



# What in the World Triggers Asthma: What Every School Should Know

This Webinar is brought to you as part  
of EPA's *Environmental Education in  
Action* initiative.

May 15, 2012



# Outline

- Introductions:
  - Karen Scott of EPA's Office of Environmental Education
  - Leyla McCurdy of the National Environmental Education Foundation (NEEF)
  - Donna Rogers of EPA's School Flag Program
- Asthma Awareness, Triggers and Educational Resources from NEEF, EPA and Others
- School Flag Program and Other Air Quality EE Resources



Please hold questions until  
the end. We will take  
questions on the phone  
and through the webinar.

# Environmental Management of Asthma in Schools

Leyla Erk McCurdy

May 15, 2012

Winner of



# What is Asthma?

- Asthma is a chronic disease that affects the airways in the lungs
- During an asthma attack, airways become inflamed, making it hard to breathe
- Asthma attacks can be mild, moderate, or serious – and even life threatening
- Asthma cannot be cured but it can be controlled
- Students with asthma should be able to live healthy, active lives with few symptoms

# Symptoms

- Coughing, especially at night
- Wheezing
- Shortness of breath
- Chest tightness, pain, or pressure

# Asthma

- 7 million children have asthma in U.S.
- Asthma disparities include:
  - Low income populations, minorities, and children living in inner cities experience more emergency department visits, hospitalizations, and deaths due to asthma
  - Black children are 2 times more likely to have asthma than white children

# Asthma and Schools

- 1 out of every 10-11 school-age children has asthma. In a classroom of 30 children, about 3 are likely to be affected.
- Asthma is the leading cause of school absenteeism due to a chronic condition. Over 10.5 million missed school days per year are due to asthma.
- Nearly 1 in 2 children with asthma report missing at least 1 day of school each year because of asthma.

# Asthma Triggers

- When children are exposed to things in the environment an asthma attack can occur. These are called **asthma triggers**.
- Asthma triggers in schools include:
  - Animal allergens
  - Cockroach and pest allergens
  - Mold and moisture
  - Dust mites
  - Irritants, like tobacco smoke, pesticides, paint, cleaners, strong odors, fumes, other chemicals
  - Outdoor air pollutants, like ozone and particle pollution, or school bus diesel exhaust

# Managing Asthma in Schools

- Use EPA Indoor Air Quality's Tools for Schools Action Kit
- Control Animal Allergens
  - If possible, keep your classroom pet free
  - If not:
    - Keep animals in localized areas and away from sensitive students, carpets, and upholstered furniture
    - Clean classrooms and cages daily

# Managing Asthma in Schools

- Control Cockroach Allergens
  - Use integrated pest management (IPM) practices to prevent pest problems
    - Do not leave food, water, or garbage exposed
      - Store food in tightly sealed containers
      - Check for plumbing leaks
      - Empty waste containers daily
      - Place dumpsters away from the building
  - Look for signs of pest and explore options of pest control

# Managing Asthma in Schools

- Clean Up Mold and Control Moisture
  - Reduce indoor humidity
    - Provide ventilation to maintain 30%-60% humidity level
    - Vent moisture generating sources to the outside
  - Observe your workspace
    - Check for musty, moldy odors in the building
    - Look for discoloration in the ceilings
  - Respond promptly when you see signs of moisture
    - Fix leaks and thoroughly dry wet areas within 24-28 hours to prevent mold growth
    - Clean and dry all damp materials in school
  - Clean up hard, moldy surfaces with water and detergent, and then dry thoroughly

EPA Asthma Awareness Month Event Planning Kit

[www.epa.gov/asthma/pdfs/awm/event\\_planning\\_kit.pdf](http://www.epa.gov/asthma/pdfs/awm/event_planning_kit.pdf) p.5

# Managing Asthma in Schools

- Eliminate Secondhand Smoke Exposure
  - Enforce comprehensive, tobacco-free schools policies
- Reduce Dust Mite Exposure
  - Make sure the school is dusted and vacuumed thoroughly and regularly
  - Choose washable toys

# Managing Asthma in Schools

- Reduce School Bus Diesel Exhaust
  - Replace the oldest buses in the fleet with new ones
  - Install effective emission control systems on newer buses
  - Encourage policies and practices to eliminate unnecessary school bus idling
  - Clean School Bus USA Program  
[www.epa.gov/cleanschoolbus](http://www.epa.gov/cleanschoolbus)

# Managing Asthma in Schools

- Develop an Asthma Management Plan
  - Policies on inhaler and other medication usage and emergency procedures
  - Asthma Action Plans  
[www.nlm.nih.gov/health/public/lung/asthma/asthma\\_actplan.htm](http://www.nlm.nih.gov/health/public/lung/asthma/asthma_actplan.htm)
  - Students' environmental triggers
  - National Asthma Education and Prevention Program's Managing Asthma: A Guide for Schools  
[www.nlm.nih.gov/health/prof/lung/asthma/asth\\_sch.pdf](http://www.nlm.nih.gov/health/prof/lung/asthma/asth_sch.pdf)

EPA Asthma Awareness Month Event Planning Kit  
[www.epa.gov/asthma/pdfs/awm/event\\_planning\\_kit.pdf](http://www.epa.gov/asthma/pdfs/awm/event_planning_kit.pdf) p.5

# Managing Asthma in Schools

- Provide School-Based Asthma Education Programs
- Gather Additional Asthma Resources

# Resources

## National Environmental Education Foundation (NEEF)

- Pediatric Asthma Initiative  
[www.neefusa.org/health/asthma](http://www.neefusa.org/health/asthma)
- *Environmental Management of Pediatric Asthma: Guidelines for Health Care Providers*  
[www.neefusa.org/health/asthma/asthmaguidelines](http://www.neefusa.org/health/asthma/asthmaguidelines)
- Environmental History Form for Asthma Patient  
[www.neefusa.org/health/asthma/astmahistoryform](http://www.neefusa.org/health/asthma/astmahistoryform)
- Supplemental Resources: Schools  
[www.neefusa.org/health/asthma/asthma\\_resources](http://www.neefusa.org/health/asthma/asthma_resources)

# Resources

## U.S. Environmental Protection Agency (EPA)

- Asthma: Improving Health in Schools  
[www.epa.gov/asthma/school-based.html](http://www.epa.gov/asthma/school-based.html)
- Managing Asthma in the School Environment  
[www.epa.gov/iaq/schools/managingasthma.html](http://www.epa.gov/iaq/schools/managingasthma.html)
- IAQ Tools for Schools  
[www.epa.gov/iaq/schools](http://www.epa.gov/iaq/schools)
- Integrated Pest Management in Schools  
[www.epa.gov/pesticides/ipm/](http://www.epa.gov/pesticides/ipm/)
- Schools Chemical Cleanout Campaign  
[www.epa.gov/epawaste/partnerships/sc3](http://www.epa.gov/epawaste/partnerships/sc3)
- Clean School Bus Program  
[epa.gov/cleanschoolbus](http://epa.gov/cleanschoolbus)
- Asthma Awareness Month Event Planning Kit  
[www.epa.gov/asthma/pdfs/awm/event\\_planning\\_kit.pdf](http://www.epa.gov/asthma/pdfs/awm/event_planning_kit.pdf)
- Asthma Awareness Month  
[www.epa.gov/asthma/awareness.html](http://www.epa.gov/asthma/awareness.html)

# Resources

## Centers for Disease Control and Prevention (CDC)

- Asthma  
[www.cdc.gov/asthma](http://www.cdc.gov/asthma)
- Asthma's Impact on the Nation  
[www.cdc.gov/asthma/impacts\\_nation/default.htm](http://www.cdc.gov/asthma/impacts_nation/default.htm)
- Adolescent and School Health: Asthma and Schools  
[www.cdc.gov/HealthyYouth/asthma](http://www.cdc.gov/HealthyYouth/asthma)
- National Center for Health Statistics Data Brief  
[www.cdc.gov/nchs/data/databriefs/db94.htm](http://www.cdc.gov/nchs/data/databriefs/db94.htm)
- Families, Clinicians, and Schools: Working Together to Improve Asthma Management  
[www.cdc.gov/Features/ManageAsthma](http://www.cdc.gov/Features/ManageAsthma)
- Asthma Awareness Month  
[www.cdc.gov/Features/AsthmaAwareness](http://www.cdc.gov/Features/AsthmaAwareness)

# Resources

## National Heart Lung and Blood Institute (NHLBI)

- How Asthma-Friendly is Your School?  
[www.nhlbi.nih.gov/health/public/lung/asthma/friendhi.htm](http://www.nhlbi.nih.gov/health/public/lung/asthma/friendhi.htm)
- Managing Asthma: A Guide for Schools  
[www.nhlbi.nih.gov/health/prof/lung/asthma/asth\\_sch.htm](http://www.nhlbi.nih.gov/health/prof/lung/asthma/asth_sch.htm)
- Management of Asthma Exacerbations: School Treatment  
[www.nhlbi.nih.gov/health/prof/lung/asthma/sch-emer-actplan.pdf](http://www.nhlbi.nih.gov/health/prof/lung/asthma/sch-emer-actplan.pdf)
- Asthma Action Plan  
[www.nhlbi.nih.gov/health/public/lung/asthma/asthma\\_actplan.htm](http://www.nhlbi.nih.gov/health/public/lung/asthma/asthma_actplan.htm)
- Guidelines for the Diagnosis and Management of Asthma  
<http://www.nhlbi.nih.gov/guidelines/asthma/index.htm>
- Asthma Awareness Month  
[www.nhlbi.nih.gov/health/prof/lung/asthma/naci/news/world-asthma-day.htm](http://www.nhlbi.nih.gov/health/prof/lung/asthma/naci/news/world-asthma-day.htm)



## How Asthma-Friendly Is Your School?

**Students with asthma need proper support at school to keep their asthma under control and be fully active. Use this checklist to find out how well your school serves students with asthma:**

- Are the school buildings and grounds **free of tobacco smoke** at all times? Are all school buses, vans, and trucks free of tobacco smoke? Are all school events, like field trips and team games (both "at-home" and "away"), free from tobacco smoke?
- Does your school have a policy or rule that allows **students to carry and use their own asthma medicines**? If some students do not carry their asthma medicines, do they have quick and easy access to their medicines?
- Does your school have a **written emergency plan for teachers** and staff to follow to take care of a student who has an asthma attack? In an emergency, such as a fire, weather, or lockdown, or if a student forgets his/her medicine, does your school have standing orders and quick-relief medicines for students to use?
- Do all students with asthma have updated **asthma action plans** on file at the school? An asthma action plan is a written plan from the student's doctor to help manage asthma and prevent asthma attacks.
- Is there a **school nurse in your school building during all school hours**? Does a nurse identify, assess, and monitor students with asthma at your school? Does he/she help students with their medicines, and help them be active in physical education, sports, recess, and field trips? If a school nurse is not full-time in your school, is a nurse regularly available to write plans and give the school guidance on these issues?
- Does the school nurse or other asthma education expert **teach school staff about asthma**, asthma action plans, and asthma medicines? Does someone teach all students about asthma and how to help a classmate who has asthma?
- Can students with asthma fully and safely join in **physical education, sports, recess, and field trips**? Are students' medicines nearby, before and after they exercise? Can students with asthma choose a physical activity that is different from others in the class when it is medically necessary? Can they choose another activity without fear of being ridiculed or receiving reduced grades?
- Does the school have **good indoor air quality**? Does the school help to reduce or prevent students' contact with allergens or irritants, indoors and outdoors, that can make their asthma worse? Allergens and irritants include tobacco smoke, pollens, animal dander, mold, dust mites, cockroaches, and strong odors or fumes from things like bug spray, paint, perfumes, and cleaners. Does the school exclude animals with fur?

If the answer to any question is "no," then it may be harder for students to have good control of their asthma. Uncontrolled asthma can hinder a student's attendance, participation and progress in school. School staff, healthcare providers, and families should work together to make schools more asthma-friendly to promote student health and education.

For more information on keeping students with asthma safe at school, see the list of resources on the next page. National and state laws can help children with asthma.

**Asthma cannot be cured but it can be controlled.  
Students with asthma should be able to live healthy, active lives with few symptoms.**

October 2008

# Conclusions

Research demonstrates that successful school-based asthma programs:

- Establish strong links with asthma care clinicians to ensure appropriate and ongoing medical care
- Target students who are the most affected by asthma at school to identify and intervene with those in greatest need
- Get administrative buy-in and build a team of enthusiastic people, including a full-time school nurse, to support the program
- Use a coordinated, multi-component and collaborative approach that includes school nursing services, asthma education for students and professional development for school staff
- Support evaluation of school-based programs and use adequate and appropriate outcome measures

# Conclusions

- Improved asthma management can result in increased attendance and performance at school. Improvements are most effective when they are coordinated within schools and with the community.
- Asthma care clinicians, families, and schools can work together to help students with asthma manage their disease at school.
- Asthma-friendly schools are those that make the effort to create safe and supportive learning environments for students with asthma. They have policies and procedures that allow students to successfully manage their asthma.

# Contact Information

## **Leyla Erk McCurdy**

Senior Director, Health & Environment

National Environmental Education Foundation

4301 Connecticut Ave., Suite 160

Washington DC, 20008

Phone: 202-261-6488

Fax: 202-261-6464

Email: [lmccurdy@neefusa.org](mailto:lmccurdy@neefusa.org)

[www.neefusa.org](http://www.neefusa.org)

# Four Easy Steps to Implement a School Flag Program



Donna Rogers  
US Environmental Protection Agency

May 15, 2012

# Today we'll talk about...

- The Flag Program
- The purpose of the program
- Background information
- Getting started in four easy steps
- Air quality resources for teachers



# What is the School Flag Program?

- Schools raise a flag each day
- Flag colors are based on the colors of the AQI (Air Quality Index)
- The flag color signals the air quality forecast for the local area
- Recommendations provide guidance on how to modify outdoor activities when the air quality is unhealthy



# Purpose of Program

- Create public awareness
- Protect children's health
- Provide activity guidelines
- Increase knowledge of air quality issues



# What is the Air Quality Index?

- Guide for reporting daily air quality
- Indicates how clean or dirty the air is
- Identifies health effects
- EPA calculates the AQI for five major air pollutants regulated by the Clean Air Act:
  - Ozone (O<sub>3</sub>)
  - Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>)
  - Nitrogen Dioxide (NO<sub>2</sub>)
  - Sulfur Dioxide (SO<sub>2</sub>)
  - Carbon Monoxide (CO)

**Good**

**Moderate**

**Unhealthy for  
Sensitive Groups**

**Unhealthy**

**Very Unhealthy**

# Air Quality Index (AQI) Colors

Air Quality Index (AQI) Values	Levels of Health Concern	Colors
<i>When the AQI is in this range:</i>	<i>...air quality conditions are:</i>	<i>...as symbolized by this color:</i>
0 to 50	Good	Green
51 to 100	Moderate	Yellow
101 to 150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon

Wood-Burning Stoves



Power Plants



Heavy Duty Diesel Engines



Natural Sources



# Air Pollution Comes from Many Different Sources

Cars and Trucks



Non-Road Vehicles



Forest Fires



Industrial Sources



# Effects of Common Air Pollutants

- Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing
- Decreased lung function
- Aggravated asthma
- Development of chronic bronchitis
- Chest tightness; chest pain
- Irregular heartbeat
- Premature death in people with heart or lung disease

# Some Groups Are More Sensitive to Air Pollution

- People with heart or lung disease
  - Conditions make them vulnerable
- Older adults (age 55 and older)
  - Greater prevalence of heart and lung disease
- Children (birth to age 18)
  - More likely to be active
  - Breathe more air per pound of body weight
  - Bodies still developing
- People with asthma
  - Asthma is a serious, chronic respiratory disease that affects almost 25 million Americans, including an estimated 7 million children

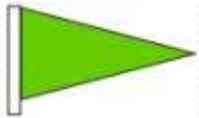


Children active outdoors can be sensitive to some air pollutants.

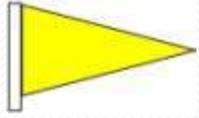


Sometimes people with asthma need help breathing 33

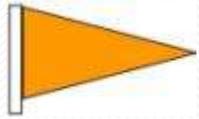
# Four Easy Steps to Get Your Flag Program Started



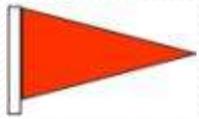
Purchase flags



Educate and inform the school and the community



Check the daily air quality forecast and fly the corresponding flag



Follow the recommendations for schools for outdoor activities

# Flags

- Flags can be purchased by the PTA, a local health organization or business
- Cost is approximately \$100
- Order from local flag vendor or you can find flag vendors online
- Set of five flags: green, yellow, orange, red, purple
- Use pennant style flags, 5 x 3 ft.
- Recommend Plain flags - logos or graphics can be added, although:
  - Not easily seen from flag pole
  - Adds to the cost



# Educate and Inform

- Educate and inform the teachers and parents
- Tell your co-workers about the AQI and flag program
- Recruit one or two teachers (or school nurse) to be the Flag Program Coordinator(s)
- Inform the school and surrounding community through:
  - Newsletters
  - Emails
  - Flyers
  - Local newspaper
  - Radio station
  - Word-of-Mouth



# EnviroFlash

- Air quality forecast notification sent to your email
- Free and easy to subscribe
  - [www.airnow.gov/enviroflash](http://www.airnow.gov/enviroflash)
- Other ways to get the air quality forecast:
  - Download the free AirNow app available at [www.airnow.gov](http://www.airnow.gov)



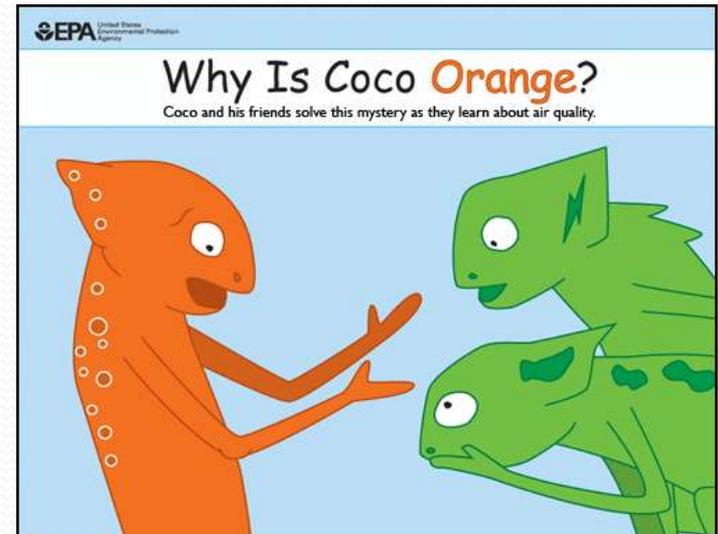
## Recommendations for Schools and Others on Poor Air Quality Days

### Air Quality Index (AQI) Chart for Ozone (8-hr standard)

ACTIVITY	0 to 50 GOOD	51 to 100 MODERATE	101 to 150 UNHEALTHY FOR SENSITIVE GROUPS	151 to 200 UNHEALTHY	201 to 300 VERY UNHEALTHY
Recess (15 min)	No Restrictions	No Restrictions	Make indoor space available for children with asthma or other respiratory problems.	Any child who complains of difficulty breathing, or who has asthma or other respiratory problems, should be allowed to play indoors.	Restrict outdoor activities to light to moderate exercise.
P.E. (1 hr)	No Restrictions	No Restrictions	Make indoor space available for children with asthma or other respiratory problems.	Any child who complains of difficulty breathing, or who has asthma or other respiratory problems, should be allowed to play indoors.	Restrict outdoor activities to light to moderate exercise not to exceed one hour.
Scheduled Sporting Events	No Restrictions	Individuals who are unusually sensitive to ground-level ozone should limit intense activities.	Individuals with asthma or other respiratory or cardiovascular illness should increase rest periods and reduce activities to lower breathing rates.	Consideration should be given to rescheduling or relocating event.	Event should be rescheduled or relocated indoors.
Athletic Practice and Training (2 to 4 hrs)	No Restrictions	Individuals who are unusually sensitive to ground-level ozone should limit intense activities.	Individuals with asthma or other respiratory or cardiovascular illness should increase rest periods and reduce activities to lower breathing rates.	Activities over 2 hours should decrease intensity and duration. Add rest breaks or substitutions to lower breathing rates.	Sustained rigorous exercise for more than one hour must be rescheduled, moved indoors or discontinued.

# Air Quality Resources

- Resources for teachers are available on the AirNow.gov website: [www.airnow.gov](http://www.airnow.gov)
  - Online curricula
  - Interactive games
  - Air quality simulator
  - Children's picture book
  - AirNow Learning Center
  - Free through the National Service Center for Environmental Publications (NSCEP) [www.epa.gov/nscep](http://www.epa.gov/nscep)



# School Flag Program Website

[www.airnow.gov/schoolflag](http://www.airnow.gov/schoolflag)

- Fact sheet
- Coordinator's Handbook
- Recommendations Chart/Activity Guidelines
- Press Release Template
- Registration Form
- Student Activities
- Teacher and student resources



# Contact Information

Donna Rogers

US EPA

(919) 541-5478

[rogers.donna@epa.gov](mailto:rogers.donna@epa.gov)

