

# Lesson A4 How Does Air Pollution Affect People?

## Air Quality Index

The Air Quality Index (AQI) is a tool used to measure the daily air quality in a given location. It tells you how polluted the air is and what health effects may be related to current air quality. The Environmental Protection Agency (EPA) monitors the air quality for five different pollutants: ozone, particle pollution (PM), carbon monoxide, nitrogen dioxide and sulfur dioxide.

The AQI is a point system ranging from 1-500. Higher numbers mean greater levels of pollution, and bigger health concerns. The AQI lets you know how your air quality can affect your health. To make this easier, the EPA divided the AQI into six categories and assigned each one a color, as seen in the chart below.



Photo ©U.S. Department of Interior

Numerical Value	Color	Level of Health Concern	Meaning
0-50	Green	Good	Air quality is satisfactory. Pollution poses little or no risk.
51-100	Yellow	Moderate	Air quality is acceptable, but for some pollutants there may be a moderate health concern for a small number of people who are very sensitive to pollution
101-150	Orange	Unhealthy for Sensitive Groups	Members of sensitive groups may experience health effects. Most people are not likely to be affected.
151-200	Red	Unhealthy	Everyone may begin to experience health effects. Sensitive groups may begin to experience more serious health effects.
201-300	Purple	Very Unhealthy	Health alert. Everyone may experience more serious health effects.
301-500	Maroon	Hazardous	Health warnings of emergency condition. The entire population is likely to be affected.

(Source: U.S. EPA: AIRNow)

## Air Quality Actions Days

Action days are called on days when the AQI moves into an unhealthy range. Action days are called by different agencies in different areas, so in one place the action day may be called when the AQI reaches orange, while in another place, it is called when the AQI reaches red. In any case, when an action day is called, a few things you can do are:

- Conserve energy
- Try to limit driving or do not drive at all – walk, bike or use mass transit
- Try to reduce your exposure to air pollution by avoiding heavy exercise outside

To find out if your area participates in action days or to check the AQI, follow this link: <http://www.airnow.gov/index.cfm?action=airnow.actionday>



### Did you know...

In heavily polluted cities like Beijing and Mexico City, Air Quality Action Days are a common occurrence and residents are advised to stay indoors. Those who do venture out often wear face masks for protection. Beijing suffers so greatly from pollution that the government calls days with relatively little pollution “Blue Sky Days.”

# Activity A4b

## AQI Role Play

### Objectives: Students will...

- Understand how to read and interpret the Air Quality Index.

*Time:* 45 minutes

*Location:* Classroom

### Materials:

- Printout or newspaper with the day's weather report (make sure it has the AQI)
- Role play cards

### Discussion:

What is the Air Quality Index? What does it mean and how does it affect what we do?

Show students an AQI Index chart (easily found on the Internet or in weather reports) and briefly review each of the levels. Then the chart out of sight.

1. Divide the class into pairs and give each pair a Role Play Card.
2. Tell the class that each card has an AQI color on the top and a situation that each pair must act out. The object is to act out the appropriate action to take in that situation for that AQI color. Students may use body gestures, speech and even phrases describing the air quality conditions, but they may not reveal their color. The class must guess their color.
3. Give each pair a few minutes to work out a skit. When everyone is ready, have the class sit down and watch as each pair goes up to present their skit.
4. The class should not guess the color out loud until the skit is finished.



### AQI Red

**What's the story?** You and your cousin were going to pick up some books at the library. The library is four blocks away. How will you get there?

**Things to think about:** 4 blocks is not far to walk, ride a bike or take a bus. On a red AQI day, everyone can feel the effects of pollution with heavy exercise. Walking slowly might be OK unless someone is sensitive to pollution. Driving a car would contribute more pollution but would reduce personal exposure. Sometimes it might be better to stay home inside until the air is cleaner.

### AQI Yellow

**What's the story?** You and your cousin were going to pick up some books at the library. The library is four blocks away. How will you get there?

**Things to think about:** 4 blocks is not far to walk, ride a bike or take a bus. On a yellow AQI day, it should be fine to ride or walk unless someone is extremely sensitive to pollution.

# Activity A4b

## AQI Role Play



### AQI Orange

**What's the Story?** Two of you are playing outside. One of you has asthma. It is a hot and sunny day and you begin coughing. What should you do?

**Things to think about:** On an orange day, people with asthma could be affected by the air quality and it might be better to play indoors.

### AQI Green

**What's the story?** Two of you are playing outside. One of you has asthma. It is a hot and sunny day and you begin coughing. What should you do?

**Things to think about:** Green days are great times to be outside. The air quality should be fine even for someone with asthma. If anyone (with or without asthma) starts coughing or has trouble breathing, they should stop and rest.

### AQI Purple

**What's the story?** You and your friend both love playing soccer. You want to go outside to the park and kick the ball around. What should you do?

**Things to think about:** The air is very unhealthy for everyone on purple days. You should avoid physical activity outdoors. It may be better to wait for a cleaner day to kick the soccer ball around.

### AQI Green

**What's the story?** You and your friend both love playing soccer. You want to go outside to the park and kick the ball around. What should you do?

**Things to think about:** On a green day, go outside and play!

# Activity A4b AQI Role Play



## AQI Green

**What's the Story?** You are an elderly grandparent and young grandchild. You want to go to the near-by supermarket to get some ice cream because it is such a hot day. How do you get there?

**Things to think about:** On a green day, walking to the corner should be fine even for an elderly person and a very young person, as long as it's not too hot.

## AQI Orange

**What's the story?** You are an elderly grandparent and young grandchild. You want to go to the near-by supermarket to get some ice cream because it is such a hot day. How do you get there?

**Things to think about:** On an orange day, it is better for an elderly person not to over-exert themselves outside, as they are considered to be in the sensitive group. It may be better to wait or drive.

## AQI Red

**What's the story?** You and your best friend want to go see the new movie that is out at the theater. The theater is 10 miles away. One of your parents could drive you if necessary. What should you do?

**Thing to think about:** If you can avoid driving on red days, it will help reduce emissions into the already polluted air. Public transportation could be an option or staying at home to watch a DVD.

## AQI Green

**What's the story?** You and your best friend want to go see the new movie that is out at the theater. The theater is 10 miles away. One of your parents could drive you if necessary. What should you do?

**Thing to think about:** Even on a green day, not driving helps reduce emissions. Green days are also great for going outside. If you really must see a movie, public transportation is an option.