

Air Quality Index School Flag Program Handbook

Environmental Engineering and Permitting Division
Air Monitoring and Outreach



Air Quality Index School Flag Program Handbook

Table of Contents

| | |
|----------------------------------|-----|
| Welcome | 3 |
| Overview | 4 |
| Successful Steps..... | 5 |
| Background Information | 6 |
| Air Quality | 7 |
| Resources | 8-9 |
| Frequently Asked Questions | 10 |

For more information, visit Broward.org/Air

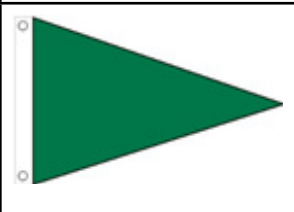
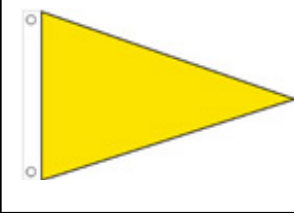
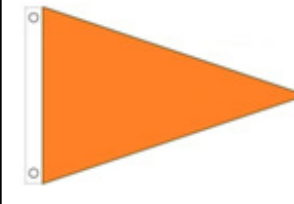


Broward County Board of County Commissioners
Environmental Engineering and Permitting Division
Air Monitoring and Outreach Section
1 N. University Drive, Mailbox 201 • Plantation, FL 33324 • **954-519-1483**

Welcome to Broward County's Air Quality Index (AQI) Flag Program

The Broward Air Quality Index (AQI) School Flag Program helps children, parents, the community and school personnel become aware of daily outdoor air quality conditions using brightly colored flags. Each day, a flag is raised in front of participating schools that signal the level of air pollution for that day. The flag colors correspond to the colors used in the Environmental Protection Agency's (EPA) Air Quality Index, which tells how clean or polluted the air is for that day.

Flags Explained

| Flag | Color | What does it mean? |
|---|-------------|---|
|  | Green Flag | Indicates Good Air Quality |
|  | Yellow Flag | Indicates Moderate Air Quality |
|  | Orange Flag | Indicates Air Quality is Unhealthy for Sensitive Groups |

Note: The AQI Index is comprised of six air quality levels; however, in South Florida, any AQI conditions above the Orange flag are considered rare. In the event we do experience unhealthy or very unhealthy air quality, health advisories will be issued from the Environmental Engineering and Permitting Division (EPPD) in the local media.

Air Quality Synopsis

- Air Quality is a measurement of the quality of the air. **Air Quality** can be affected by **pollutants** released from **stationary sources** as well as **mobile sources**.
- **Transportation** is the **number one source** of **air pollution** in Broward County.
- In Broward County, the two most common pollutants of Air Quality are: **Ozone** and **Particulate Matter**.
- Broward County's Air Quality is **Good 80%** of the year.
- Broward County has **six monitoring stations** located throughout the county that measure and report on the level of pollutants in our air.
- The Environmental Protection Agency maintains a website called **AirNow** strictly dedicated to forecasting and providing observational **AQI data**.

How does the Broward AQI School Flag Program work?

Application/Set Up Program

Schools interested in participating in the Broward AQI School Flag Program can email the Broward County Environmental Engineering and Permitting Division (EPPD) at airoutreach@broward.org.

If your school is selected, EPPD will register your school on EPA's school flag website. EPPD will provide the selected schools with all the materials needed to implement the program, which include:

- 3 Flags: Green, Yellow, and Orange.
- Air Quality Information Poster (Poster should be displayed somewhere in the school, in high traffic area)
- *Incentives provided for students actively participating in program. Limited to 3-5 students per school.
- *All necessary materials and resources for teachers and the school to have a successful program.
- The program will require each participating school to:
 - Select a School Flag Program Coordinator (Preferably a Science teacher or Health/Physical Education teacher)
 - Have the School Flag Program Coordinator work closely with EPPD staff to help establish the program

Duties/Established Program

Check the air quality each morning via one of the following options:

- ✓ Opening the Broward County Air Quality School Flag Program webpage
- ✓ Subscribing to **EnviroFlash** which allows anyone to get the daily air quality forecast sent to your email, cell phone or Twitter
- ✓ Viewing the **AirNow** website
- ✓ Using the Air Now Mobile Application (available on the Android and Apple)
- ✓ Receiving notifications from EPPD staff when the AQI goes out of the good (green) range.

1) Coordinate with science club or school patrols to hang the corresponding flag that represents that day's air quality early each morning.

2) Include an air quality message about the outdoor air quality during the morning announcements (as a part of the weather forecast or any other appropriate portion).



Steps for a Successful School Flag Program

Step 1: Contact EEPD to obtain the flags

Email airoutreach@broward.org to inform us of your interest in our AQI Flag Program. If approved, you will receive three flags: green, yellow, orange. The flags are rectangle style and there are two options for dimensions: 2'x3' flags and 3'x5' flags. Please contact EEPD so we can place the most appropriately sized flags for your school.

Step 2: Educate and inform the school and the community at the start of the program

Choose a date to begin flying your flags, and then educate and inform your school and the surrounding community. EEPD will register your program on **EPA's school flag website** under "School Flag Program Registration Form". EPA will add your school to the online table of participating schools and will send you an official participation certificate for display. Train school personnel about the Air Quality Index and the Flag Program so they can help administer the program and teach the students.

Step 3: Find out the daily air quality forecast and fly the corresponding flag

Like the weather, air quality changes from day to day. Your local or state air quality agency makes a daily air quality forecast that predicts the AQI color for both ozone and particle pollution. The forecast appears in the early afternoon and predicts the air quality for the next day.

As mentioned previously, you can check air quality each morning via one of the following options:

- Opening the Broward County AQI School Flag Program webpage
- Viewing the AirNow website
- Using the Air Now Mobile Application (available on the Android and Apple)
- Receiving notifications from EEPD staff when the AQI goes out of the good (green) range.


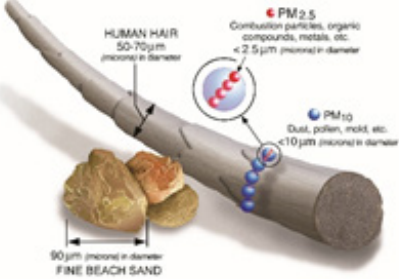
There are multiple ways to involve students and teachers in the AQI flag program; creating a segment on the morning announcements, or a specific club just for air quality. In addition, EEPD can provide some incentives for students participating in the program such as Air Quality Promotional Items.

Step 4: Know what actions to take when the air quality is unhealthy

General Actions When Ozone or Particle Pollution Levels are Unhealthy

Ozone and particle pollution are the most widespread air pollutants in Broward County. When either ozone or particle pollution is at an unhealthy level, the chances of being affected increase the longer a person is active outdoors and the more strenuous the activity. Based on the recommended actions listed school staff should use their judgment to decide how to modify planned outdoor activities when air quality is unhealthy.

Background Information

| Pollutant | Graphic | What is it? | Harmful Health Effects |
|----------------------------------|--|---|---|
| <p>Ozone</p> |  | <p>Ozone is a colorless gas found in the air we breathe. Naturally occurring ozone high above the earth's surface protects our planet from solar radiation. When ozone is created near the ground it is unhealthy to breathe and can also damage trees and crops.</p> | <ul style="list-style-type: none"> • Constriction of airways • Coughing, painful breathing, wheezing and inflammation of the airways • Increased fatigue • Reduced athletic performance • Aggravated lung disease |
| <p>Particulate Matter</p> |  | <p>Particles in the air are a mixture of solids and liquid droplets that vary in size and are referred to as "particulate matter." Some particles - those less than 10 micrometers in diameter - pose the greatest health concern because they can pass through the nose and throat and get deep into the lungs. Ten micrometers in diameter is just a fraction of the diameter of a single human hair.</p> <p>Particles with diameters less than 2.5 micrometers are called "fine" particles. They are produced when fuels such as coal, oil, diesel or wood are burned in power plants and motor vehicles (e.g., cars, trucks, buses and marine engines). These particles are also produced by construction equipment, agricultural burning, trash and brush burning, and forest fires.</p> | <ul style="list-style-type: none"> • Irritation of the airways, coughing, or difficulty breathing • Decreased lung function • Aggravated asthma • Development of chronic bronchitis • Irregular heartbeat • Heart attacks • Premature death in people with heart or lung disease |

What is the Air Quality Index (AQI)?

The Air Quality Index (AQI) is an index for reporting daily air quality. It tells you how clean or polluted your air is, and what associated health effects might be a concern for you. The AQI focuses on health effects one may experience within a few hours or days after breathing polluted air. The purpose of the AQI is to help you understand what local air quality means to your health. To make it easier to understand, the AQI is divided into categories. Each category corresponds to a different level of health concern. The levels of health concern and what they mean are:

How does the AQI work?

The higher the AQI value, the greater the level of air pollution and the greater the health concerns. For example, an AQI level of 40 represents good air quality with little potential to affect public health, while an AQI value over 201 represents very unhealthy air quality.

| Air Quality Index Levels of Health Concern | Numerical Value | Color | Meaning |
|---|------------------------|----------------------|--|
| Good | 0-50 | <i>Green</i> | Air quality is considered satisfactory, air pollution poses little or no risk |
| Moderate | 51-100 | <i>Yellow</i> | Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a small number of people who are unusually sensitive to air pollution |
| Unhealthy for Sensitive Groups | 101-150 | <i>Orange</i> | Members of sensitive groups may experience health effects. The general public is not likely to be affected |
| Unhealthy | 151-200 | <i>Red</i> | Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects |
| Very Unhealthy | 201-300 | <i>Purple</i> | Health alert: everyone may experience more serious health effects |
| Hazardous | 301-500 | <i>Maroon</i> | Health warnings of emergency conditions. The entire population is more likely to be affected |

Resources:

Morning Announcements Script

Check the Daily Air Quality from one of the following locations:

The Broward County AQI School Flag Program webpage

The **AirNow** website

Subscribe to **EnviroFlash** which allows anyone to get the daily air quality forecast sent to your email, cell phone or Twitter

Use the Air Now Mobile Application (available on the Android and Apple)

Recommended Script (can modify to best suite your needs):

If the Outdoor Air Quality is determined to be in the Good (Green) Range:

Today's Air Quality is in the good range. That's why there is a green flag outside today. Everyone can continue outdoor activities as planned. If you are going to exercise outdoors, please be sure to stay hydrated (drink a lot of water).

If the Outdoor Air Quality is determined to be in the Moderate (Yellow) Range:

Today's Outdoor Air Quality is Moderate. That's why there is a yellow flag outside today. Sensitive people such as those with asthma should consider limiting prolonged outdoor exertion (exercise). If you are going to exercise outdoors, please be sure to stay hydrated (drink a lot of water).

If the Outdoor Air Quality is determined to be in the Unhealthy for Sensitive Groups (Orange) Range:

Today's Outdoor Air Quality is Unhealthy for Sensitive Groups. That's why there is an orange flag outside today. Active Children and adults, and people with respiratory disease such as asthma, should limit prolonged outdoor exertion (exercise). If you are going to exercise outdoors, please be sure to stay hydrated (drink a lot of water).

Template to Introduce the New Flag Program

How much pollution is in the air outside today? Soon, our entire school community will have a simple way to find out.... just look up! Starting [insert date], we'll be flying a brightly colored flag below our American flag that will show how clean or polluted the air is. This new flag program will help us continue to promote exercise while protecting health.

Each colored flag corresponds to an air quality level:

Green – good air quality

Yellow – moderate air quality

Orange – unhealthy for sensitive groups, including all children and those with asthma or other respiratory issues

On green and yellow days, teachers and coaches will encourage students to get outside and get moving! When air quality is orange or red, it is still OK to play outside, but we will encourage kids to take breaks and cut back on activities that involve lots of running. In addition to helping us plan for exercise, the flags will help students and staffs with asthma get to know whether their symptoms get worse when air quality is poor and whether they need to take extra steps to protect their health.

The flag program is used in many U.S. cities and we're proud to be the first school in [city] to adopt it. Thanks to the Broward Environmental Engineering and Permitting Division for providing us with the flags! In addition to the new flags, we will have in-class activities [include when] to learn more about air pollution, how it affects us, and what we can do to make the air cleaner.

We will post more information about this exciting new program and our flag raising event on our school website.

Frequently Asked Questions:

Q: 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.

Q: 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 or when they do more intense activities. More pollution enters the lungs when a person is breathing harder. It helps to:

- ▶▶ reduce time playing (e.g., take breaks; rotate players frequently)
- ▶▶ reduce intensity of activities (e.g., walk instead of run)

Q: 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.

Q: How can I find out the daily air quality?

Go to the **AirNow** website. Many cities have a forecast and a current AQI that tells what the local air quality is now. The AirNow website shows what the pollutant of concern is. Sign up for emails, download the free AirNow app, or install the free AirNow widget on your website.

Q: 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.

Q: 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 such as jumping, skipping, sit-ups, and 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.

Q: 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 symptoms. See the Centers for Disease Control & Prevention for sample asthma action plans. When asthma is well managed and well controlled, students should be able to participate fully in activities.