

# Air Quality Guide for Particle Pollution

Harmful particle pollution is one of our nation's most common air pollutants. Use the chart below to help reduce your exposure and protect your health. Visit [AirNow.gov](http://www.airnow.gov) for your local air quality forecast ([www.airnow.gov](http://www.airnow.gov)).

| Air Quality Index                        | Who Needs to be Concerned?  | What Should I Do?  |
|--|---|--|
| Good (0-50)                              |   | It's a great day to be active outside.   |
| Moderate (51-100)                        | Some people who may be unusually sensitive to particle pollution.   | <p><b>Unusually sensitive people:</b> Consider making outdoor activities shorter and less intense. Watch for symptoms such as coughing or shortness of breath. These are signs to take it easier.</p> <p><b>Everyone else:</b> It's a good day to be active outside.</p>   |
| Unhealthy for Sensitive Groups (101-150) | Sensitive groups include <b>people with heart or lung disease, older adults, children and teenagers, minority populations, and outdoor workers.</b> | <p><b>Sensitive groups:</b> Make outdoor activities shorter and less intense. It's OK to be active outdoors, but take more breaks. Watch for symptoms such as coughing or shortness of breath.</p> <p><b>People with asthma:</b> Follow your asthma action plan and keep quick relief medicine handy.</p> <p><b>People with heart disease:</b> Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your health care provider.</p> |
| Unhealthy (151-200)                      | <b>Everyone</b>   | <p><b>Sensitive groups:</b> Avoid long or intense outdoor activities. Consider rescheduling or moving activities indoors.*</p> <p><b>Everyone else:</b> Reduce long or intense activities. Take more breaks during outdoor activities.</p>   |
| Very Unhealthy (201-300)                 | <b>Everyone</b>   | <p><b>Sensitive groups:</b> Avoid all physical activity outdoors. Reschedule to a time when air quality is better or move activities indoors.*</p> <p><b>Everyone else:</b> Avoid long or intense activities. Consider rescheduling or moving activities indoors.*</p>   |
| Hazardous (301-500)                      | <b>Everyone</b>   | <p><b>Everyone:</b> Avoid all physical activity outdoors.</p> <p><b>Sensitive groups:</b> Remain indoors and keep activity levels low. Follow tips for keeping particle levels low indoors.*</p>   |

**\*Note:** If you don't have an air conditioner, staying inside with the windows closed may be dangerous in extremely hot weather. If you are hot, go someplace with air conditioning or check with your local government to find out if cooling centers are available in your community.

## Key Facts to Know About Particle Pollution:

- Particle pollution can cause serious health problems, including asthma attacks, heart attacks, strokes and early death.
- Particle pollution can be a problem at any time of the year, depending on where you live.
- You can reduce your exposure to ozone pollution and still get exercise! Use [AirNow's](#) ([www.airnow.gov](http://www.airnow.gov)) current Air Quality Index (AQI) information and forecasts to plan your outdoor activities.

### What is particle pollution?

Particle pollution comes from many different sources. Fine particles (2.5 micrometers in diameter and smaller) come from power plants, industrial processes, vehicle tailpipes, woodstoves, and wildfires. Coarse particles (between 2.5 and 10 micrometers) come from crushing and grinding operations, road dust, and some agricultural operations.

### Why is particle pollution a problem?

Particle pollution causes a number of serious health problems, including coughing, wheezing, reduced lung function, asthma attacks, heart attacks and strokes. It also is linked to early death in people with heart or lung disease.

### Do I need to be concerned?

It's always smart to pay attention to your air quality, but it's especially true for people who may be at greater risk. They include:

- People with heart disease.
- People with lung disease, including asthma and Chronic Obstructive Pulmonary Disease (COPD).
- Older adults.
- Children and teenagers because their lungs are still developing, and they breathe more air per pound of body weight than adults.
- Pregnant people.
- Minority populations.
- Outdoor workers.

### How can I protect myself?

Use [AQI forecasts, available on AirNow.gov](#) to plan outdoor activities. On days when the AQI is forecast to be unhealthy, check AirNow for your current air quality and take simple steps to reduce your exposure, including:

- Choose a less intense activity.
- Shorten your outdoor activities.
- Reschedule activities.
- Exercise away from busy roads.

### When particle levels are high outdoors, they can be high indoors too.

Keep particles lower indoors:

- Reduce your [use of fireplaces and wood stoves](#). And don't use candles or smoke indoors.
- Use [HEPA air filters \(https://www.epa.gov/indoor-air-quality-iaq\)](https://www.epa.gov/indoor-air-quality-iaq) in your HVAC system.
- Buy or make your own portable air cleaner designed to reduce particles indoors.

### Can I help reduce particle pollution?

Yes! Here are a few tips.

- Drive less: bike or walk, carpool, use public transportation.
- Use energy efficiently; choose ENERGY STAR certified products.
- For cleaner heat, upgrade to a heat pump, electric heat, or ductless heat pumps.
- Keep car, boat and other engines tuned.
- If you use wood for heat, burn it efficiently. Check [EPA's Burn Wise Program](#) for tips ([www.epa.gov/burnwise](http://www.epa.gov/burnwise)).
- Don't burn leaves, garbage, plastic or rubber.



# Air Quality and Outdoor Activity Guidance for Schools

Regular physical activity — at least 60 minutes each day — promotes health and fitness. The table below shows when and how to modify outdoor physical activity based on the Air Quality Index. This guidance can help protect the health of all children, including teenagers, who are more sensitive than adults to air pollution. Check the air quality daily at [www.airnow.gov](http://www.airnow.gov).

| Air Quality Index   | Outdoor Activity Guidance   |
|---|---|
|  <p>green</p> <p>GOOD</p>                            | <p>Great day to be active outside!</p>  |
|  <p>yellow</p> <p>MODERATE</p>                       | <p>Good day to be active outside!</p> <p>Students who are unusually sensitive to air pollution could have symptoms.*</p>  |
|  <p>orange</p> <p>UNHEALTHY FOR SENSITIVE GROUPS</p> | <p>It's OK to be active outside, especially for <b>short activities</b> such as recess and physical education (PE).</p> <p>For <b>longer activities</b> such as athletic practice, take more breaks and do less intense activities.</p> <p>Watch for symptoms and take action as needed.*</p> <p>Students with asthma should follow their asthma action plans and keep their quick-relief medicine handy.</p> |
|  <p>red</p> <p>UNHEALTHY</p>                       | <p>For <b>all outdoor activities</b>, take more breaks and do less intense activities.</p> <p>Consider moving <b>longer or more intense activities</b> indoors or rescheduling them to another day or time.</p> <p>Watch for symptoms and take action as needed.*</p> <p>Students with asthma should follow their asthma action plans and keep their quick-relief medicine handy.</p>                         |
|  <p>purple</p> <p>VERY UNHEALTHY</p>               | <p>Move <b>all activities</b> indoors or reschedule them to another day.</p>  |

## \* Watch for Symptoms

Air pollution can make asthma symptoms worse and trigger attacks. Symptoms of asthma include coughing, wheezing, difficulty breathing, and chest tightness. Even students who do not have asthma could experience these symptoms.

### If symptoms occur:

The student might need to take a break, do a less intense activity, stop all activity, go indoors, or use quick-relief medicine as prescribed. If symptoms don't improve, get medical help.

## Go for 60!

CDC recommends that children get 60 or more minutes of physical activity each day. [www.cdc.gov/healthyyouth/physicalactivity/guidelines.htm](http://www.cdc.gov/healthyyouth/physicalactivity/guidelines.htm)

## Plan Ahead for Ozone

There is less ozone in the morning. On days when ozone is expected to be at unhealthy levels, plan outdoor activities in the morning.

## Questions and Answers

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### How long can students stay outside when the air quality is unhealthy?

There is no exact amount of time. The worse the air quality, the more important it is to take breaks, do less intense activities, and watch for symptoms. Remember that students with asthma will be more sensitive to unhealthy air.

### Why should students take breaks and do less intense activities when air quality is unhealthy?

Students breathe harder when they are active for a longer period of time or when they do more intense activities. More pollution enters the lungs when a person is breathing harder. It helps to:

- ✓ reduce the amount of time students are breathing hard (e.g., take breaks; rotate players frequently)
- ✓ reduce the intensity of activities so students are not breathing so hard (e.g., walk instead of run)

### Are there times when air pollution is expected to be worse?

**Ozone pollution** is often worse on hot sunny days, especially during the afternoon and early evening. Plan outdoor activities in the morning, when air quality is better and it is not as hot.

**Particle pollution** can be high any time of day. Since vehicle exhaust contains particle pollution, limit activity near idling cars and buses and near busy roads, especially during rush hours. Also, limit outdoor activity when there is smoke in the air.

### How can I find out the daily air quality?

Go to [www.airnow.gov](http://www.airnow.gov). Many cities have an Air Quality Index (AQI) *forecast* that tells you what the local air quality will be later today or tomorrow, and a *current* AQI that tells you what the local air quality is now. The AirNow website also tells you whether the pollutant of concern is ozone or particle pollution. Sign up for emails, download the free AirNow app, or install the free AirNow widget on your website. You can also find out how to participate (and register your school) in the School Flag Program ([www.airnow.gov/schoolflag](http://www.airnow.gov/schoolflag)).

### If students stay inside because of unhealthy outdoor air quality, can they still be active?

It depends on which pollutant is causing the problem:

**Ozone pollution:** If windows are closed, the amount of ozone should be much lower indoors, so it is OK to keep students moving.

**Particle pollution:** If the building has a forced air heating or cooling system that filters out particles then the amount of particle pollution should be lower indoors, and it is OK to keep students moving. It is important that the particle filtration system is installed properly and well maintained.

### What physical activities can students do inside?

Encourage indoor activities that keep all students moving. Plan activities that include aerobic exercise as well as muscle and bone strengthening components (e.g., jumping, skipping, sit-ups, pushups). If a gymnasium or open space is accessible, promote activities that use equipment, such as cones, hula hoops, and sports balls. If restricted to the classroom, encourage students to come up with fun ways to get everyone moving (e.g., act out action words from a story). Teachers and recess supervisors can work with PE teachers to identify additional indoor activities.

### What is an asthma action plan?

An asthma action plan is a written plan developed with a student's doctor for daily management of asthma. It includes medication plans, control of triggers, and how to recognize and manage worsening asthma symptoms. See [www.cdc.gov/asthma/actionplan.html](http://www.cdc.gov/asthma/actionplan.html) for a link to sample asthma action plans. When asthma is well managed and well controlled, students should be able to participate fully in all activities. For a booklet on "Asthma and Physical Activity in the School," see <http://www.nhlbi.nih.gov/health/resources/lung/asthma-physical-activity.htm>.

# Air Quality Guide for Ozone

Ground-level ozone is one of our nation's most common air pollutants. Use the chart below to help reduce your exposure and protect your health. Visit [AirNow.gov](http://AirNow.gov) for your local air quality forecast ([www.airnow.gov](http://www.airnow.gov)).

| Air Quality Index                        | Who Needs to be Concerned?   | What Should I Do?  |
|--|--|--|
| Good (0-50)                              |  | It's a great day to be active outside.   |
| Moderate (51-100)                        | Some people who may be unusually sensitive to ozone.   | <p><b>Unusually sensitive people:</b> Consider making outdoor activities shorter and less intense. Watch for symptoms such as coughing or shortness of breath. These are signs to take it easier.</p> <p><b>Everyone else:</b> It's a good day to be active outside.</p>   |
| Unhealthy for Sensitive Groups (101-150) | Sensitive groups include <b>people with lung disease such as asthma, older adults, children and teenagers, and people who are active outdoors.</b> | <p><b>Sensitive groups:</b> Make outdoor activities shorter and less intense. Take more breaks. Watch for symptoms such as coughing or shortness of breath. Plan outdoor activities in the morning when ozone is lower.</p> <p><b>People with asthma:</b> Follow your asthma action plan and keep quick-relief medicine handy.</p> <p><b>Everyone else:</b> Consider making outdoor activities shorter and less intense.</p>   |
| Unhealthy (151-200)                      | <b>Everyone</b>  | <p><b>Sensitive groups:</b> Do not do long or intense outdoor activities. Schedule outdoor activities in the morning when ozone is lower. Consider moving activities indoors.</p> <p><b>People with asthma:</b> Follow your asthma action plan and keep quick-relief medicine handy.</p> <p><b>Everyone else:</b> Reduce long or intense outdoor activity. Take more breaks, do less intense activities. Schedule outdoor activities in the morning when ozone is lower.</p> |
| Very Unhealthy (201-300)                 | <b>Everyone</b>  | <p><b>Sensitive groups:</b> Avoid all physical activity outdoors. Move activities indoors* or reschedule to when air quality will be better. People with asthma: Follow your asthma action plan and keep quick-relief medicine handy.</p> <p><b>Everyone else:</b> Avoid long or intense outdoor exertion. Schedule outdoor activities in the morning when ozone is lower. Consider moving activities indoors.*</p>  |
| Hazardous (301-500)                      | <b>Everyone</b>  | <p><b>Everyone:</b> Avoid all physical activity outdoors.*</p> <p><b>People with asthma:</b> Follow your asthma action plan and keep quick-relief medicine handy.</p>  |

**\*Note:** If you don't have an air conditioner, staying inside with the windows closed may be dangerous in extremely hot weather. If you are hot, go someplace with air conditioning or check with your local government to find out if cooling centers are available in your community.

## Key Facts to Know About Ozone:

- Ozone in the air we breathe can cause serious health problems, including breathing difficulty, asthma attacks, lung damage, and even death from lung disease.
- Ozone forms in sunlight, usually on hot summer days. Ozone is worse in the afternoon and early evening, so plan outdoor activities for the morning.
- You can reduce your exposure to ozone and still get exercise! Use [AirNow's](https://www.airnow.gov) ([www.airnow.gov](https://www.airnow.gov)) current Air Quality Index (AQI) information and forecasts to plan your outdoor activities.

## What is ozone?

Ozone is a colorless gas that can be good or bad, depending on where it is. Ozone up high in the stratosphere forms the ozone layer, which shields the earth from the sun's ultraviolet rays. But ozone at ground level, where we breathe, can harm human health. Ground-level ozone forms when two types of pollutants, volatile organic compounds and nitrogen oxides, react in sunlight. These pollutants come from sources such as vehicles, industries, power plants, and products such as solvents and paints.

## Why is ozone a problem?

Ozone can cause health problems, including coughing, breathing difficulty, and lung damage. Exposure to ozone can make the lungs more susceptible to infection, aggravate lung diseases, increase the frequency of asthma attacks, and increase the risk of death from lung disease.

## Do I need to be concerned?

Even healthy adults can experience ozone's harmful effects, but some people may be at greater risk. They include:

- People with lung disease such as asthma.
- Children, including teenagers, because their lungs are still developing, and they breathe more air per pound of body weight than adults.
- Older adults.
- People who are active outdoors, including outdoor workers.

## How can I protect myself?

**Use the Air Quality Index (AQI) to plan outdoor activities** when ozone levels are lower. Check [AirNow.gov](https://www.airnow.gov), download the free AirNow app, or install the free AirNow widget on your website.

**Find the app** (<https://www.airnow.gov/airnow-mobile-app/>)

**Find the widget** (<https://www.airnow.gov/aqi-widgets/>)

Stay healthy: exercise, eat a balanced diet, and keep asthma under control with your asthma action plan.

When you see that the AQI is unhealthy, take simple steps to reduce your exposure:

- Choose a less intense activity.
- Shorten or take more breaks during outdoor activity.
- Reschedule activities to the morning or to another day.
- Move your activity inside where ozone levels are usually lower.

## Can I help reduce ozone?

Yes! Here are a few tips.

- Drive less: bike or walk, carpool, or use public transportation.
- Turn off lights and devices that you are not using.
- Keep your vehicle engine tuned, and don't let your engine idle.
- Inflate tires to the recommended pressure.
- When refueling, stop when the pump shuts off. Avoid spilling fuel and tighten your gas cap.
- Use low-VOC paint and cleaning products; seal and store them so they can't evaporate.
- Watch for Ozone Action Days in your area.



Office of Air Quality and Radiation

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[www.airnow.gov](https://www.airnow.gov)

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