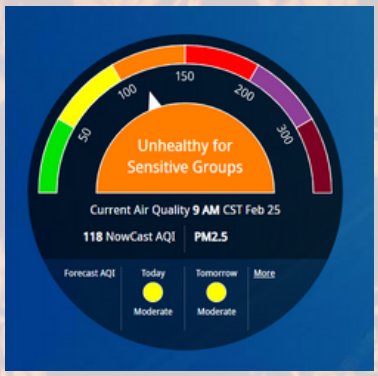
Wildfire Smoke Response Guide for Preschools and Daycares

Outdoor Air Quality Guidelines for Children



Health Impacts of Wildfire Smoke

How to Protect Children Indoors

Educational Activities and Resources

MONTANA DPHHS
DEPARTMENT OF PUBLIC HEALTH & HUMAN SERVICES

Montana DPHHS Air Quality and Health
https://dphhs.mt.gov/airquality/
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Table of Contents

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More Information:
https://dphhs.mt.gov/airquality/SmokefromFires

“Any kind of air pollution can be dangerous to young children, but wildfire smoke is about 10 times as toxic for children compared to air pollution from burning fossil fuels.”

~Lisa Patel,
clinical associate professor of pediatrics at Stanford Children’s Health

Why a resource guide for preschools and daycares?

Wildfires are a natural occurrence in Montana that can have major health impacts on residents due to the harmful effects of wildfire smoke. With changes in weather patterns and changes in wildfire management practices, wildfires and wildfire smoke are now common events across the West. Wildfire smoke contains a slew of harmful particulate matter (PM), gases, and chemicals. These particles are especially harmful to one’s health as the particles are so small they can travel into the bloodstream when inhaled, impacting other parts of the body than the lungs. Everyone is impacted when exposed to wildfire smoke, but sensitive populations may experience health impacts sooner when exposed to lower concentrations of wildfire smoke.

One of population groups most vulnerable to the short-term and long-term health effects of wildfire smoke is children. This guide is designed to make you aware of the outdoor activity guidelines for children and empower you to protect your indoor air.

How can I help spread the word?

Although this toolkit is tailored to preschools and daycares, please share this information with families. As the harmful effects associated with wildfire smoke become more evident, we appreciate your assistance informing the public about these concerns and how to protect those they love.

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WHAT TO KNOW ABOUT WILDFIRE SMOKE AND YOUNG CHILDREN

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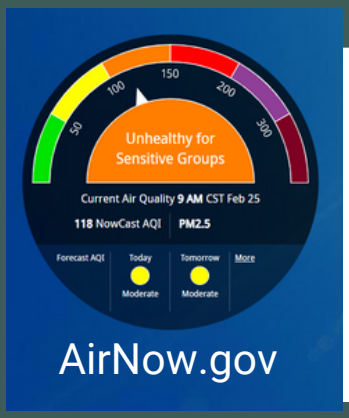
1 Health Risks of Wildfire Smoke are Greater in Children

Wildfire smoke is more dangerous to children because their lungs are still developing, they breathe more quickly, and generally, spend more time outdoors.

In addition, children may have an underlying chronic disease that hasn't been diagnosed yet.

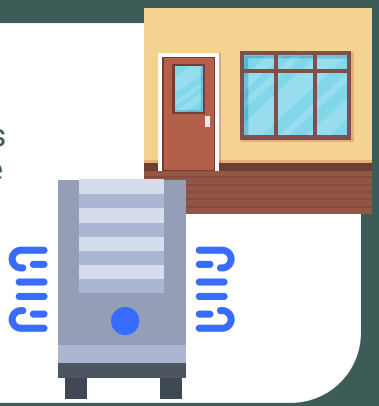


2 Limit Time Spent Outdoors When the Air Quality Index Exceeds 100

The EPA Air Quality Activity Guidelines recommend that young children are not outside longer than 15-minute intervals during a smoke event. Use a local air quality monitoring site to know when the air quality improves.

3 Protect Your Indoor Air

Studies show that indoor air can become as unhealthy as outdoor air in a wildfire smoke event. Keep doors and windows closed and use a HEPA air cleaner or DIY box fan filter in the room where your children spend the most time. For more tips, visit *dphhs.mt.gov/AirQuality/SmokefromFires*.



4 Other Steps You Can Take During a Smoke Event

- Drink plenty of water. Keeping hydrated helps to remove wildfire smoke toxins from the blood.
- Encourage sleep. Place a HEPA air cleaner in the sleeping area, if possible.
- Serve fruits and leafy vegetables to help with inflammation.

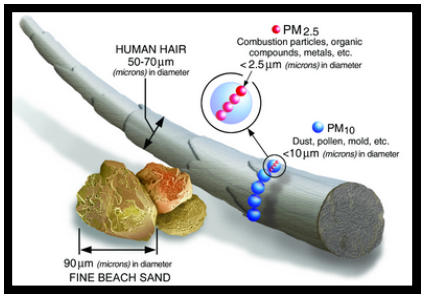
For more information, visit AirQuality.mt.gov

Wildfire Smoke & Your Health

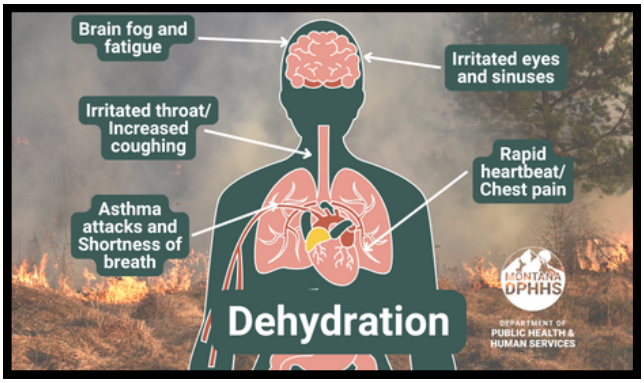
Protecting Yourself Indoors

Why do we worry about indoor air and wildfire smoke?

Wildfire smoke contains particulate matter that is four times smaller and up to ten times more toxic than other pollution. These tiny particles enter our homes and commercial buildings through open doors and windows, HVAC systems, and poorly sealed homes. They then travel into our lungs and in high quantities, can enter the bloodstream. This is harmful to all of us, but can be dangerous (and in some cases, deadly) to those with lung or heart conditions or those who are pregnant, children, or senior citizens.



Symptoms of Smoke Exposure



Wildfire smoke exposure may increase the risk of respiratory infections like bronchitis and pneumonia. Persons with lung or heart conditions should keep their rescue medication stocked and available. Closely monitor those who are more vulnerable and seek medical attention if symptoms become more noticeable.

Protecting Your Indoor Air

During a smoke event, the air inside can become as unhealthy as the air outside. These strategies protect the air in your home, community buildings, and businesses.

Keep doors and windows closed. Open at night to cool home if necessary

Avoid stovetop cooking, candle burning and smoking indoors

Use a HEPA air purifier or a DIY filter

Seal cracks in doors and windows

Change A/C setting to recirculate

For more information visit AirQuality.mt.gov

Outdoor Activity & Air Quality Guidelines for Schools and Child Care Facilities

Health Effect Category	Good	Moderate	Unhealthy for sensitive groups*	Unhealthy	Very Unhealthy/ Hazardous
Visibility (miles)	13+	9-13	5-9	2 5	Less than 2
Air Quality Index (AQI)	0-50	51 - 100	101 - 150	151 200	201 +
Recess or Other Outdoor Activity (15-30 minutes)	No limitations	No limitations	Keep students with chronic lung or heart conditions indoors. Make indoor space available for all children to be active, especially young children.	Keep all students indoors and limit students to light or moderate activities.	Keep all students indoors and limit students to light activities.
Physical Education Class (1 hour)	No limitations	Monitor sensitive groups and limit their vigorous activities.	Keep students with chronic lung or heart conditions indoors. Limit these students to light activities. Make indoor space available for all students to be active, especially young children. If outdoors, limit students to light or moderate activities.	Conduct P.E. classes in an indoor environment with good air quality and limit students to light or moderate activities.	Conduct P.E. classes in an indoor environment with good air quality and limit students to light activities.
Athletic Events and Practices (2-4 hours)	No limitations	Monitor sensitive groups and limit their vigorous activities.	Students with chronic lung or heart conditions should abstain from outdoor practices and events based on the severity of their condition and sensitivity to smoke. Consider moving practice and events indoors. If events are not cancelled, increase rest periods and substitutions to allow for lower breathing rates.	Reschedule events or relocate to an area with good air quality. Conduct practices in an indoor environment with good air quality and limit students to light activities.	Reschedule/cancel events. Conduct practices in an indoor environment with good air quality and limit students to light activities.

Visit todaysair.mtdeq.us for local air quality conditions and more information.

Examples of Activities

Light Activities: Walking, stretching, playing board/card games, dancing slowly

Moderate Activities: Yoga, gymnastics, shooting basketballs, skateboarding, weight training, hiking, biking, golfing

Vigorous Activities: Running/jogging, basketball, football, soccer, swimming, cheerleading, and wheeling your wheelchair

† *Please note that the intensity of an activity can vary by person and ability.*

*For the purpose of this document, sensitive groups include:

- **Children (ages 0-17 years)**: Children may be more sensitive to air pollution as their lungs are still developing and they may have an unknown underlying health condition.
- **People with chronic conditions:** People with chronic conditions, such as asthma or another respiratory disease, or cardiovascular disease, may be more sensitive to air pollution and should talk with their healthcare provider about managing their condition. People with chronic conditions should be medically managing their condition during air quality that is unhealthy for sensitive groups or worse. Students with asthma should be following their Asthma Action Plan in all conditions.
- **Pregnant women**: During pregnancy, changes to a woman's body may increase vulnerability to environmental exposures. Additionally, during critical windows of human development, a pregnant woman's prolonged exposure to wildfire smoke may harm the developing baby.
- **Older adults**: Older adults are at increased risk of health effects from short-term exposures to wildfire smoke because of their higher prevalence of pre-existing lung and heart diseases.

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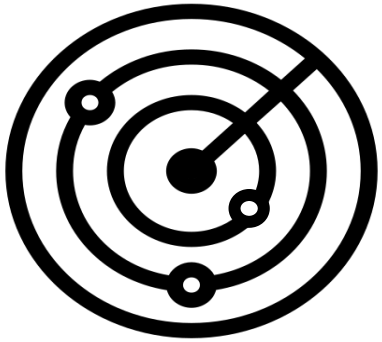
MONTANA DPHHS DEPARTMENT OF PUBLIC HEALTH & HUMAN SERVICES

DEQ MONTANA

MONTANA OFFICE OF PUBLIC INSTRUCTION

How to Use This Table and the Today's Air Website

- Start planning early. Well before your event, start monitoring the air quality by visiting the **todaysair.mtdeq.us** website.
  - Review statewide smoke forecasts on the DEQ website: **deq.mt.gov/air/Programs/smokeforecasts**.
  - If your area is not near an air monitor, follow directions below for using the visibility guidelines.
  - Make adjustments to your plans depending on the forecast and the health effect category.
- Continue to monitor the air quality and the forecast in your area.
  - Be sure to leave adequate time for decisions to be made before teams/participants begin travel.
  - Air quality can change rapidly. Regularly review the PM2.5 concentration levels before and throughout lengthy events to assess for deteriorating conditions.



How to Estimate Air Quality Based on Visibility:

1. Use pre-determined landmarks that were established on a clear day for distances (face away from the sun).
2. Determine the limit of your visible range by looking for targets at known distances (miles).
3. Use the visibility values in the table to determine the local wildfire smoke health effect category.

Items to Consider When Planning for Poor Air Quality During the School Year

- Is there an indoor/outdoor air quality section in the school or district wellness policy? If so, do you know where it is located?
- Which air quality monitor do you use or what geographic spot do you use for visibility guidelines? Does your school have its own air quality monitors?
- Who makes the decisions to hold, cancel, or reschedule outdoor events? What is the procedure for rescheduling events? How do you communicate your decision with stakeholders? If participants are already traveling, how do you notify them?
- What do you do for recess and athletic practices on days with poor air quality?
- Has the school/district adopted a smoke readiness plan? What are the school/district plans to protect indoor air quality if poor outdoor air quality persists for a long period of time?
- Has the school inspected the air handling system and made necessary improvements to ensure ultimate efficiency?
- How do you document what happened during wildfire smoke or other air pollution events? What went well? What can be done better?

Protection from Particulate Matter

Wildfires, wood burning, and air stagnation increase the fine particulate matter (PM2.5/PM10) in the air we breathe. Fine particulate matter travels easily indoors, especially through doors, windows, and small openings. Over time, concentrations of fine particulate matter indoors can approach the level of concentration outdoors. Schools should use MERV 13 rated filters or greater in their HVAC systems if the system is capable. Supplemental use of properly sized HEPA air purifiers have also been shown to improve indoor air quality by reducing particulate matter and chemicals found in smoke.

Cloth face coverings and dust masks offer little protection against harmful air pollutants in wildfire smoke because these coverings do not capture most small particles in smoke. Anyone thinking about wearing an N95 mask or respirator should consult their physician prior to doing so. Individuals experiencing symptoms such as wheezing, shortness of breath, chest pain, headache, and dizziness should be seen by a medical provider. Schools should be aware of students with asthma and other chronic conditions and consider accommodations for these students to minimize their exposure to wildfire smoke.

Visit AirQuality.mt.gov for more information on particulate matter and how to protect your health during poor air quality conditions.

MOST VULNERABLE STUDENT POPULATIONS TO WILDFIRE SMOKE

MONTANA DPHHS
DEPARTMENT OF PUBLIC HEALTH & HUMAN SERVICES

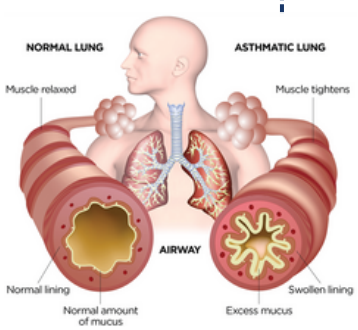
CHILDREN AGED 0-5

Wildfire is more dangerous to children because their lungs are still developing, they breathe more quickly and spend more time outdoors.

In addition, children may have a chronic disease that has not been identified yet.

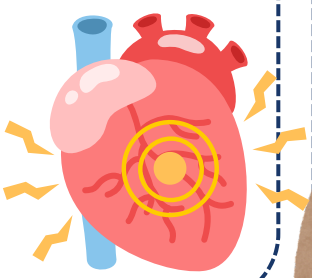
STUDENTS WITH ASTHMA

Wildfire smoke increases asthma symptoms like difficulty breathing, wheezing, and coughing. This may cause more reliance on rescue inhalers and possible emergency room visits.



STUDENTS WITH HEART CONDITIONS

Wildfire smoke exposure is linked to chest pain, heart palpitations and emergency room visits.



STUDENTS WITH OTHER LUNG ISSUES

Wildfire smoke exposure increases symptoms like shortness of breath, chest tightness, and fatigue or dizziness.

STUDENTS WITH DIABETES

Wildfire smoke exposure increases dehydration and has been associated with an increase in symptoms of diabetes.

STUDENT ATHLETES

Increased rate of breathing exposes lungs to increased levels of wildfire smoke, leading to inflammation, coughing, shortness of breath, and susceptibility to respiratory illness

For more information, visit airquality.mt.gov

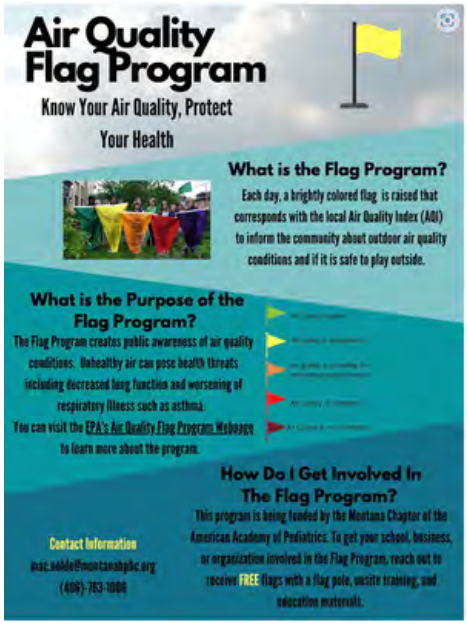
Educational Activities and Resources

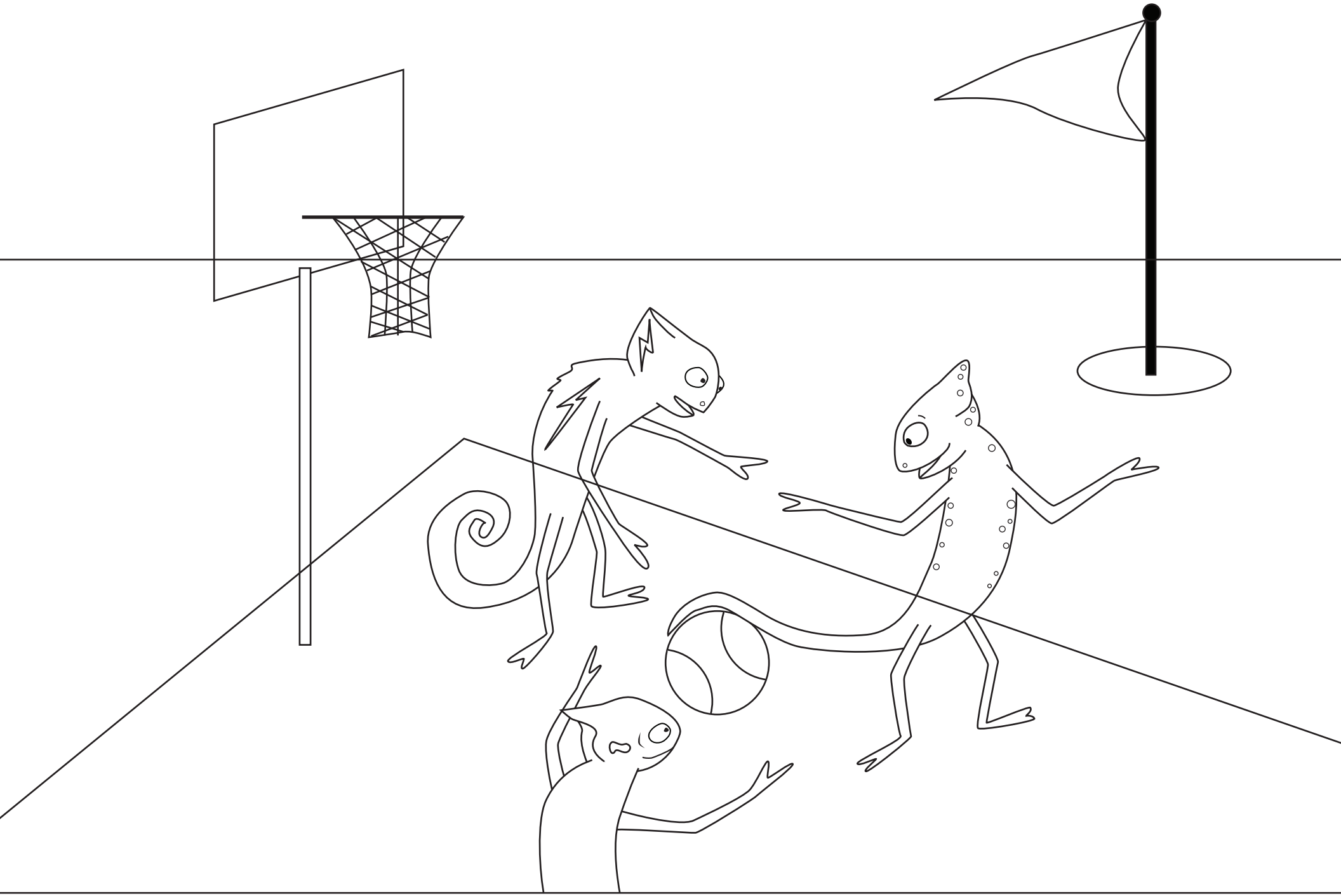
Summary

This book was developed by the EPA to introduce kids to the concept of air quality levels and the air quality flag program. It explains that sometimes the air can contain smoke or other things that affect our breathing, that some people are more sensitive than others, and that there are levels of risk – from normal through hazardous. It shows children how to protect their lungs by playing inside during poor air quality and using air filters, while encouraging kindness to children who are sensitive to poor air quality. It focuses on what we can do to stay healthy and keep each other well. Accompanying resources include an educational game and coloring pages.

The digital book is available in print and audio form online:
https://www.airnow.gov/education/why-is-coco-red/

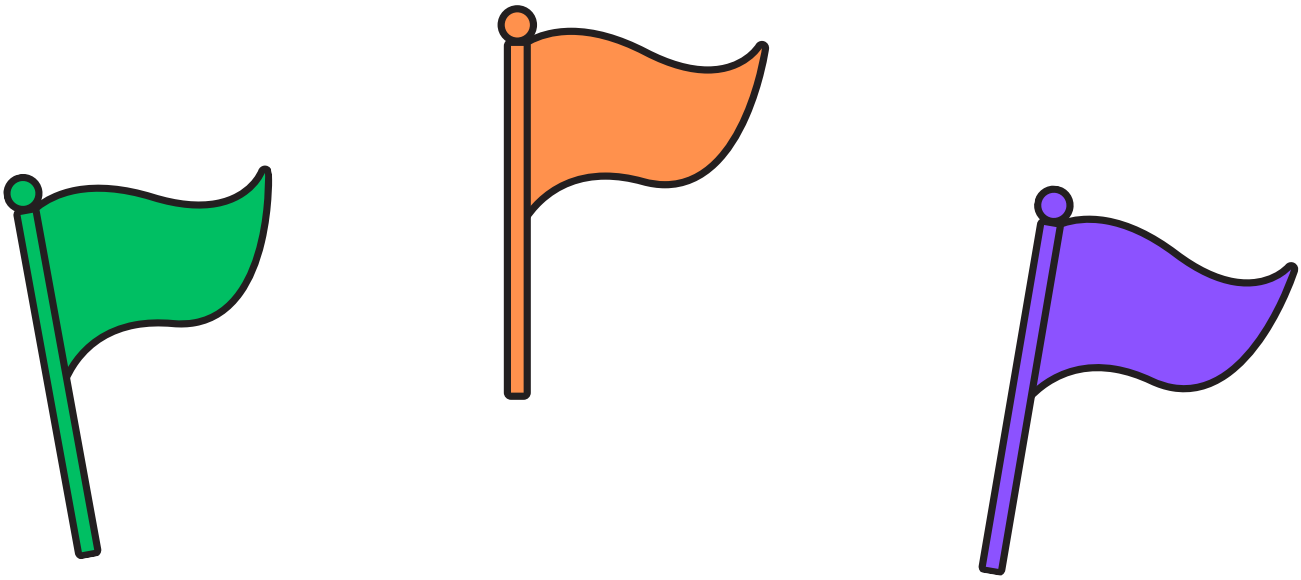
If you would like a set of air quality flags for your daycare or preschool, contact the Montana Health Professionals for a Healthy Climate website:
https://www.montanahphc.org/air-quality-flags.html
Phone: (406) 763-1006





Exercise is good for you! Remember to take more breaks if the air outside is unhealthy.
Check the air quality color at airnow.gov

Activity
Green light, orange light, purple light



This activity is connected to the air quality levels and can be used to complement the book, "Why is CoCo Red?"

1. Explain to the children that they are going to practice following the air quality guidelines through a game. Review what the colors indicate about air quality.
   - Green levels mean healthy air.
   - Orange levels mean the air is unhealthy for sensitive groups (this includes all children, as their lungs are still developing), and children should take it slow and not run or engage in strenuous activity outside.
   - Purple means (hazardous) levels, children should stay inside.
2. For this activity, you will need a small green flag, an orange flag, and a purple flag. (If you have a color-blind student, consider marking the flags with different letters, like a G, O, and P, so they can differentiate them).
3. Everyone lines up at one end of a space. When the Flag Raiser (child or staff) raises the green flag, everybody runs as fast as they can toward the finish line. When the orange flag is raised, runners must run in slow motion. If someone doesn't run in slow motion, they have to go back to the start! When the purple flag is raised, everyone must freeze. Alternate flags in no particular order.
4. First one to the finish line wins! (Or, to mix it up – last one to the finish line wins)!

Materials

Flags - can be made of construction paper or inexpensive cotton material and a dowel.
Duct tape, chalk, or something to temporarily mark a finish line.
Optional - a small harmonica or whistle to call a "foul" when someone doesn't change movement speed quickly!

This activity is a lesson in the Environmental Health Education in a Box Curriculum developed by the Pediatric Environmental Health Specialty Units. For more information, visit the Montana Health Professionals for a Healthy Climate website.