

## Overview

We encounter many types of risks every day. What is meant by the term risk? What types of risks do we encounter daily? Are all risks equally likely to occur? Are they all harmful? Why are we willing to take some risks but not others? Is anything really 100 percent risk free? In this activity, students will work together to explore these and other questions as they discuss, develop, and refine their definition and concept of risk and of risk assessment.

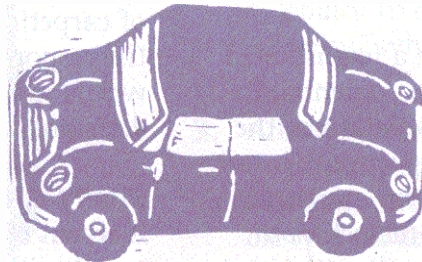
## Background

Nothing is 100 percent risk free; consequently, each day we make many decisions based on personal evaluations of risk situations. In our daily lives we are likely to encounter some risks (such as those related to driving or smoking) more than others (such as risks related to skydiving or earthquakes). Besides the personal risks that individuals must evaluate, many professionals also make assessments regarding risks to society (such as those related to air quality, nuclear power, or toxic waste disposal).

*Risk assessment* is the process by which one attempts to evaluate and predict the likelihood and extent of harm (in quantitative and qualitative terms) that may result from a health or safety hazard. Risk assessments determine the degree of certainty that something negative will occur. The negative consequences of an event make it a risk; however, the event may also have positive consequences. All risks involve varying degrees of chance, or probability, that something unpredicted will happen without any discernible human intention or observable cause. This dimension of chance will come up throughout the study of this module. (Please refer to pages 7-9 in the Background Information for Educators section for more information on risk assessment.)

It is important to recognize that we do not all evaluate risks in the same way. Professional risk analysts use quantitative scientific data and qualitative assessments based on best professional judgment to evaluate risks.

**Lay people**, however, will make evaluations (or judgments) about risks, but those judgments are typically based on *qualitative* information and perceptions. Those perceptions are usually based on varying characteristics such as familiarity, control, and exposure



### Subjects

Biology, Chemistry, Civics, Communications, Debate, Earth Sciences, Ecology, Environmental Science, Geography, Health, Language Arts, Physics, Social Studies

### Concepts

- ▶ Altering the environment affects all life forms—including humans—and the interrelationships that link them. (4.2)
- ▶ Cultural and societal perspectives influence the attitudes, beliefs, and biases of people toward the use of resources and environmental protection. (6.3)
- ▶ Most cultures have beliefs, values, and traditions that shape human interactions with the environment and its resources. (9.1)

### Skills

Comparing and Contrasting, Defining Issues, Evaluating, Interpreting, Presenting

### Objectives

Students will (1) develop a definition of risk and risk assessment, (2) become familiar with the concept of probability, (3) begin to explore the idea that there are different kinds of risks and that risk is perceived differently by different people, and (4) understand that hazards and risks exist in our daily lives.

### Materials

Copies of the Student Page "Group Responsibilities" on page 20 plus a blank overhead transparency.

### Time Considerations

Preparation: 20-30 minutes  
Activity:  
Part A—10 minutes  
Part B—25 minutes  
Part C—40 minutes

To better understand the role that risk plays in our society, we must learn the difference between *evaluating* risk and *managing* risk. Evaluating risk generally involves characterizing a risk by estimating the likelihood of its occurrence, the magnitude of the harm, and the extent of exposure. Managing risk involves deciding whether or not to control (or take) the risk, how to control the risk, and to what level the risk should be reduced.

**values** play a role in the evaluation and decision-making processes, at both the professional and lay levels. Lay people use their personal value system to decide how they will manage the risks they encounter. Risk experts use science and numbers to evaluate risks, but their decisions will reflect some degree of personal values. In short, decisions made by both professionals and lay people are never truly *value free*. In this activity, students will begin to define the term risk as they identify and qualitatively evaluate the risks they encounter daily. Later in the module, students will have the opportunity to learn more about decision making and risk.

wood, pine] trees. These defoliators injure trees by reducing photosynthesis and by interfering with food and water transport. All of these impacts affect tree growth rates. The current proposals for dealing with this crisis include introducing the insect's predator, spraying the area with insecticides, or doing nothing in the hope that the affected trees will be able to resist enough damage so as not to be completely wiped out in the area. The local Forest Service office is taking public comments regarding the situation for the next 3 weeks and urges as many people as possible to give their input

