

The purpose of this lesson is to provide students with an opportunity to solve problems utilizing the [IAQ Tools for Schools Action Kit Problem Solving Wheel](#).

TOPIC(S)			COMPOSITION OF AIR	DEFINING THE INDOOR ENVIRONMENT
	EFFECTS OF INDOOR AIR POLLUTION ON OCCUPANTS	✓	SOURCES OF INDOOR AIR POLLUTION	MOVEMENT OF AIR Natural and mechanical airflow (HVAC)
✓	IDENTIFYING INDOOR ENVIRONMENT POLLUTANTS	✓	SOLVING INDOOR ENVIRONMENT PROBLEMS (Preventing and Fixing)	VOCABULARY

## OBJECTIVE(S)

The students will be able to use [EPA's IAQ Tools for Schools Action Kit Problem Solving Wheel](#).

## SCIENCE/HEALTH STANDARD CORRELATIONS

### [National Science Education Standards, Science Content Standards](#)

#### 6.1 Science as Inquiry

- Levels K-12: Abilities necessary to do scientific inquiry, Understanding about scientific inquiry

#### 6.6 Science in Personal and Social Perspectives

- Levels K-4: Personal Health; Changes in environments
- Levels 5-8: Personal Health; Populations, resources, and environments, Natural hazards
- Levels 9-12: Personal and community health; Environmental quality; Natural and human-induced hazards

### [Mid-continent Research for Education and Learning \(McREL\), Science Standards](#)

Earth and Space Sciences 1.1, 1.4, 1.5 and Physical Sciences 8.1, 8.3, 8.5

\*See "Curriculum Connections" section for standards that apply to other content areas.

## SUGGESTED GRADE BAND

6-12 science

## ESTIMATED TIME LENGTH

1 class period

## LESSON PROCEDURES

The lesson is designed to be used with the [EPA's IAQ Tools for Schools Action Kit](#). You must have the [Problem Solving Wheel](#) (see Materials section) to implement this lesson.

1. Activate the prior knowledge during a brief discussion about indoor air pollution. Ask students if they know how to solve problems at the school related to indoor air quality (IAQ)?
2. Tell the students that they will be given an opportunity to solve hypothetical problems. Put the students into five groups. Give each group a scenario from the **Problem Solving Wheel Scenarios** (see Materials section) and each student a [Problem Solving Wheel](#) (see Materials section).
3. Explain how to use the [Problem Solving Wheel](#). Have students use the wheel to solve the problems on the scenario cards. Ask the students to use chart paper and markers to record the solutions they identify.
4. When the groups are finished, have each group share their scenario and solutions. After each group has a turn, ask the students to write a paragraph summarizing what they have learned.

## MATERIALS

markers, chart paper, masking tape, **Problem Solving Wheel Scenarios** (see IAQ Lesson 4 Supplement\_Problem Solving Wheel Scenarios.doc), [Problem Solving Wheel](#) from the [EPA's IAQ Tools for Schools Action Kit](#) (one per student).

*\* To order EPA's Indoor Air Quality Tools for Schools (IAQ TfS) Action Kit and/or Problem Solving Wheel tool contact IAQ INFO at 800-438-4318 or visit [www.epa.gov/iaq](http://www.epa.gov/iaq).*

## GROUPING

whole class, small group, independent

## ASSESSMENT

Teacher can observe students for active participation problem solving. Teacher can assess the students' solutions. Teacher can evaluate writing sample.

## MODIFICATIONS/EXTENSIONS

Have groups rotate cards to have an opportunity to solve all scenarios. Compare solutions.

## CURRICULUM CONNECTIONS

Reading and Language Arts, [International Reading Association and National Council of Teachers of English Standards, Standards for the English Language Arts](#)

- 4: Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.
- 5: Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes

- 6: Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language, and genre to create, critique, and discuss print and nonprint texts
- 7: Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and nonprint texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience
- 8: Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge
- 12: Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information)

**Social Studies, Center for Civic Education, National Standards for Civics and Government**

- Content Standard K-12, V: What are the Roles of the Citizen in American Democracy? /What are important responsibilities of Americans?

**Health, American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD), National Health Education Standards**

- Health Education Standard 1, Grades PK-12: Students will comprehend concepts related to health promotion and disease prevention

**Math, National Council of Teachers of Mathematics, Math Standards**

- Data Analysis and Probability  
Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer

## RESOURCES

- [EPA's IAQ Tools for Schools Action Kit](#) (3<sup>rd</sup> Edition)