



## I. INTRODUCTION TO TEACHERS

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To many people, radiation is something associated with a late-night news story about a nuclear power plant or weapons manufacturing. To the contrary, radiation is around us 24 hours a day in the food we eat, the place where we sleep, and where we work and play. Radiation also plays an important role in diagnostic and therapeutic medicine, food preservation, and scientific research. In addition, natural geologic processes that occur in the rocks and soils beneath our feet produce a radioactive gas called radon. This natural contaminant can accumulate to dangerously high concentrations in the air we breathe inside our homes, and is the second leading cause of lung cancer. The topic of radon as a social issue offers a superb opportunity to integrate math, social studies, science, and language arts. The social relevancy of the radon hazard helps to generate student interest and excitement. The enclosed activities focus on this unseen, poorly understood, but potentially dangerous radioactive phenomenon of nature called radon.

*Radon Alert* contains a series of investigations and extension activities exploring radon and its potential impact on the citizens of New Jersey. The investigations emphasize data gathering, graphing, and data analysis so that students are able to make inferences and draw conclusions about radon and its economic, political, social, and ethical ramifications.

The data used in this teacher's guide represent the latest synthesized research from federal, state and local agencies. The teacher's guide itself includes an introduction to the topic and a collection of 10 lesson plans and numerous extension activities that will help you, the classroom teacher, integrate radon with any thematic area in social studies, language arts, health, or math. Although the major topic is scientific in nature, the lesson plans and activities have been carefully selected to be integrated into the whole curriculum. An important objective of this program is to make science relevant and practical to the students. The activities develop and promote skills in language arts, data processing and interpretation, and critical thinking using a topic that is highly relevant to both scientific and societal issues. The companion teacher's guide focuses more specifically on the proficiencies in social studies, lan-

guage arts, health, and mathematics and is intended for use in junior high general academic curricula. The section on Background Information on Radon (Section III) provides a comprehensive and detailed overview. It is intended primarily for use by the teacher, as background information for the completion of the lesson plans.

The authors compiled this workbook to provide investigations that complement your curriculum by offering a set of experiments, surveys, and research data about a topic that is both relevant and practical for student exploration. As you and your students become better informed about this phenomenon of nature, you will be prepared to alert others to one of the unseen potential dangers that we face in our lives today.

### MAJOR PROGRAM OBJECTIVES

Upon completion of the radon-based lesson plans and extended learning activities, the student will be able to:

1. Identify the breakdown process called radioactivity
2. Consider the topic of radiation and the sources of radiation to the American public based on scientific data
3. Identify three types of radiation: alpha, beta, gamma
4. Measure the half-life of radioactive elements
5. Select the most appropriate graph to display specific data
6. Identify how people are exposed to radon
7. Evaluate health risks from radon exposure and other common sources of risk
8. Describe the interactions among geological, chemical, biological, and sociological processes to produce a socially-relevant environmental topic of importance

