperature of the Earth. The best scientific explanation for this phenomenon is the buildup of greenhouse gases such as carbon dioxide due to human activity.

malaria — A disease, transmitted by the bite of an infected mosquito, that kills approximately one million people a year in the developing world.

Ice Age — Any period of time in which the earth's surface was covered by glaciers. The last Ice Age ended about 10,000 years ago.

Montreal Protocol — An international treaty signed in 1987 that gradually phased out the use of ozone-depleting chemicals such as CFCs, or chlorofluorocarbons. Although the production of new CFCs has been banned in industrialized countries, they are still produced and used around the world.

CFCs — A family of chemicals used for such purposes as refrigeration and air conditioning, which contributes to the destruction of the ozone layer.

Kyoto Protocol — An agreement to reduce global greenhouse gas emissions adopted at the United Nations Framework Convention on Climate Change in Kyoto, Japan in 1997.

Pre-viewing Discussion

- Ask students to discuss a personal experience related to an environmental issue, such as air or water pollution.
- What are some different ways that students and their families could conserve energy around their homes?
- Many young people in your class are driving or will be driving soon. What criteria would students use to purchase an automobile? How important is fuel economy?

Focus Questions

1. In the future, where will most population growth take place? With what possible consequences?
2. What are the pros and cons associated with the use of pesticides and fossil fuels?

(Continued)

3. What environmental problems are associated with the Industrial Revolution?
4. What caused damage to the Aral Sea from 1965 to 1990?
5. Why is the Ganges so polluted?
6. Why did the Cuyahoga River catch fire in 1969?
7. What are some of the causes and effects of deforestation in the Amazon Region?
8. What is the leading scientific explanation for global warming?
9. How might the Earth be affected by global warming?
10. Why are some countries facing the problem of having many more elderly people than young?
11. What did the Montreal Protocol accomplish?
12. Why do some developed countries like the United States object to the Kyoto Protocol?

Follow-up Discussion

- The Kyoto Protocol places no restrictions on greenhouse gas emissions for developing countries. Why is it difficult for many people in the developing world to be concerned about environmental conservation?
- Although the rate of destruction has slowed, worldwide concern for the Amazon rain forest continues. Why is the Amazon region called "the lungs of the planet"? What are some of the causes and effects of the rain forest's disappearance?
- Perhaps the clearest reminder that we are all affected by environmental changes involves the climate. What is the leading explanation and some of the possible effects of the acceleration of global warming?
- Compare and contrast developed and developing nations. Who pollutes more?

Follow-up Activities

- Advocates of sustainable development say that environmental problems can't be viewed as the side effects of development, but need to be considered as a major part of any development plan. They argue that good economic development involves conservation of the environment in a sustainable manner. Ask students to research and develop an action plan to develop an environmentally sensitive area such as the Arctic Wildlife Refuge. What trade-offs would have to be made in order to implement an oil-drilling project in this region? What are the potential environmental impacts? Over the course of the activity, students should determine the viability of developing the region they are studying and present alternative scenarios, if necessary.

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