The purpose of this lesson is to encourage students to prevent indoor environment problems by promoting public awareness.

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 create a billboard design educating building occupants on at least one indoor air quality (IAQ) problem.

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, health, or language arts

ESTIMATED TIME LENGTH

1 – 2 class periods

LESSON PROCEDURES

PHASE 1 – ACTIVATE PRIOR KNOWLEDGE/CLASS DISCUSSION

Display photographs of billboards or samples of public service announcements (PSAs) from magazines (such as "Got Milk" advertisements). Explain to students that a billboard is one type of PSA. Discuss that all billboards advertise something (some are commercial, some are for the benefit of the public, and some are a combination of

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both). Ask students to name types of billboards they have seen. Have students generate a list of the characteristics of *effective* billboards. Record the students' ideas on chart paper. Guide students' ideas in this discussion as necessary (use large print, not too much information, catchy slogan, etc.).

PHASE 2 – DESIGN BILLBOARDS

Tell students they will be designing IAQ billboards on poster board. They should choose an IAQ topic they feel the public needs to be informed of (such as radon, mold, asthma, or second hand smoke). Provide each student with a copy of the IAQ Backgrounder (see Materials Section) found in the EPA's *IAQ Tools for Schools* Action Kit. Have students silently read the handout and decide on the topic they would like to design their billboard around. Have students complete the **IAQ Billboard Proposal Form** (see Materials section) and turn it in to you for approval before beginning their billboard. On the **IAQ Billboard Proposal Form** the students will identify two topics. You can determine one they will use so multiple billboards on the same topics can be avoided.

PHASE 3 – CREATE AND SHARE BILLBOARDS

Pass back the proposals. Have students create the billboard. After they are finished, display the billboards in a location where they can be viewed by their classmates. Let the students take a "road trip" to see the billboards. Have them select one billboard (other than their own) that they really learned from or appreciated. Ask them to write a one paragraph essay about that billboard, explaining their selection.

MATERIALS

chart paper, markers, crayons, colored pencils, white poster board (one per student), poster paint, sample PSAs to display, IAQ Backgrounder from the EPA's IAQ Tools for Schools Action Kit (one per student), **IAQ Billboard Proposal Form**—one per student (see IAQ Lesson 3 Supplement_IAQ Billboard Proposal Form.doc).

**To order EPA's Indoor Air Quality Tools for Schools (IAQ TfS) Action Kit or any of the supplemental materials found in the Kit, contact IAQ INFO at 800-438-4318 or visit http://www.epa.gov/iaq/schools/actionkit.html.*

GROUPING

whole class, independent

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ASSESSMENT

Teacher can observe for active participation during the class discussion. Teacher can evaluate each billboard to check for understanding of the IAQ topic. Teacher can evaluate writing sample.

MODIFICATIONS/EXTENSIONS

Have students work in teams or with partners to create the billboard. Assign students billboard topics to research and create instead of allowing them to choose their own. Display the billboards around the school. Display the billboards at several local businesses for the benefit of community members. Develop awards for the billboards (such as most creative design or most informative). Have students vote for the billboard award winners. To integrate technology, have students create the billboard design using graphic arts software on the computer.

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
- 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

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Technology, International Society for Technology in Education (ISTE), National Educational Technology Standards Project (NETS)

- Performance Indicators 3-5
  5: Use general purpose productivity tools and peripherals to support personal productivity, remediate skill deficits, and facilitate learning throughout the curriculum. (3)
  6: Use technology tools (e.g., multimedia authoring, presentation, Web tools, digital cameras, scanners) for individual and collaborative writing, communication, and publishing activities to create knowledge products for audiences inside and outside the classroom. (3, 4)
  8: Use technology resources (e.g., calculators, data collection probes, videos, educational software) for problem solving, self-directed learning, and extended learning activities. (5, 6)
- Performance Indicators 6-8
  5: Apply productivity/multimedia tools and peripherals to support personal productivity, group collaboration, and learning throughout the curriculum. (3 ,6)
  6: Design, develop, publish, and present products (e.g., Web pages, videotapes) using technology resources that demonstrate and communicate curriculum concepts to audiences inside and outside the classroom. (4, 5, 6)
  8: Select and use appropriate tools and technology resources to accomplish a variety of tasks and solve problems. (5, 6)
  10: Research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources concerning real-world problems. (2, 5, 6)
- Performance Indicators (9-12)
  7: Routinely and efficiently use online information resources to meet needs for collaboration, research, publication, communication, and productivity. (4, 5, 6)
  8: Select and apply technology tools for research, information analysis, problem solving, and decision making in content learning. (4, 5)
  10: Collaborate with peers, experts, and others to contribute to a content-related knowledge base by using technology to compile, synthesize, produce, and disseminate information, models, and other creative works. (4, 5, 6)

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 (3rd Edition), Reference Guide, Section 4-6, Pages 13 - 20

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