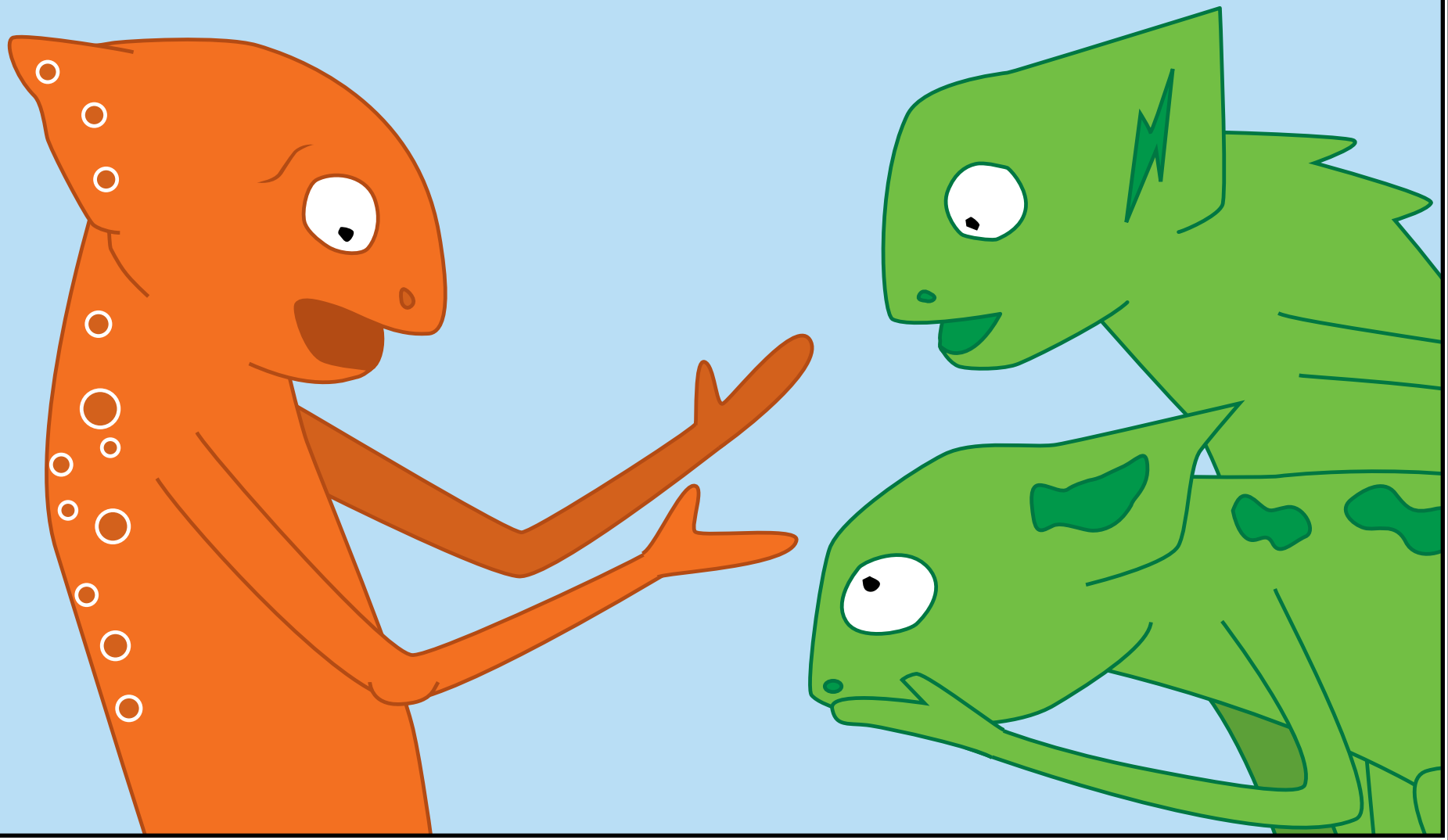
United States Environmental Protection Agency

Why Is Coco Orange?

Green day, great time to play. Learn what colors can tell you about the air.



Publication No. EPA-456/K-10-001
May 2010

Why Is Coco Orange?

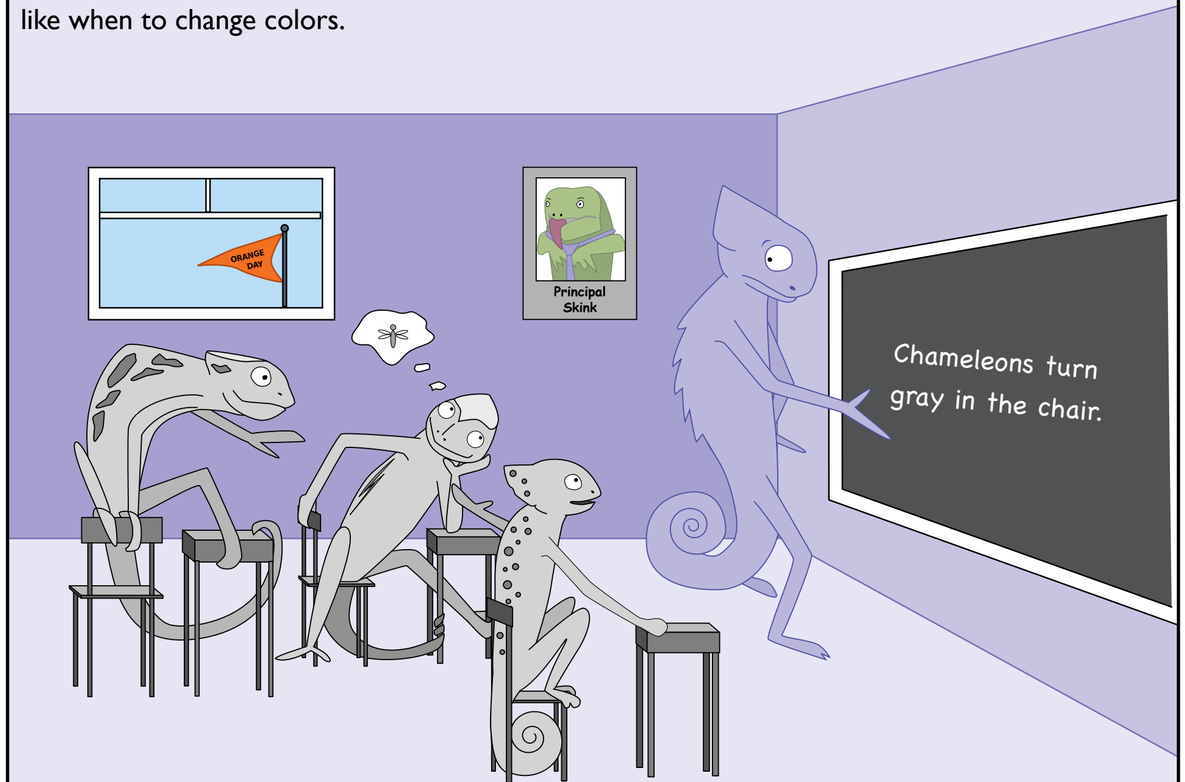
Green day, great time to play. Learn what colors can tell you about the air.

by

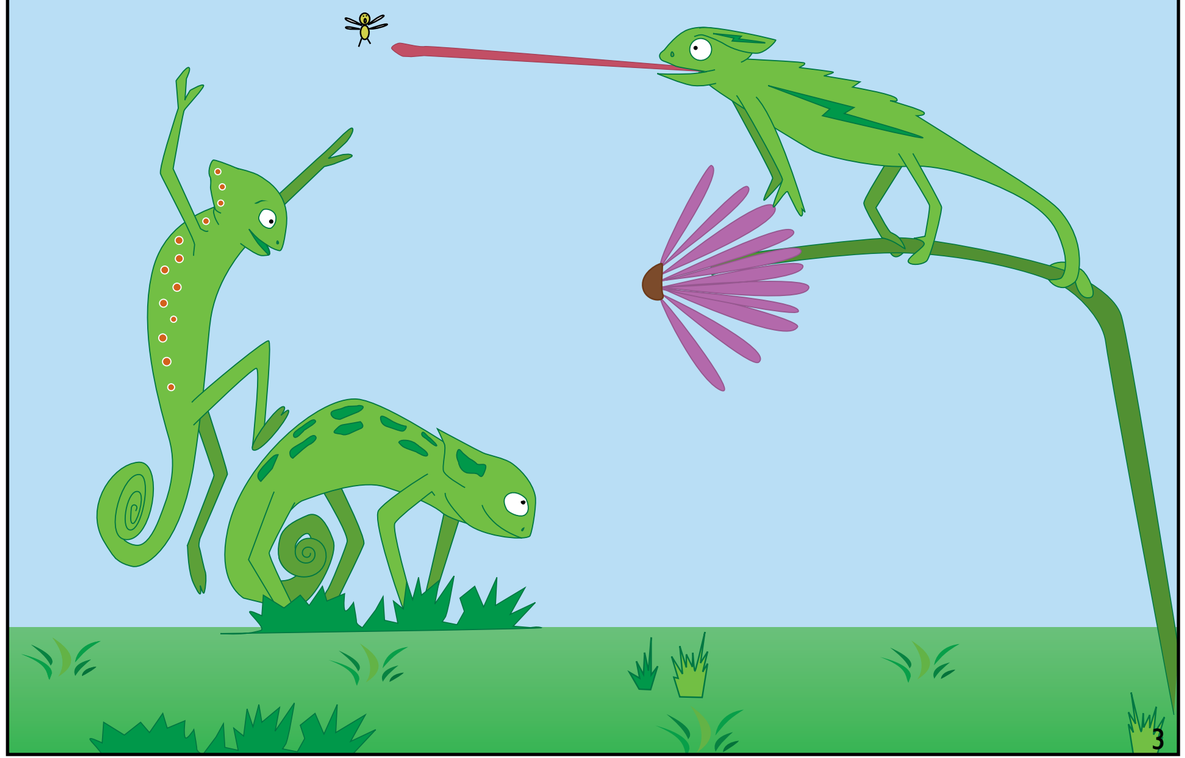
The United States Environmental Protection Agency

Coco has a problem. He's a chameleon, but he can't change colors, and his asthma is acting up. Read how Coco and his friends at Lizard Lick Elementary solve this mystery as they learn about air quality and how to stay healthy when the air quality is bad. This book is for all children, especially those with asthma, and their caretakers. Ages 4-8.

Coco, KC and Kool learned important things at Lizard Lick Elementary,
like when to change colors.



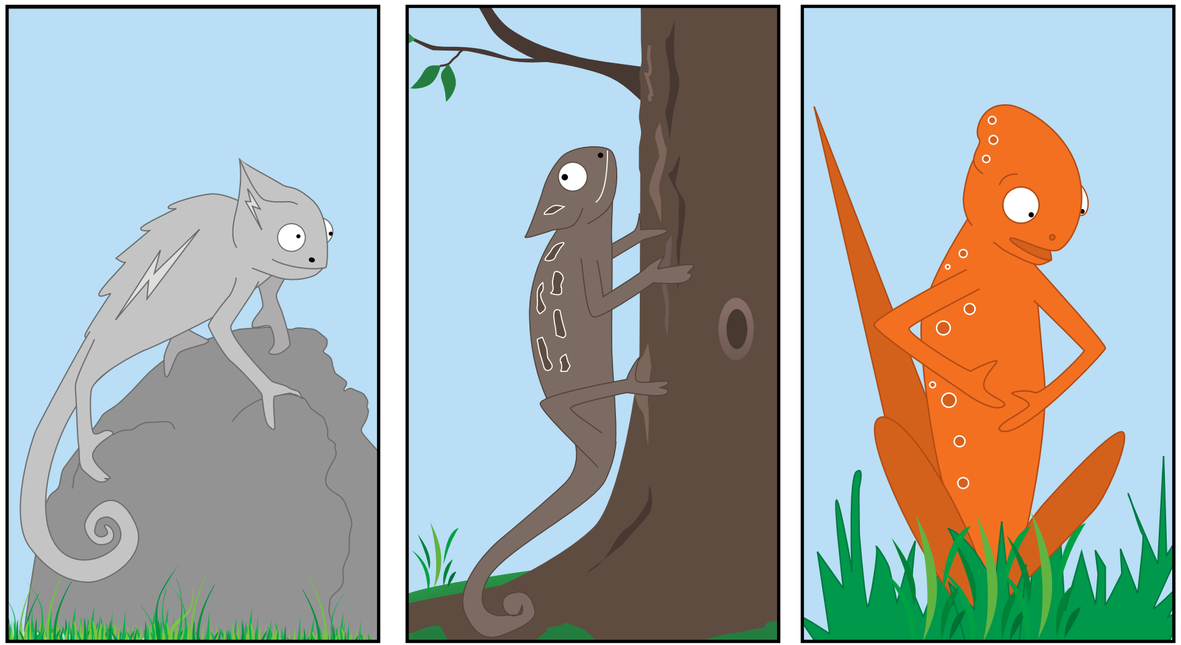
But their favorite subject was recess.
They played leaping lizards... and had a snack.



They changed color to match their surroundings. This is called **camouflage**.

Kool turned gray on the rock. KC turned brown against the tree bark.

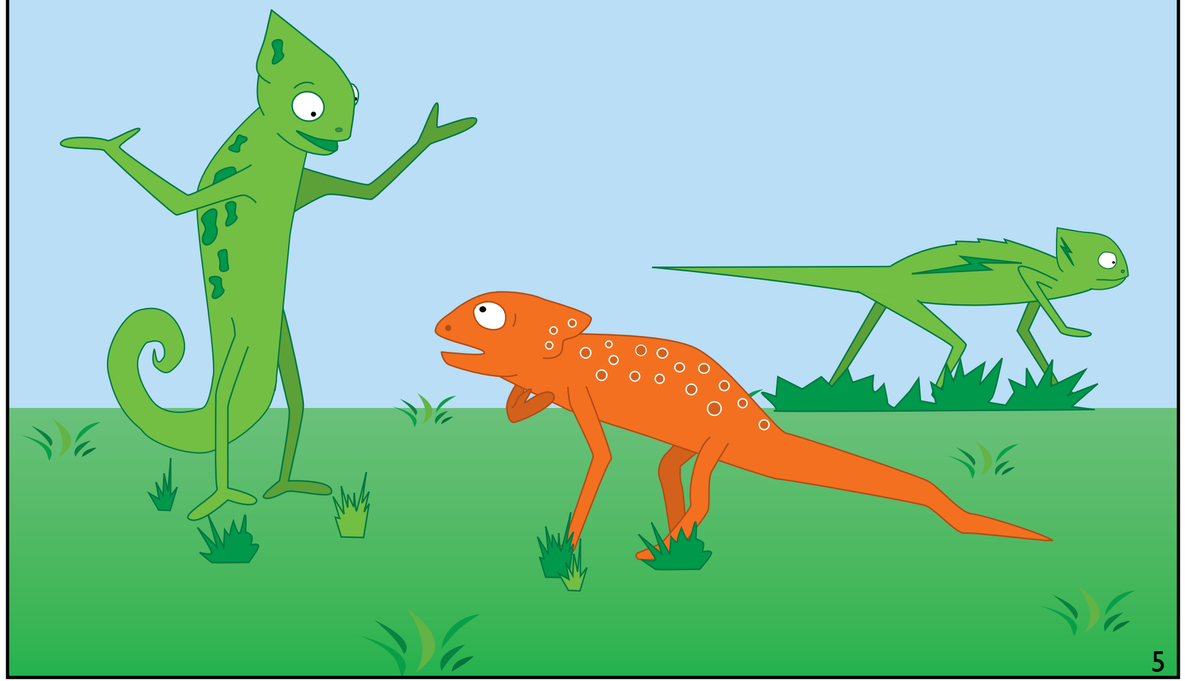
Coco coughed. "Hey, I'm not green like the grass. I'm orange!"



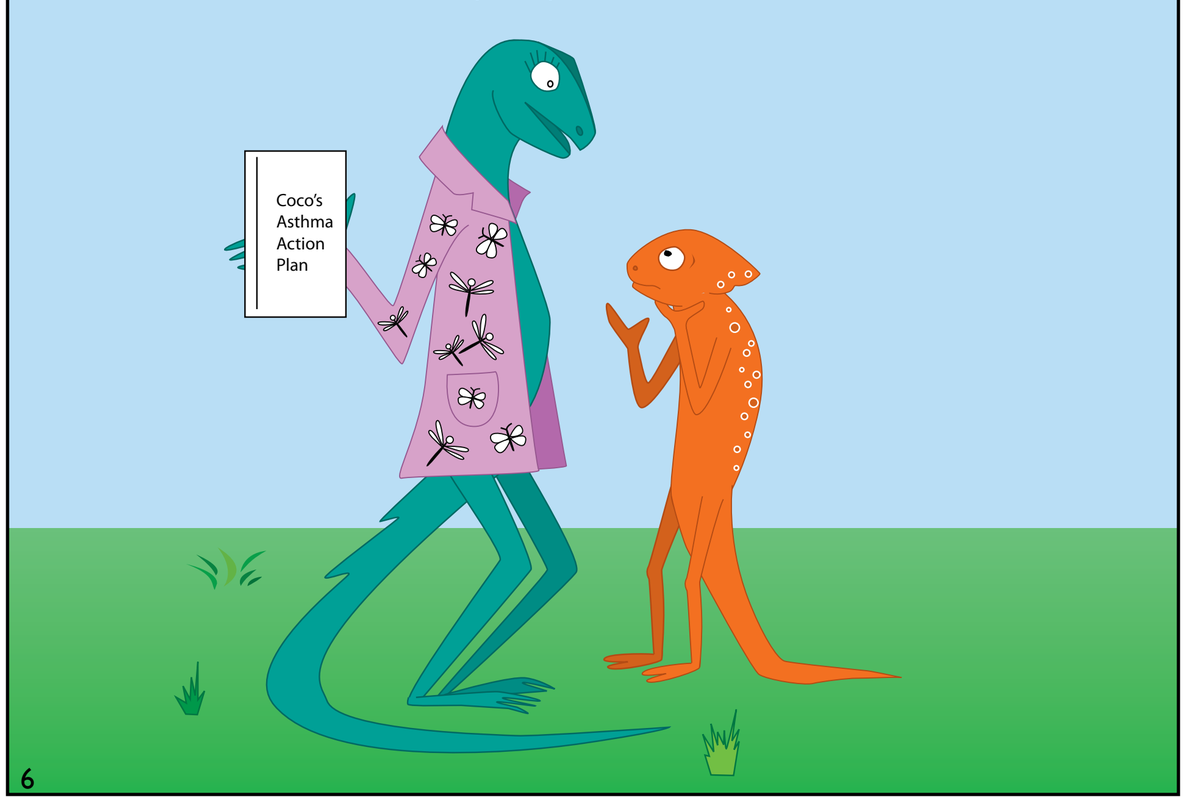
"What happened?" KC asked. "Did you eat a bad fly?"

"No. My chest is tight. It's hard to breathe, and I keep coughing. I have **asthma**."

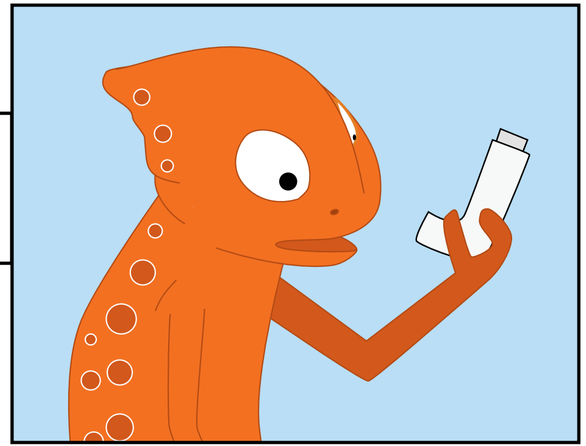
Kool ran to get the school nurse.

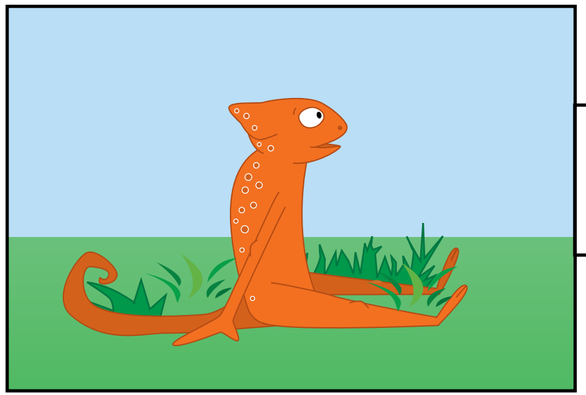


"Having **asthma** can make it hard to breathe sometimes. But it won't make you orange," the nurse said. "You should take it easy today."



Coco and the nurse followed his **asthma action plan.** He used his **inhaler**.

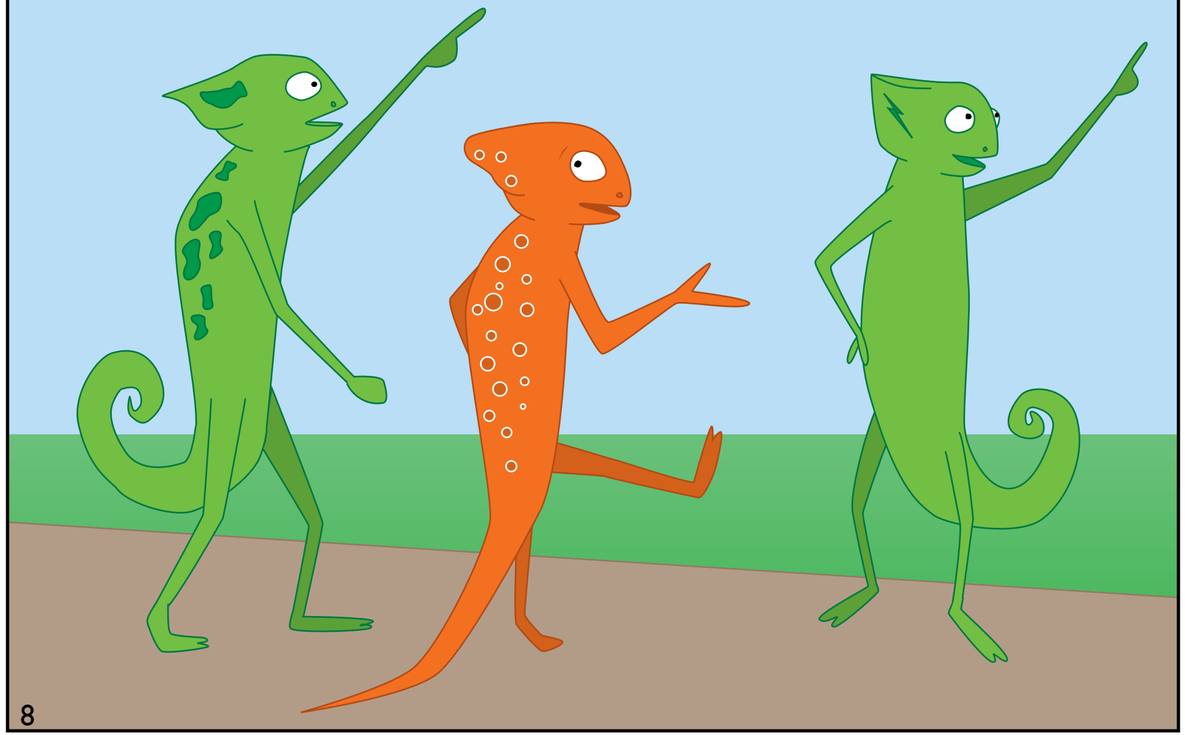




He rested for a few minutes and he felt better.

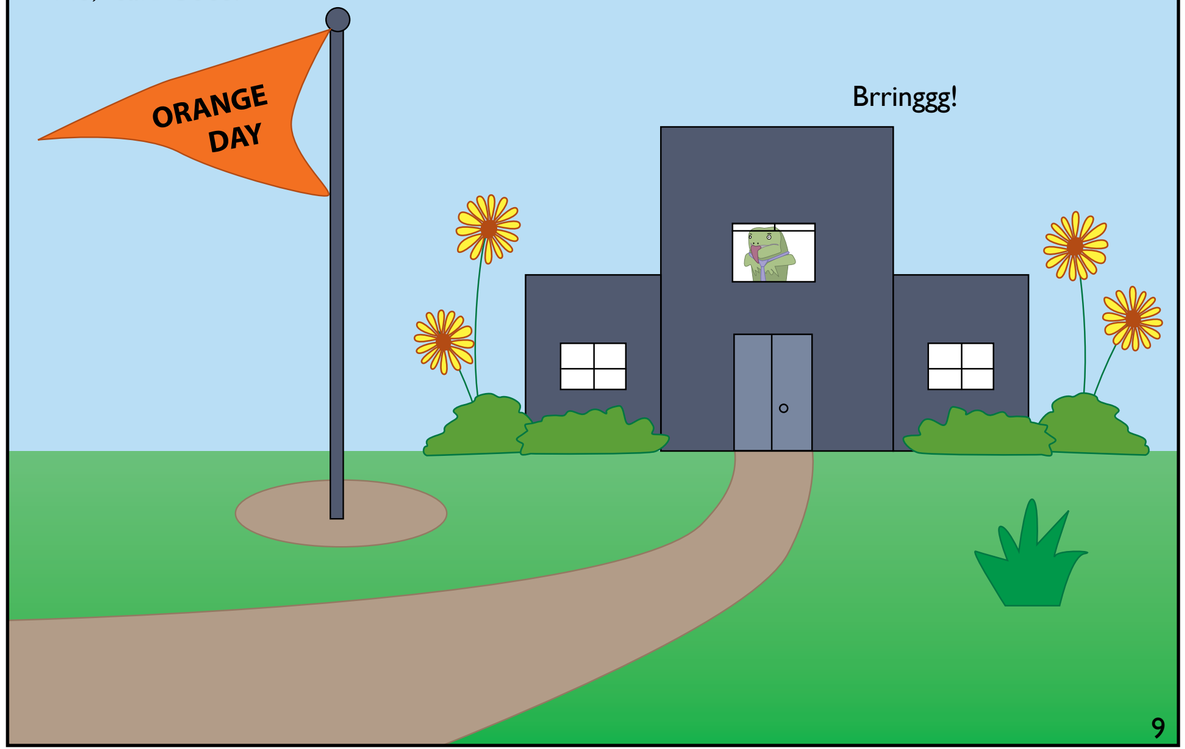
Recess was over and they walked to class.

"Look at that flag," KC said. "Coco is the same color."



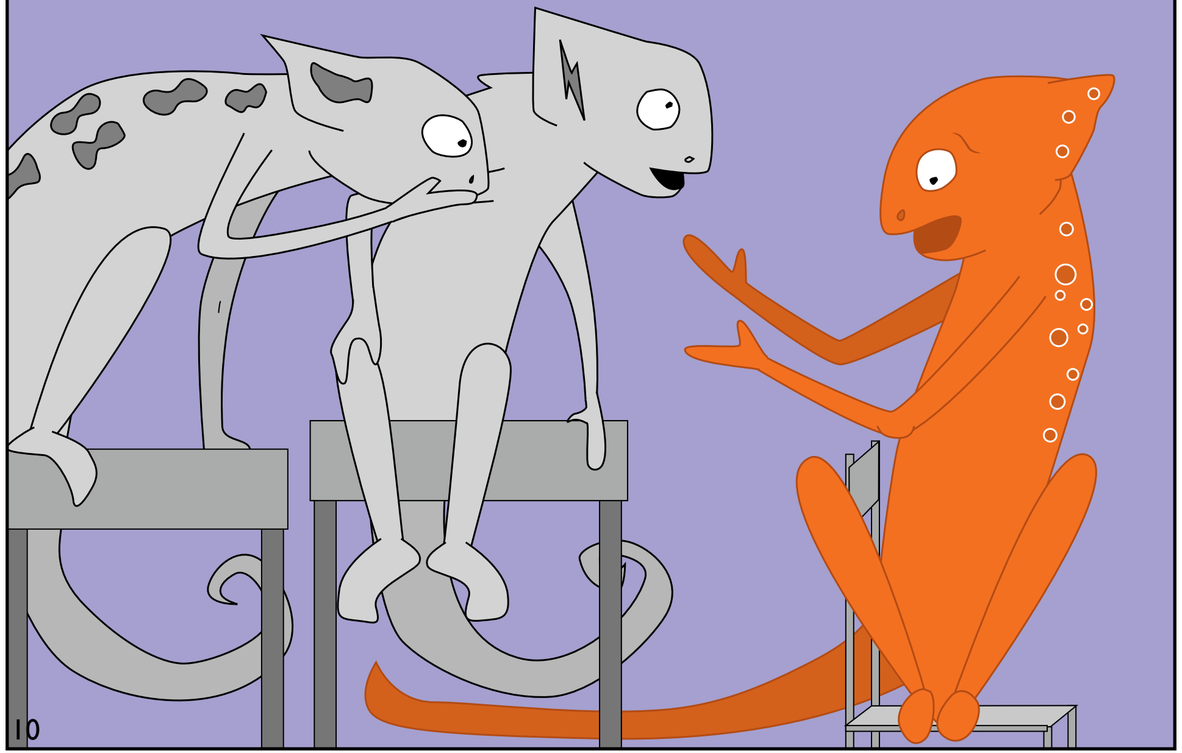
"Were you climbing on the flag?" Kool asked Coco.

"No," said Coco.



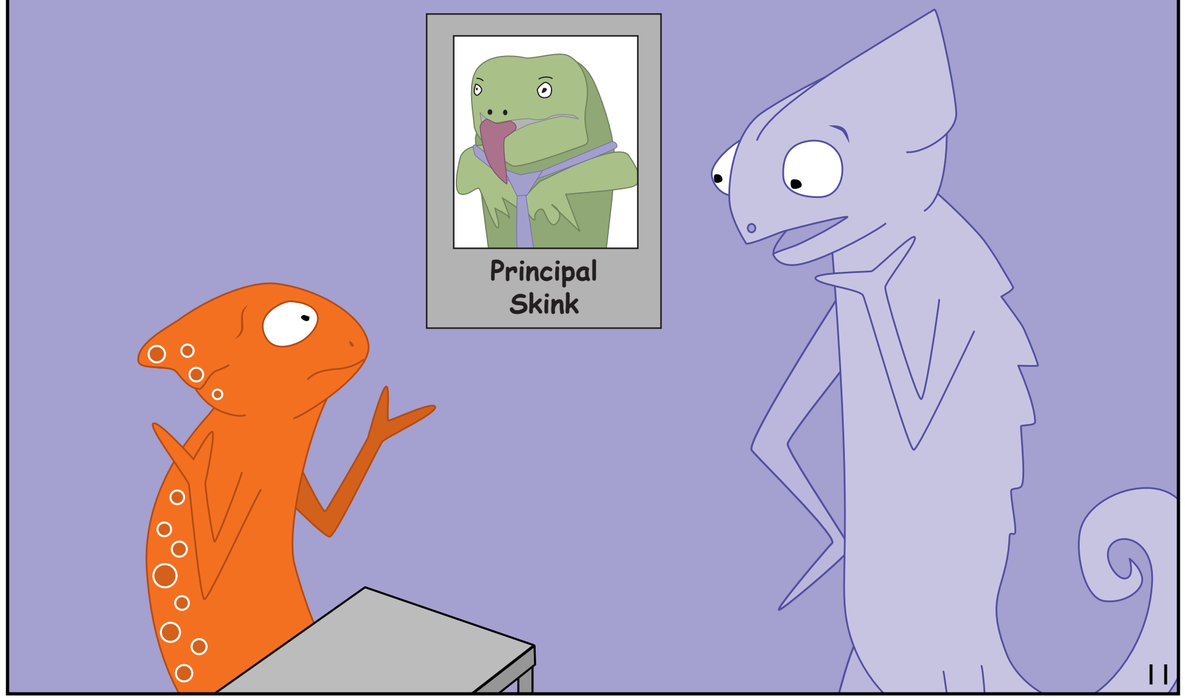
All of the other chameleons turned gray when they sat at their desks, except for Coco.

"Why is Coco orange, Mrs. Bugeye?" Kool asked.

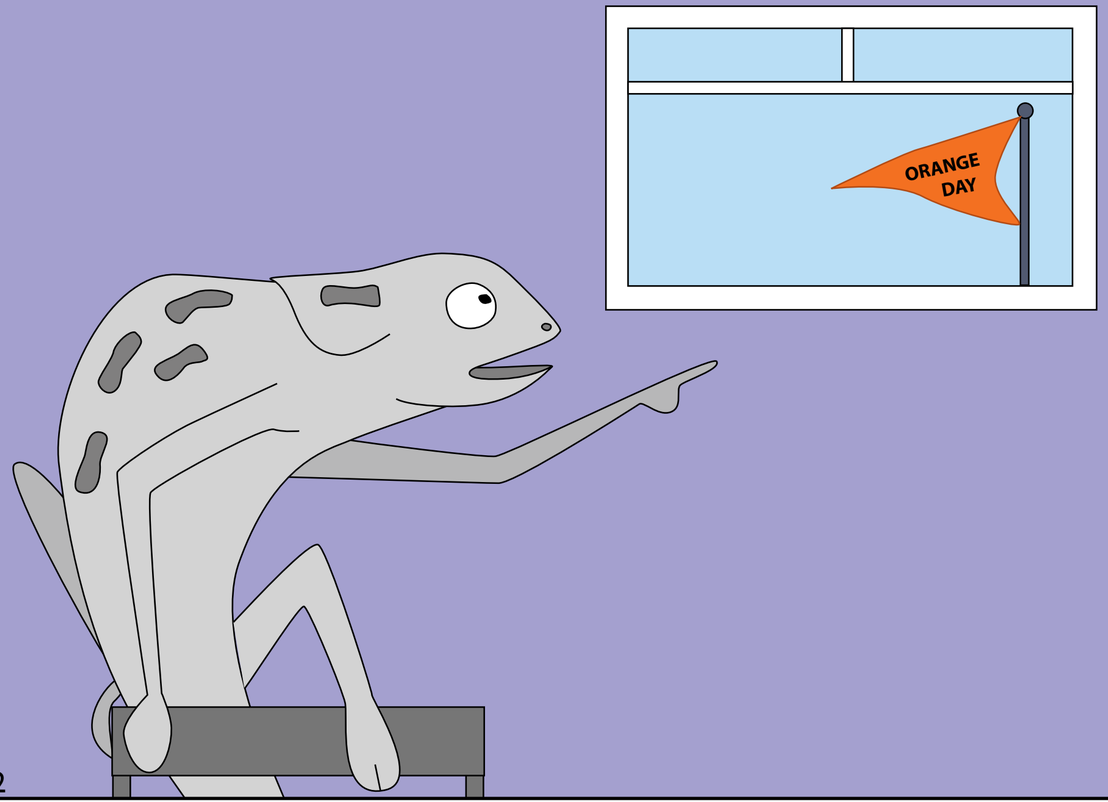


"Hmmm. Chameleons change color for **camouflage** or to **communicate**," Mrs. Bugeye said. "If you didn't turn gray to match the desk, you must be trying to tell us something."

Coco didn't know what to think.

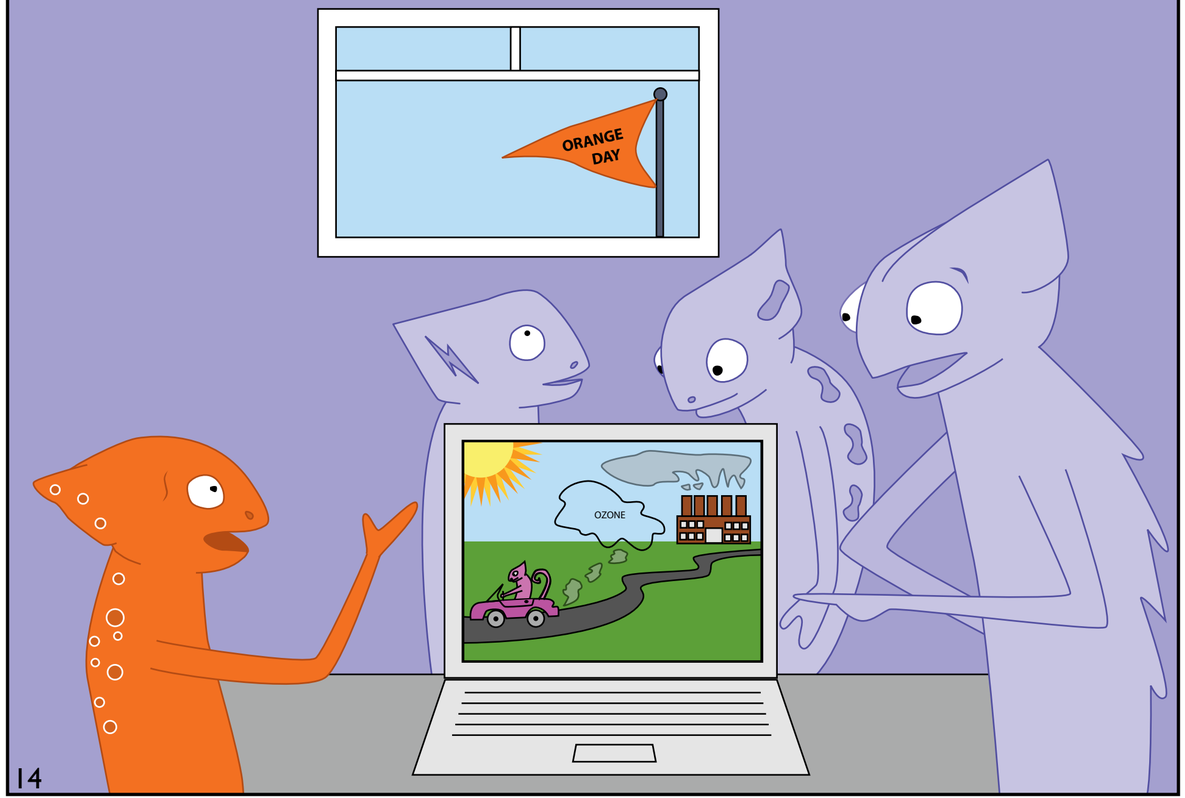


"The flag outside is the same color as Coco," said KC.

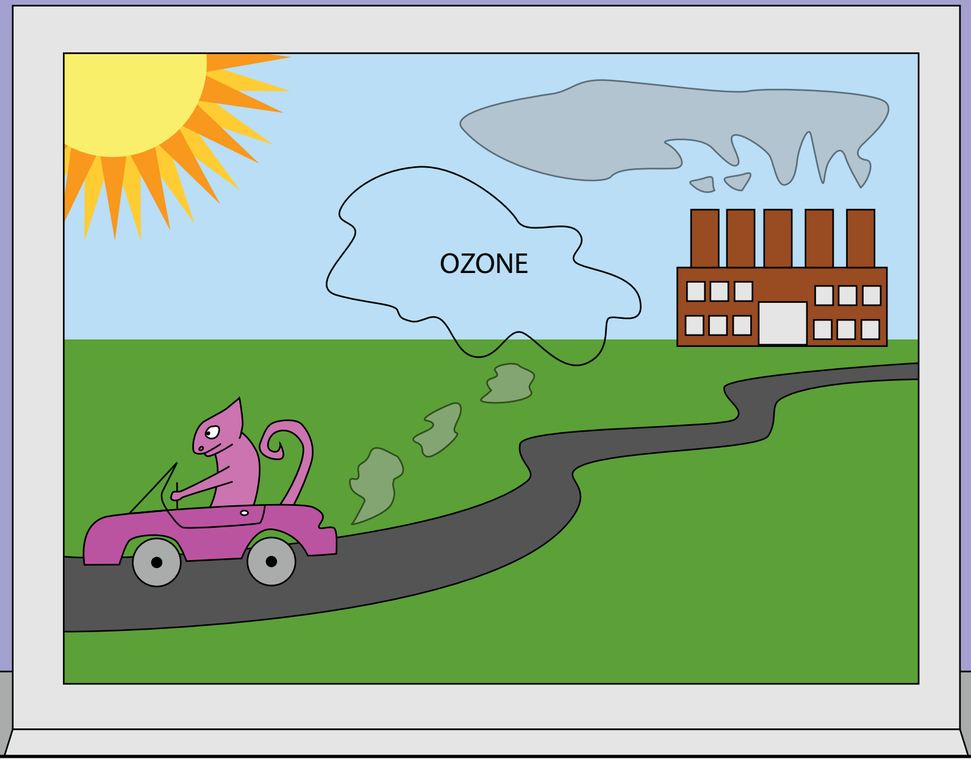


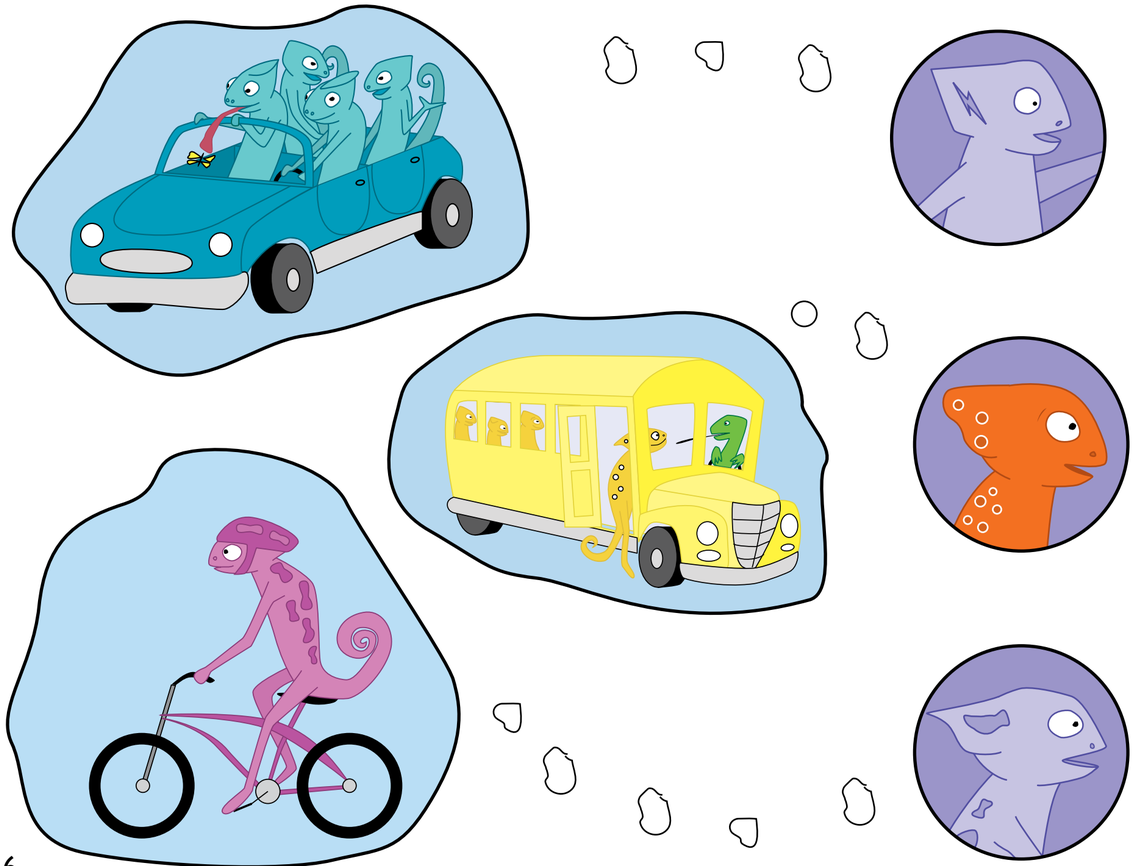
"That flag tells us if the air is clean or dirty," Mrs. Bugeye said. "Today the flag is orange. This website says it is orange because we have too much **ozone** in the air. Breathing **ozone** makes asthma worse."

"But the air looks clean," said Coco.



"Air can be dirty even when it looks clean," said Mrs. Bugeye. "**Ozone** is made when **pollutants** from factories, cars and trucks mix together in the hot summer sun. Less cars on the road means less **pollutants** to make **ozone**."





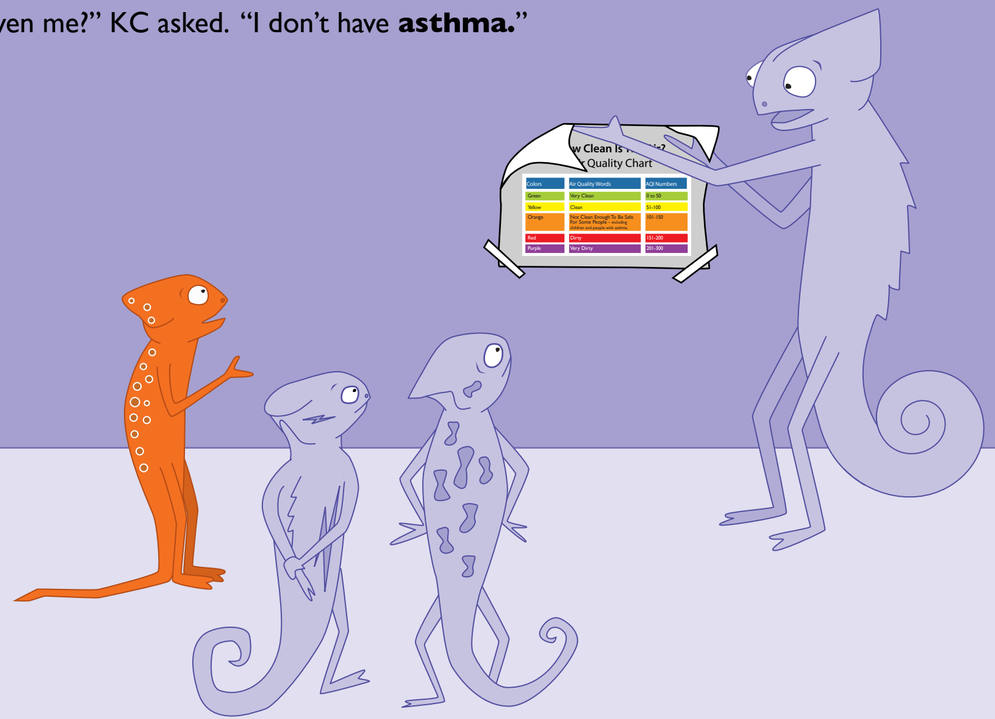
"My dad carpools to work. So he's helping to make the air cleaner. Cool!" shouted Kool.

"I could walk or take the bus to school," Coco said.

"I can ride my bike to soccer practice," KC said.

Mrs. Bugeye put up an air quality chart. "This uses colors, words, and numbers to describe how clean or dirty the air is. When the number on the chart is greater than 100, the air can be bad for kids to breathe."

"Even me?" KC asked. "I don't have **asthma.**"



"Yes, even you," said Mrs. Bugeye. "Even if the air doesn't make you cough, air that is not clean is still a problem for children. Your bodies and lungs are still growing."

How Clean Is The Air?

Air Quality Chart

Colors	Air Quality Words	Numbers
Green	Very Clean	0 - 50
Yellow	Clean	51-100
Orange	Not Clean Enough To Be Safe For Some People - including children and people with asthma.	101-150
Red	Dirty	151-200
Purple	Very Dirty	201-300

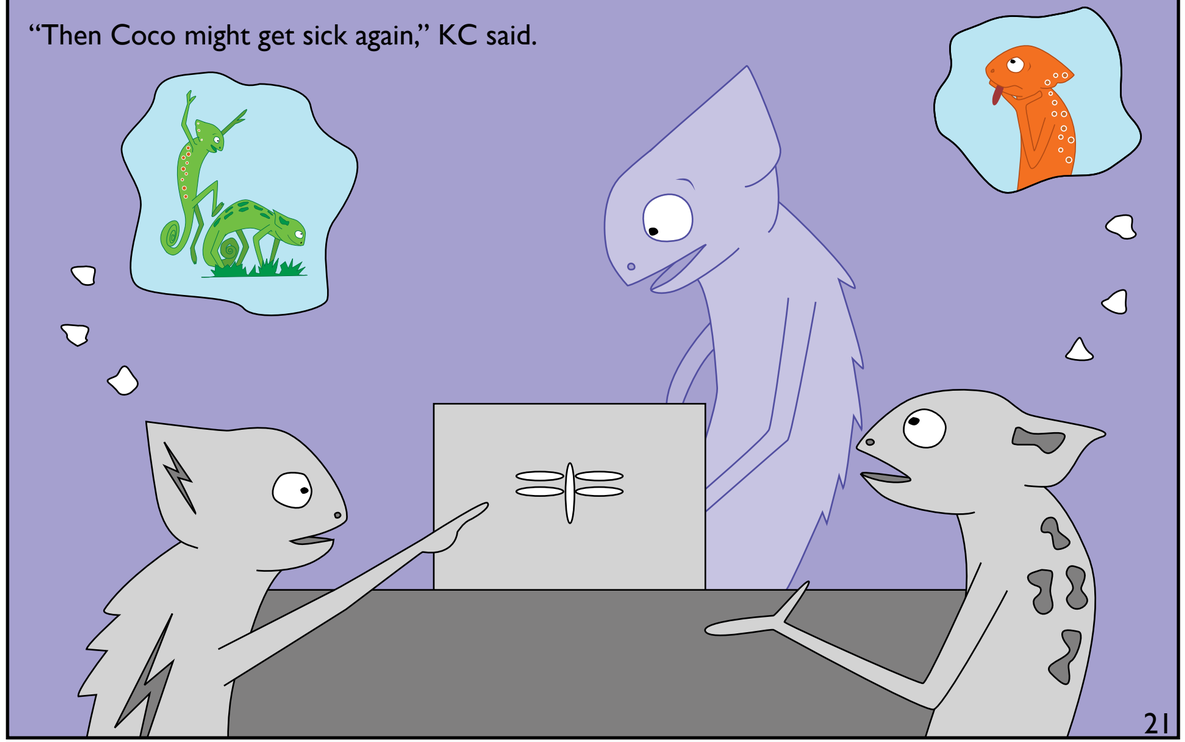
Mrs. Bugeye looked over the chart. "Hmmm. I can use this to plan recess."

If you have **asthma**, pay attention to how you feel and have your **inhaler** with you. Tell the teacher if you have breathing problems.

"Can we play outside tomorrow?" Kool asked.

Mrs. Bugeye checked her computer. "The air quality color will be red tomorrow."

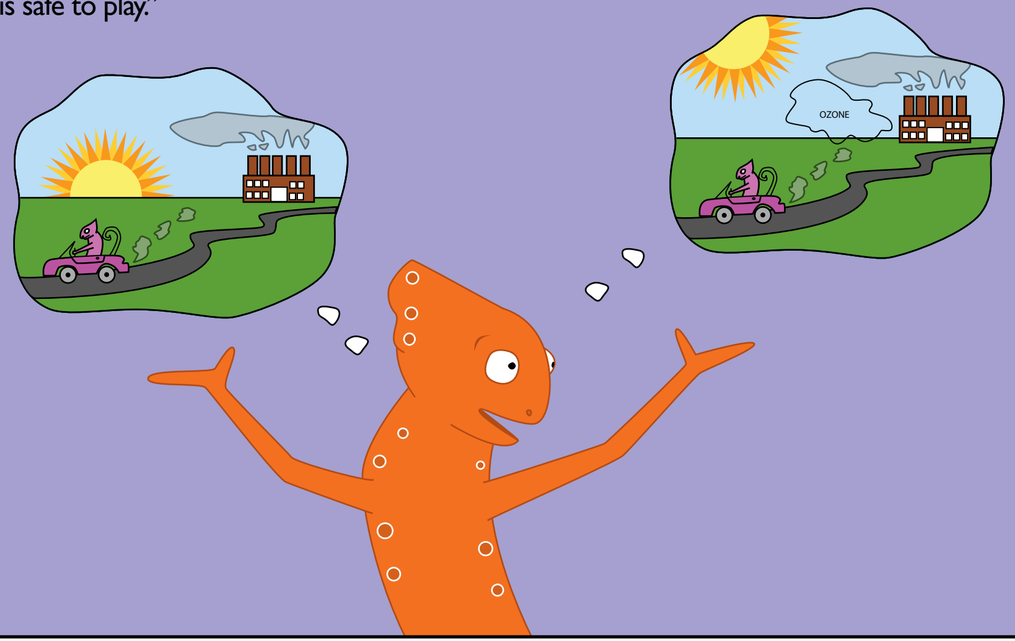
"Then Coco might get sick again," KC said.



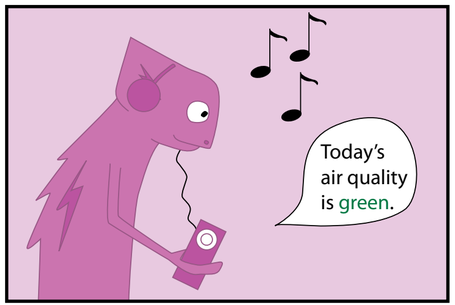
"And it wouldn't be healthy for any of us," Mrs. Bugeye said.

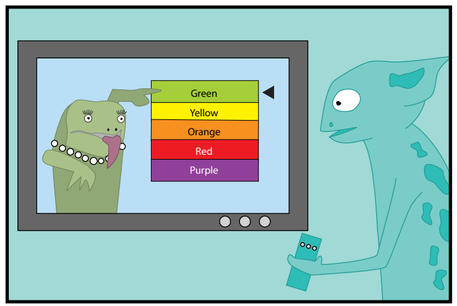
"You need heat and sunlight to make **ozone**," Coco said. "We can play in the morning when it's cooler and there's less ozone!"

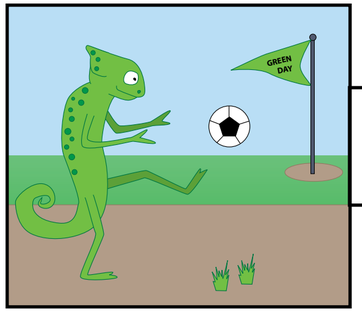
"That's a great idea," Mrs. Bugeye said. "But we should always check the air quality color to make sure it is safe to play."



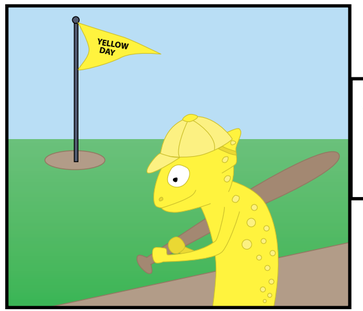
For the next week Coco, KC and Kool checked the air quality color before school. They found it in the newspaper, on TV, and heard about it on the radio.





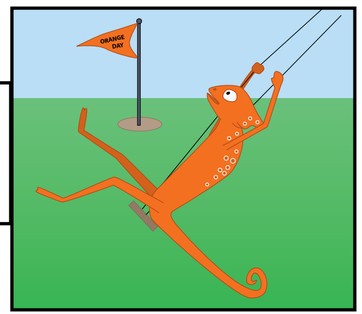


When the air quality color was green, so was Coco.

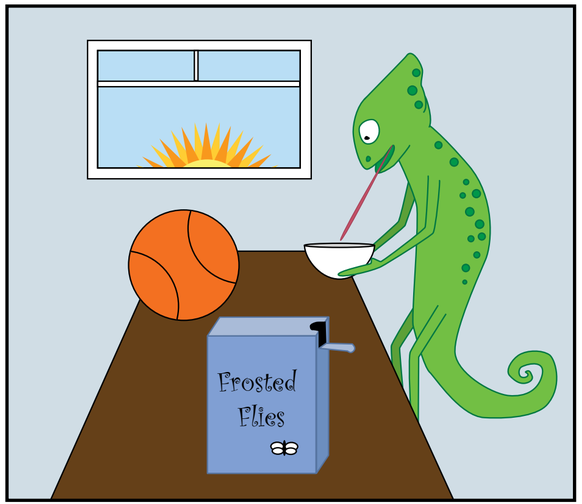


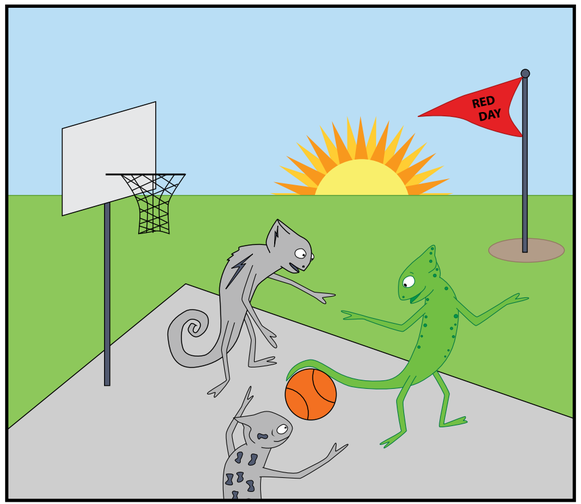
When it was yellow, so was Coco.

When the air quality color and Coco were orange, they played outside, but spent less time running.



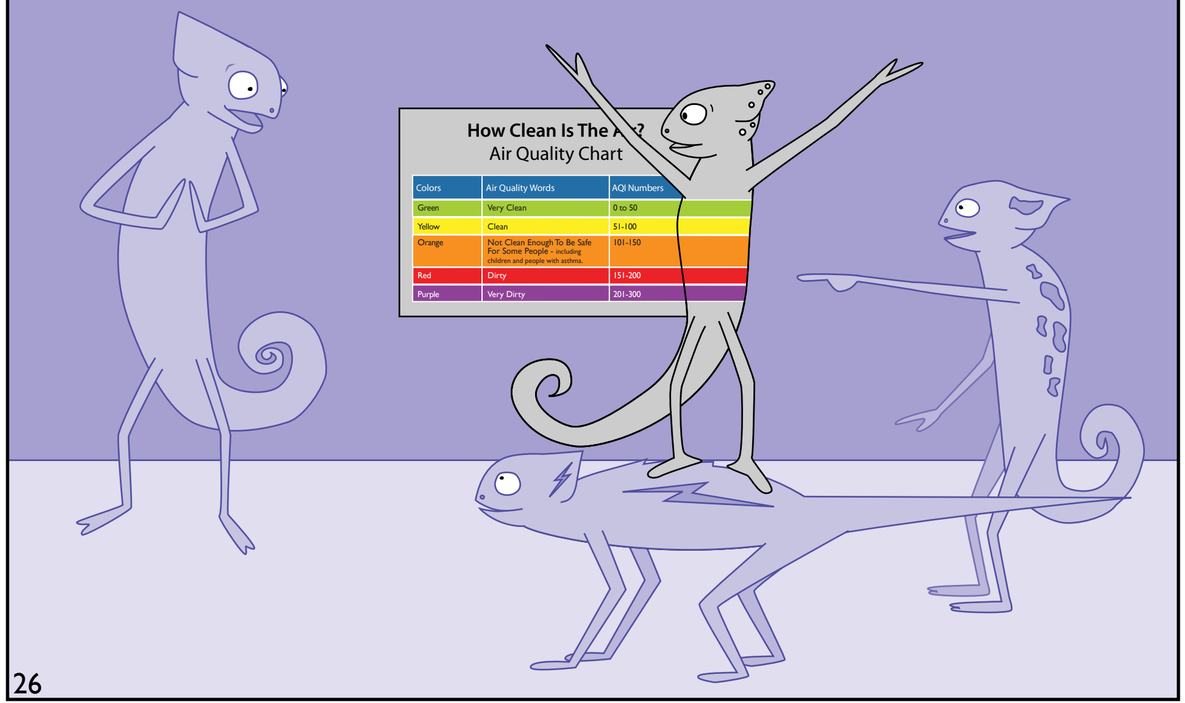
When the air quality color was red, they played outside in the morning. Coco was green, because it was cooler and the air was still clean.





Coco didn't have any more problems with his **asthma**. And Coco, Kool and KC figured out a new way to check the air quality color.

"You don't need a flag or a computer, just look at Coco!" they told Mrs. Bugeye.



Glossary

Asthma – A lung disease that can make it hard to breathe.

Asthma Action Plan – A plan written by a doctor. It has a list of any daily medicines. It tells how to know when asthma is getting worse. It tells what to do to keep asthma under control.

Camouflage – Colors that allow an animal to blend in with its surroundings.

Communicate – To say something to someone. Chameleons change color to communicate. They change color when they see another chameleon. They also change color if they are in danger or if they are hot or cold.

Inhaler – A special tube that contains medicine for the lungs. It is used to treat asthma. An inhaler that is used to stop symptoms of an asthma attack is called a quick relief inhaler.

Ozone – Too much ozone in the air makes it dirty. Ozone is formed when pollutants coming out of cars and factories are cooked by the hot sun. Ozone is more of a problem in the summer.

Pollutant – Pollutants are what make the air dirty or polluted. Sometimes you can see pollutants and sometimes you can't. Ozone is a pollutant that you can't see. Dust and soot are pollutants that you can see. Dust and soot are also called particle pollution.

Teacher's Reference

1. No one should play outside when the air quality color is:
a) Orange b) Purple c) Angry

2. If the air quality color is orange or red, do you have to stay inside all day?
a) No, but take more breaks b) Yes c) No

3. If the air quality word for the day is "very clean," what is the air quality color?
a) Green b) Orange c) Purple

4. The air quality color red means the air outside is:
a) Beautiful b) Red c) Dirty

5. Asthma makes it hard to:
a) Breathe b) Fight Crime c) Read

6. What time of day would there probably be less ozone?
a) Afternoon b) Morning c) Night

7. What time of day would there probably be the most ozone?
a) Afternoon b) Midnight c) Early Morning

8. If you're playing outside when the air quality color is orange or red and you find it hard to breathe you should:
a) Ride your bike b) Keep playing outside c) Stop and tell your parents or teachers

9. Can you see dirty air?
a) Yes b) No c) Sometimes, but not always.

10. Why is it more of a problem for children to breathe dirty air?
a) You need more sleep b) Your bodies and lungs are still growing c) You eat more cookies

Teachers Resources

What color is your air today?
To find your local air quality conditions and forecasts go to www.airnow.gov.
To have air quality information come to you via e-mail, sign up at www.enviroflash.info.

Clean Air for Kids
For children ages 5 – 6, Buster Butterfly shows young children when the air is clean and it's a good day to play outside. He helps them understand the colors associated with the Air Quality Index. Visit www.airnow.gov and click "Kids."

Air Quality Index Kid's Page
For children ages 7-10, three colorful chameleons, interactive games, background information and a dictionary helps guide children's understanding of clean and dirty air. Visit www.airnow.gov and click "Kids."

AIRNow for Students Page
Learn about ozone, particle pollution and the Air Quality Index by viewing animations or by using the on-line air pollution simulator "Smog City 2." (Ages 11 and up). Visit www.airnow.gov and click "Students

AQI Toolkit for Teachers
This toolkit provides teachers with easy-to-use and engaging lesson plans that explain air quality and related health and environmental information to students in grades K-8. Visit www.airnow.gov and click "Teachers."

EPA's Teaching Center
This site is for both formal and non-formal educators who wish to teach about the environment. It offers background information on a variety of topics, lesson plans and activities that work in and out of the classroom. Visit www.epa.gov/teachers/index.htm.

Environmental Kid's Club
The EPA Environmental Kids Club is a web site for kids. Games, pictures and stories help children explore the environment and learn how to protect it.
Visit www.epa.gov/kids/.

EPA's Student Center
The EPA Student Center is a web site for students covering many environmental topics and includes fun activities, projects and grant information.
Visit www.epa.gov/students/.

EPA IAQ Tools for Schools
Learn how to carry out a practical plan to improve indoor air problems at little or no cost using straightforward activities and in-house staff.
Visit http://www.epa.gov/iaq/schools/actionkit.html.

Pediatric Environmental Health Specialty Units (PEHSU)
The PEHSU were created to ensure that children and communities have access to, usually at no cost, special medical knowledge and resources for children faced with a health risk due to a natural or human-made environmental hazard.
Visit www.pehsu.net.

General Recommendations for Children: Actions to Take on Poor Air Quality Days

Regular exercise is good for kids. Keep them active, but know when to make simple changes. Check the AQI forecast each day when you are planning children's outdoor activities. When the forecast is "orange" or "red," adjust when and how kids exercise. In general, short periods outside, such as recess, present less risk for children.

Teachers, please note that while this book only addresses ozone, EPA calculates the AQI for five major air pollutants: ground-level ozone, particle pollution (also known as particulate matter), carbon monoxide, sulfur dioxide, and nitrogen dioxide. For each of these pollutants, EPA has established national air quality standards to protect public health. Ground-level ozone and airborne particles are the two pollutants that pose the greatest threat to human health in this country.

For outdoor activities:

- Have kids take it a little easier when the air is polluted, so they breathe less pollution. For example, reduce activities that involve running or take more frequent breaks.
- If there is flexibility in scheduling an outdoor activity, change it to a time when air quality is better. In some areas, air quality is better early in the day.
- For children with asthma, follow their asthma action plan. If the child has a quick relief inhaler, be sure it is always handy.
- Make indoor space available, as needed, for children who complain of difficulty breathing, or who have heart or lung disease (such as asthma).

Additional recommendations for sporting events and athletic practice and training:

- Increase rest breaks and substitutions to lower breathing rates.
- In athletic practices, include activities that involve walking rather than running.

Always decrease other exposures to unhealthy air:

- Choose areas away from busy streets for children to walk, exercise or play.
- Make sure children avoid standing near vehicles that are idling.

School Flag Program

The Air Quality Flag Program helps children, parents, school personnel and the community be aware of daily air quality conditions using colored flags. Each day, a flag is raised in front of participating schools that signals the level of air pollution for that day. By checking local school flagpoles and comparing the colored flags to the Air Quality Index (AQI), members of the school and the surrounding community can tell what the daily air quality is, and adjust their activities to reduce their exposure to air pollution. The flags are color-coded according to the official AQI. Green indicates good air quality, yellow is moderate, orange means unhealthy for sensitive groups (like children and those with asthma), red signals unhealthy air for everyone, and purple is very unhealthy for everyone. The daily air quality forecast and more information about the Air Quality Flag Program can be found at www.airnow.gov.

Parent Information - Help Your Child Have Fewer Asthma Episodes:

- Work with your child's doctor to identify your child's asthma triggers.
- Take steps to reduce your child's exposure to asthma triggers.
- Work with your child's doctor to come up with a written action plan for managing your child's asthma.
- Follow the asthma action plan. Keep a quick relief inhaler close by…at home, at school, everywhere.
- Share copies of your child's asthma action plan with your child's school, teachers, babysitters, and family members.
- Talk about your child's asthma action plan with people in your child's life so that, in case of an asthma episode, they will know what to do.
- Notice how often your child has asthma symptoms like coughing, chest tightness, wheezing and trouble breathing. Ask for reports of asthma symptoms at school or child care.
- Remind your children to wash their hands to reduce the spread of colds.
- Contact your child's doctor if your child has asthma symptoms or uses a quick relief inhaler more than once or twice a week. You and your child's doctor may need to adjust the asthma action plan.

For more information on managing your child's asthma, visit www.epa.gov/asthma/about.html or www.noattacks.org.

Asthma Resources for Schools:

EPA's guide ***Managing Asthma in the School Environment*** includes information to help parents and school staff identify and reduce environmental asthma triggers commonly found in schools. Visit www.epa.gov/iaq/schools/asthma.html.

Every member of the school team has a role to play to assist students with asthma. ***Managing Asthma: A Guide for Schools*** can help you develop an asthma-friendly program in your school. You will be able to brief school staff including teachers and coaches on their special role in making your school asthma-friendly. Visit www.nhlbi.nih.gov/health/prof/lung/ to find the guide and more school asthma resources.

Teacher's Reference (Answers)

1. No one should play outside when the air quality color is:
b) Purple

2. If the air quality color is orange, red, or worse, do you have to stay inside all day?
a) No, but take more breaks. Exercise is good, but take it a little easier when the air is dirty. The longer you play outside, the more you need to take breaks, and play games that do not involve as much running.

3. If the air quality word for the day is "very clean" what is the air quality color?
a) Green

4. The air quality color red means the air outside is:
c) Dirty

5. Asthma makes it hard to:
a) Breathe

6. What time of day would there ozone probably be less ozone?
b) Morning

7. What time of day would there probably be the most ozone?
a) Afternoon

8. If you're playing outside when the air quality color is orange or red and you find it hard to breathe you should:
c) Stop and tell your parents or teachers

9. Can you see dirty air?
c) Sometimes, but not always. Air can be dirty even when it looks clean. For example, you cannot see ozone.

10. Why is it more of a problem for children to breathe dirty air?
b) Your bodies and lungs are still growing

United States
Environmental Protection
Agency

Office of Air Quality Planning and Standards
Outreach and Information Division
Research Triangle Park, NC

Publication No. EPA-456/K-10-001
May 2010