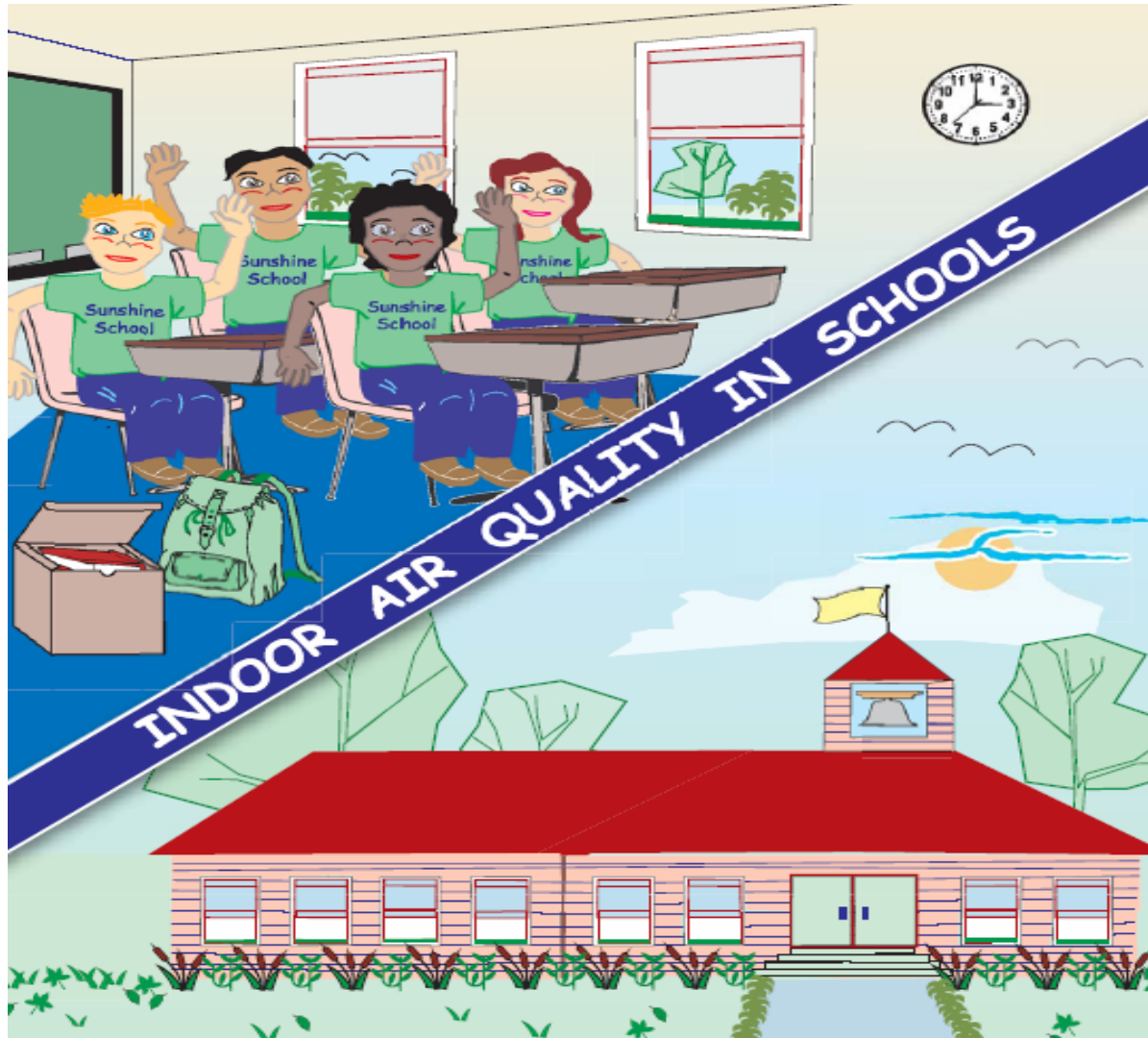


Indoor Air Quality (IAQ) in Schools Comic Book



Page 1 of 28

Supplemental Material: IAQ in Schools Comic Book

(accompanies IAQ Lesson 1 – Introduction and Overview to IAQ)

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Indoor Air Quality (IAQ) in Schools Comic Book

The indoor or "built" environment is as fascinating and complex as the outdoor environment and since we spend 90% of our day indoors, it is truly the human environment. The quality of the air indoors is important to our health and productivity. Good indoor air quality (IAQ) in schools helps enable education employees to do their best work and for students to learn to the best of their abilities. The U.S. Environmental Protection Agency has created a voluntary and common sense program called IAQ Tools for Schools (IAQ Tfs) to help schools improve IAQ and avoid situations which contribute to poor environmental conditions.

This illustrated comic book on IAQ in schools serves as a supplemental guide to the IAQ Tfs Program and is designed to be used by students and teachers from elementary through high school. The text and artwork were kept simple so that (1) 4th-5th grade students would be able to read and understand it, and (2) because many of the principles and practices of IAQ are simple and best communicated to all ages with elementary illustrations. It is expected that elementary school teachers will work closely with their students to lead them through the guide and schools while middle and high school students will be able to work more independently.

Using this guide, students and teachers will be able to explore their schools and recognize architectural, mechanical, and maintenance procedures which can contribute to good or poor IAQ. Additionally, they will learn how occupant behavior and our typical activities can dramatically affect the quality of our air inside our buildings.

We encourage students and teachers with artistic or photographic ability to customize this guide to their own school. Using actual school building features and the typical activities of their school, students can create an "owners manual" for their indoor environment.

**To order EPA's Indoor Air Quality Tools for Schools (IAQ Tfs) Action Kit or any of the supplemental materials found in the Kit, contact IAQ INFO at 800-438-4318 or visit <http://www.epa.gov/iaq/schools/actionkit.html>.*

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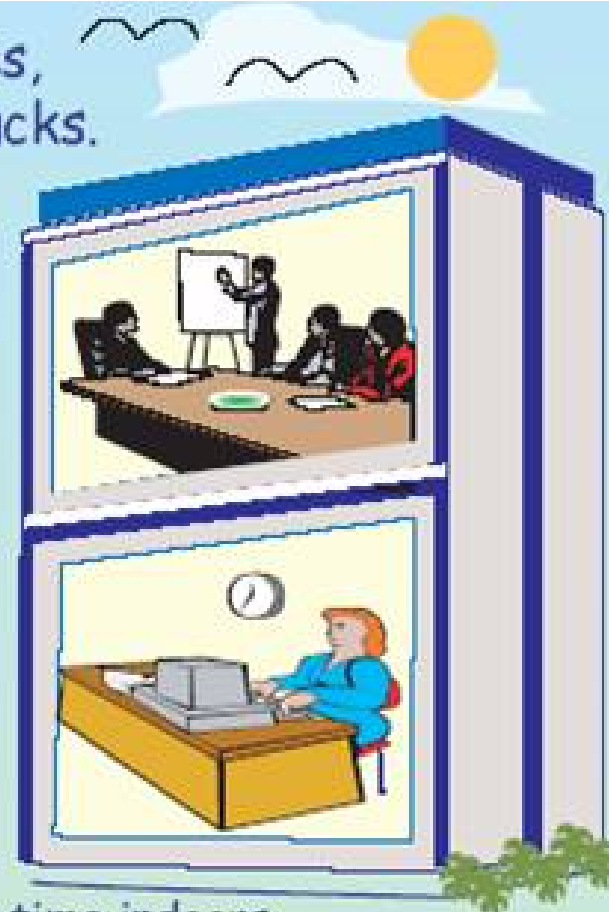
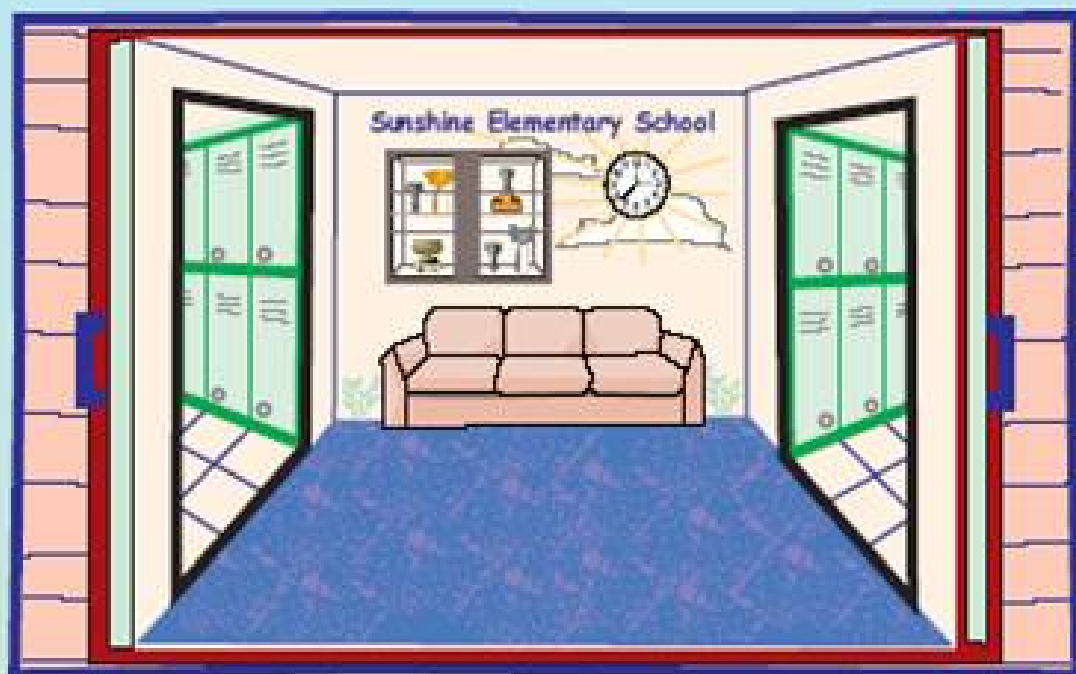
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Indoor Air Quality (IAQ) in Schools Comic Book

The Indoor Environment: inside our offices, homes, schools and even in our cars and trucks.



Most days we spend about 90% of our time indoors.
The EPA says that levels of pollutants indoors may be 2-5 times,
and occasionally more than 100 times, higher than outdoor levels.

Indoor Air Quality (IAQ) in Schools Comic Book

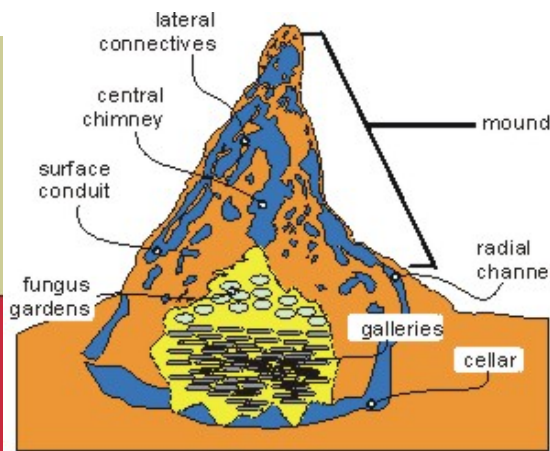
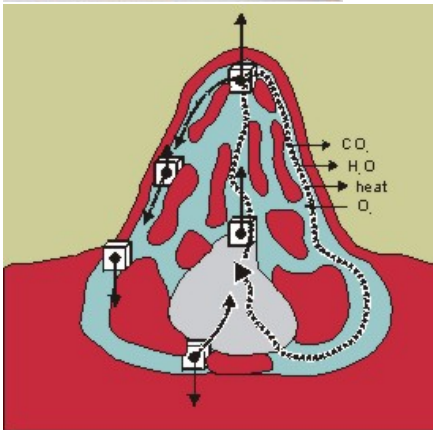
"Animals have been building homes for millions of years and they've "learned" how to build them to meet their needs. We're still experimenting - on ourselves!" Shelly Rosenblum



Dr. J. Scott Turner of the State University of New York.
<http://www.esf.edu/efb/turner/termite/termhome.htm>

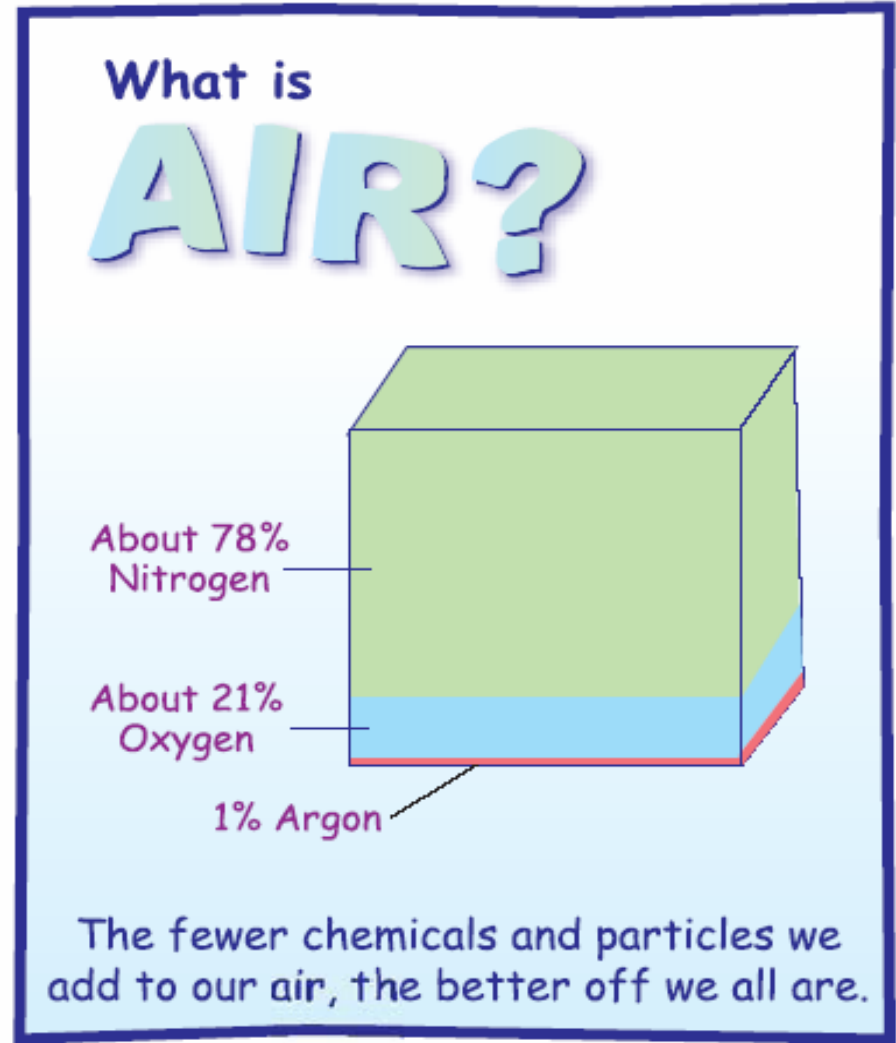
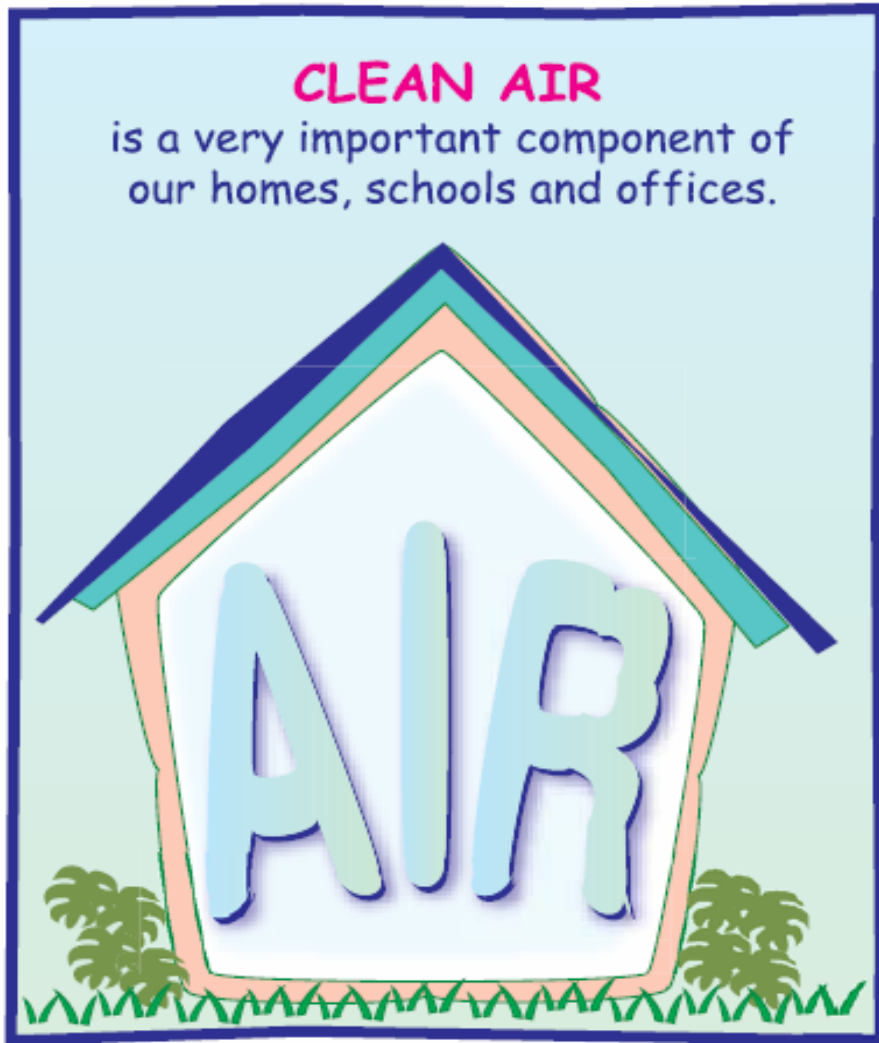
Termite mounds are ventilation systems for the colony below ground.

Engineers took lessons from termite mounds when they designed the ventilation system for the Eastgate Complex in Zimbabwe.

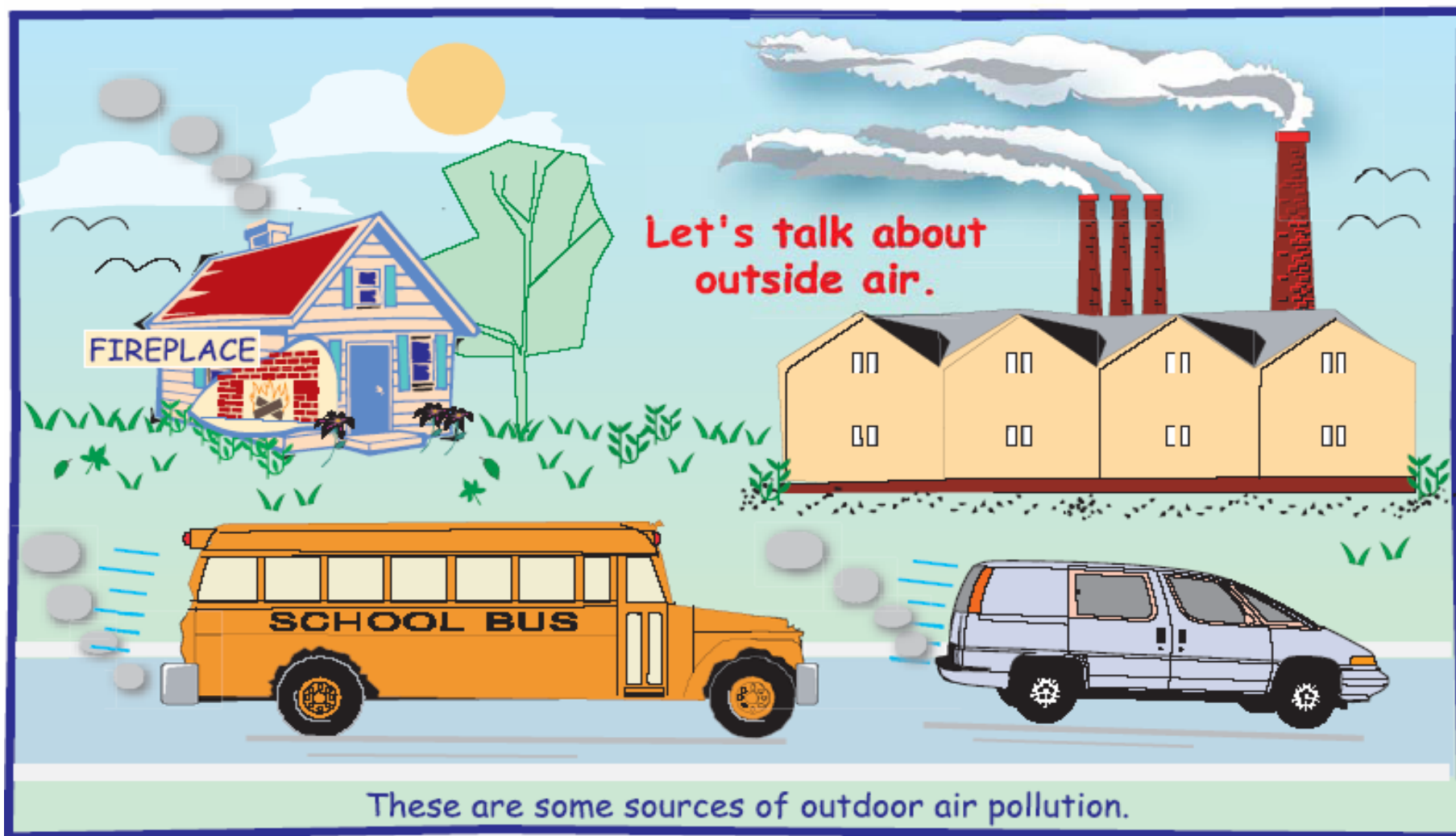


***Photos are courtesy of Dr. Turner's website
<http://www.esf.edu/efb/turner/Turner.htm>**

Indoor Air Quality (IAQ) in Schools Comic Book



Indoor Air Quality (IAQ) in Schools Comic Book



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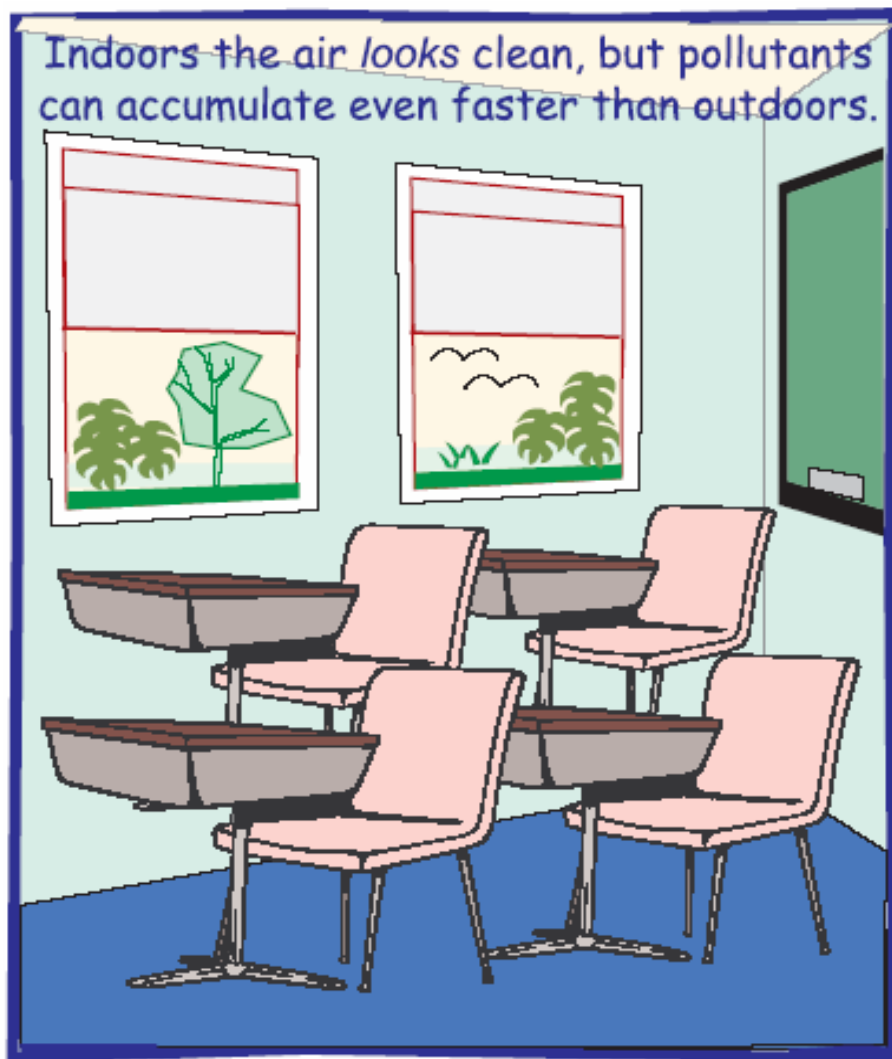
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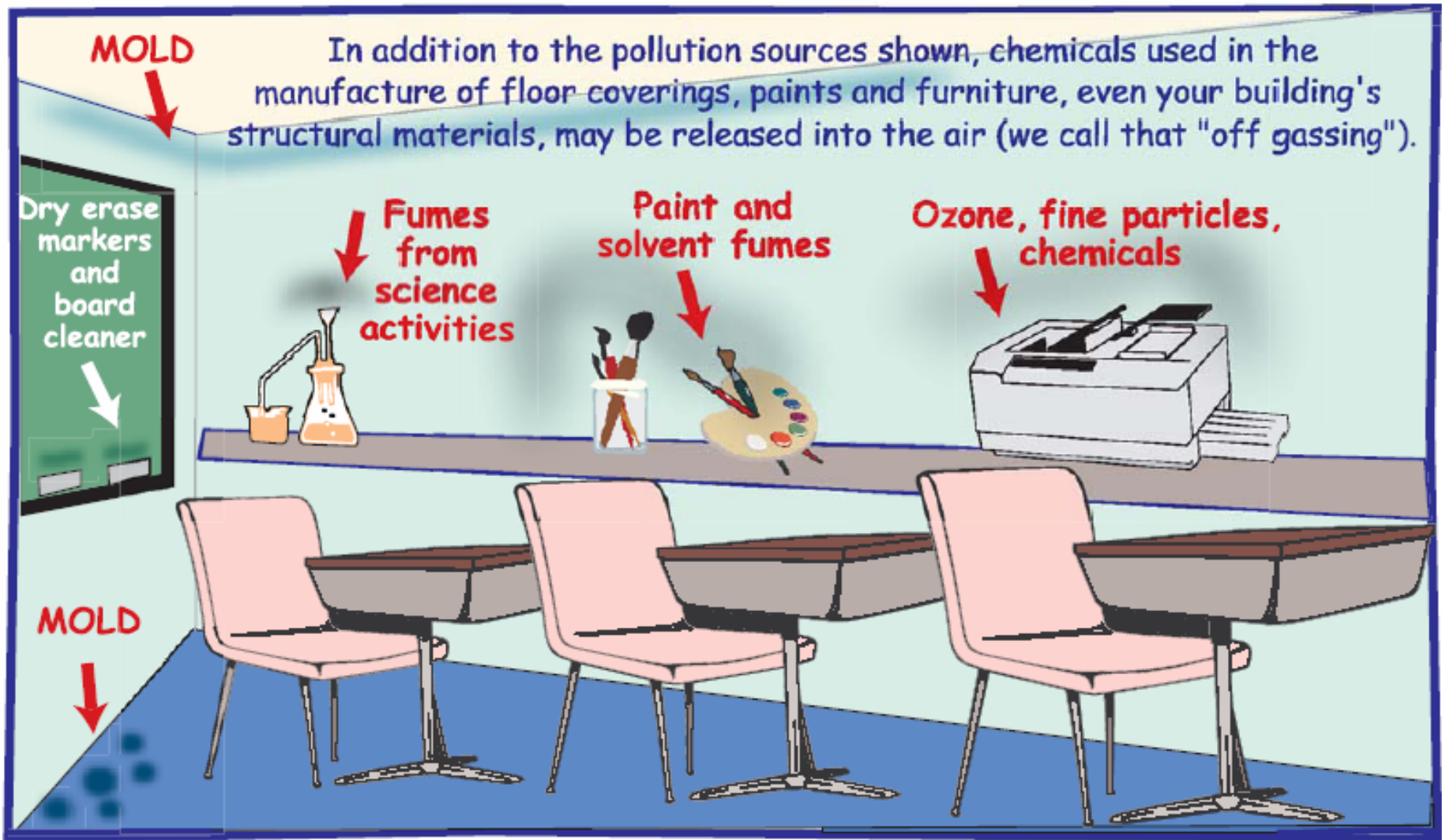
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Indoor Air Quality (IAQ) in Schools Comic Book



Human beings and animals breathe in air containing oxygen (O_2) and breathe out air containing carbon dioxide (CO_2) and other contaminants. This is one of the ways our bodies have of getting rid of wastes. And we all know about unpleasant gases and odors from our digestive processes and perspiration! To make us smell better we use aftershaves, colognes, perfumes and deodorants. We also use hairsprays, nail polish and other personal care products. These products may add additional contaminants to the air. It makes sense not to breathe too much of these contaminants which accumulate quickly in closed rooms. We should remove these odors and contaminants by opening windows or using good mechanical ventilation!

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Indoor Air Quality (IAQ) in Schools Comic Book



- Asthma leads to **2 million emergency room** visits and **5,000 deaths** per year in the U.S.
- Asthma accounted for more than **14 million missed school** days in 2000.
- Asthma costs (health care costs and lost productivity) totaled **\$14 billion** in 2002.

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Supplemental Material: IAQ in Schools Comic Book

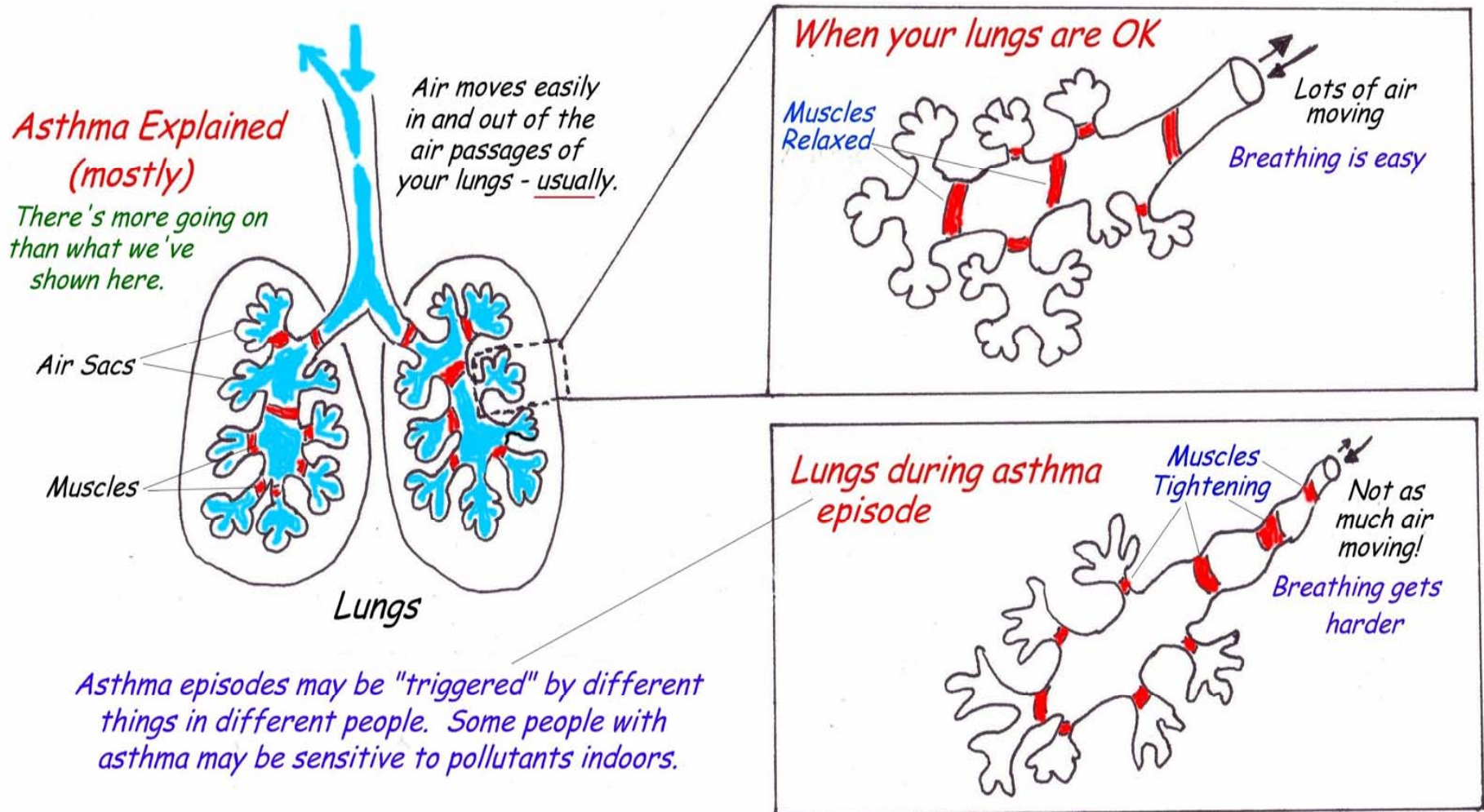
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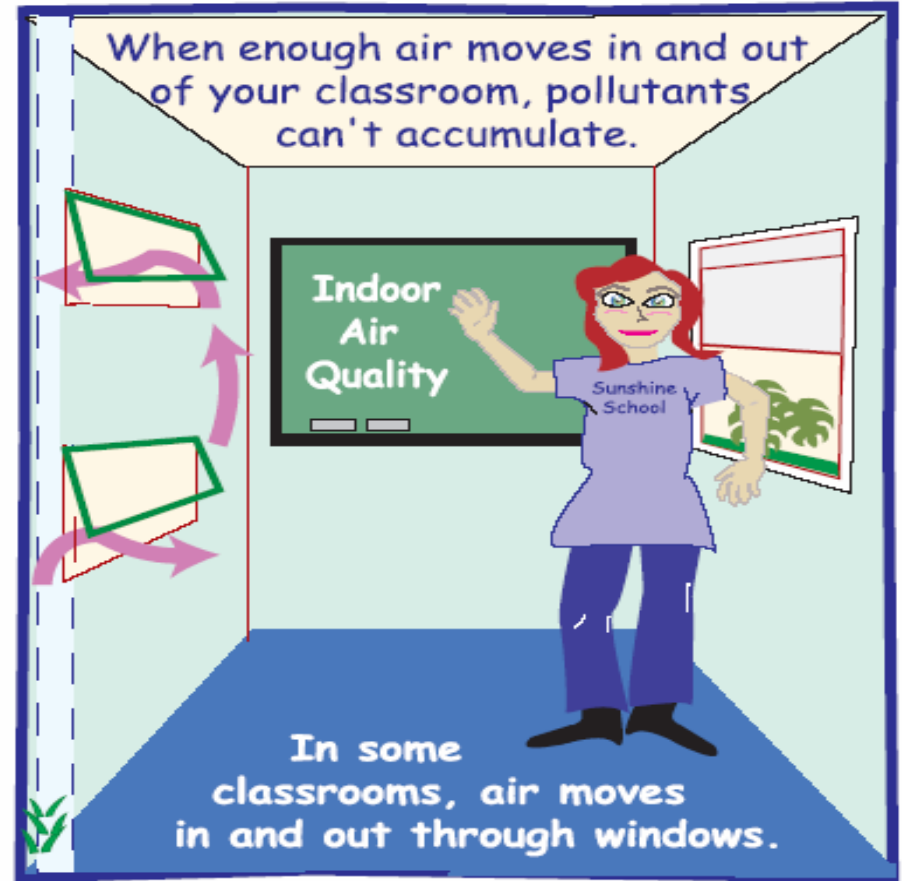
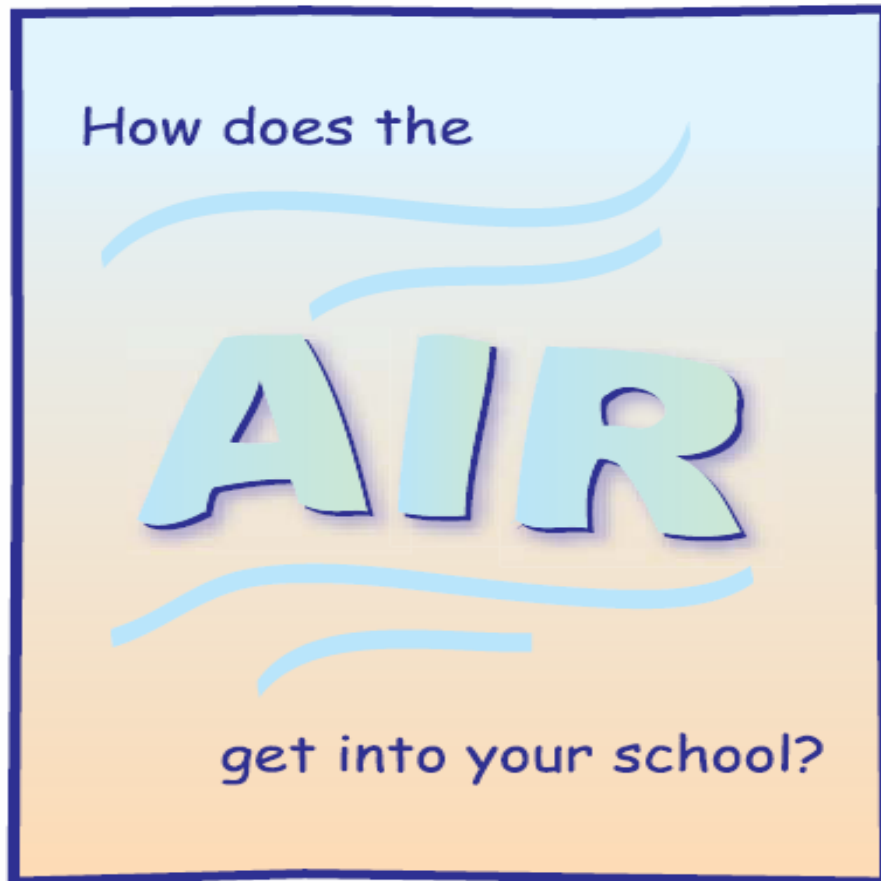
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Indoor Air Quality (IAQ) in Schools Comic Book



Indoor Air Quality (IAQ) in Schools Comic Book



It's important to open both top and bottom windows since warm air is lighter than cool air. Warm air moves out of the top window and cool air comes in the bottom window. Closing either window prevents this natural circulation.

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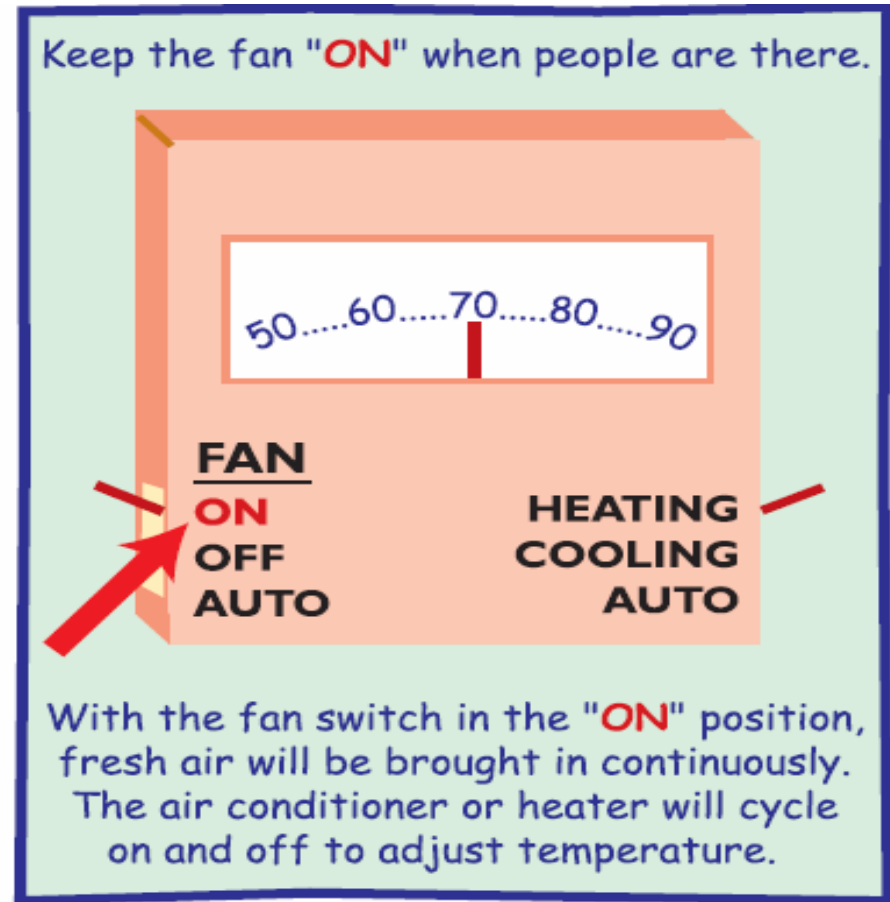
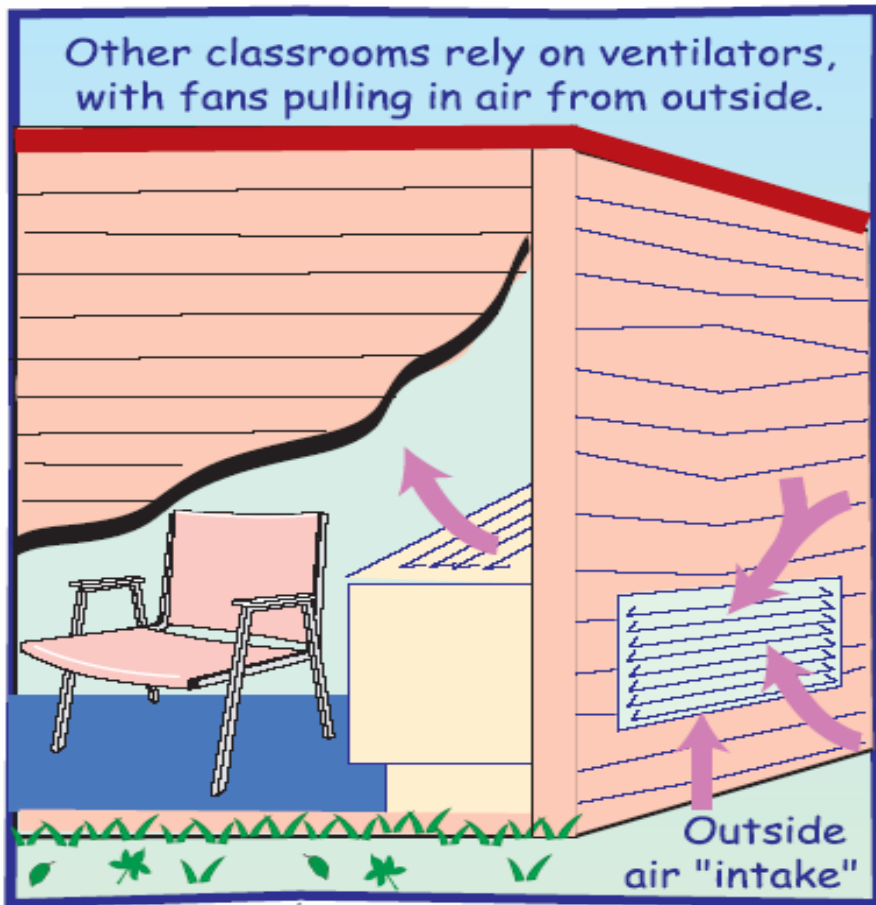
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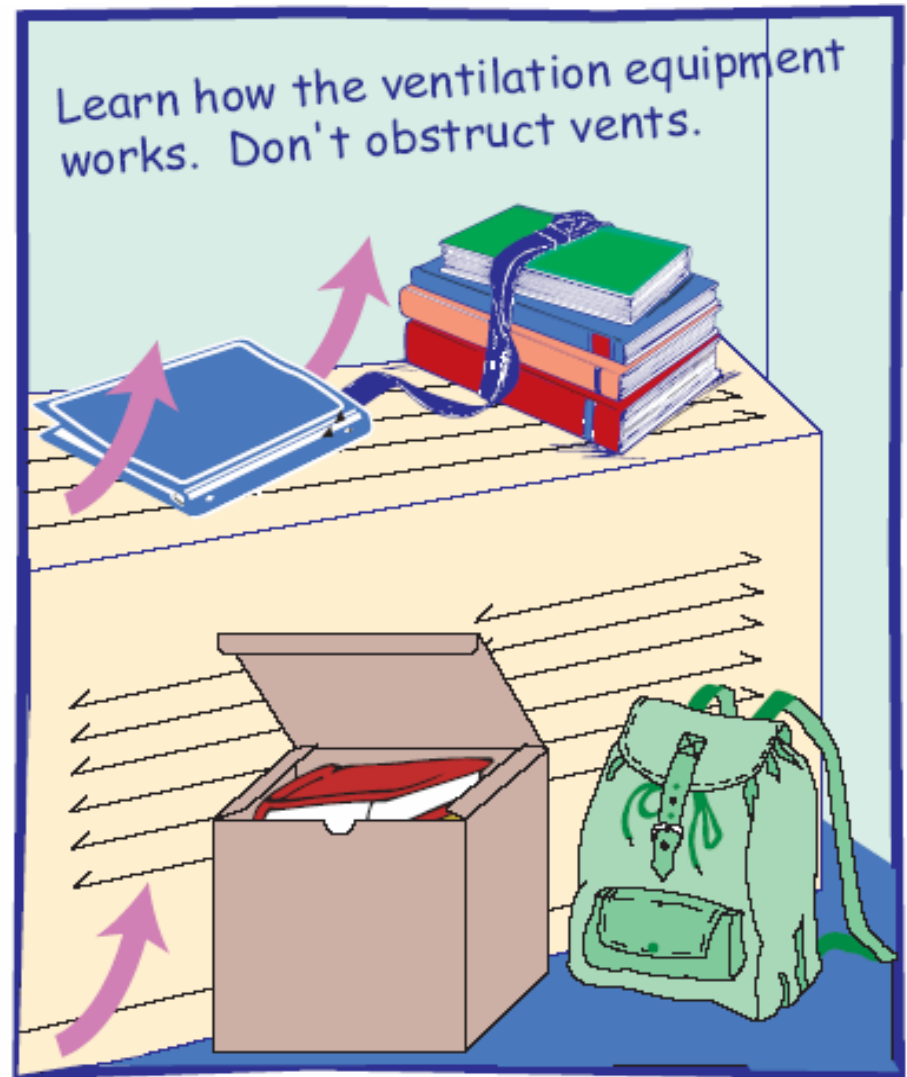
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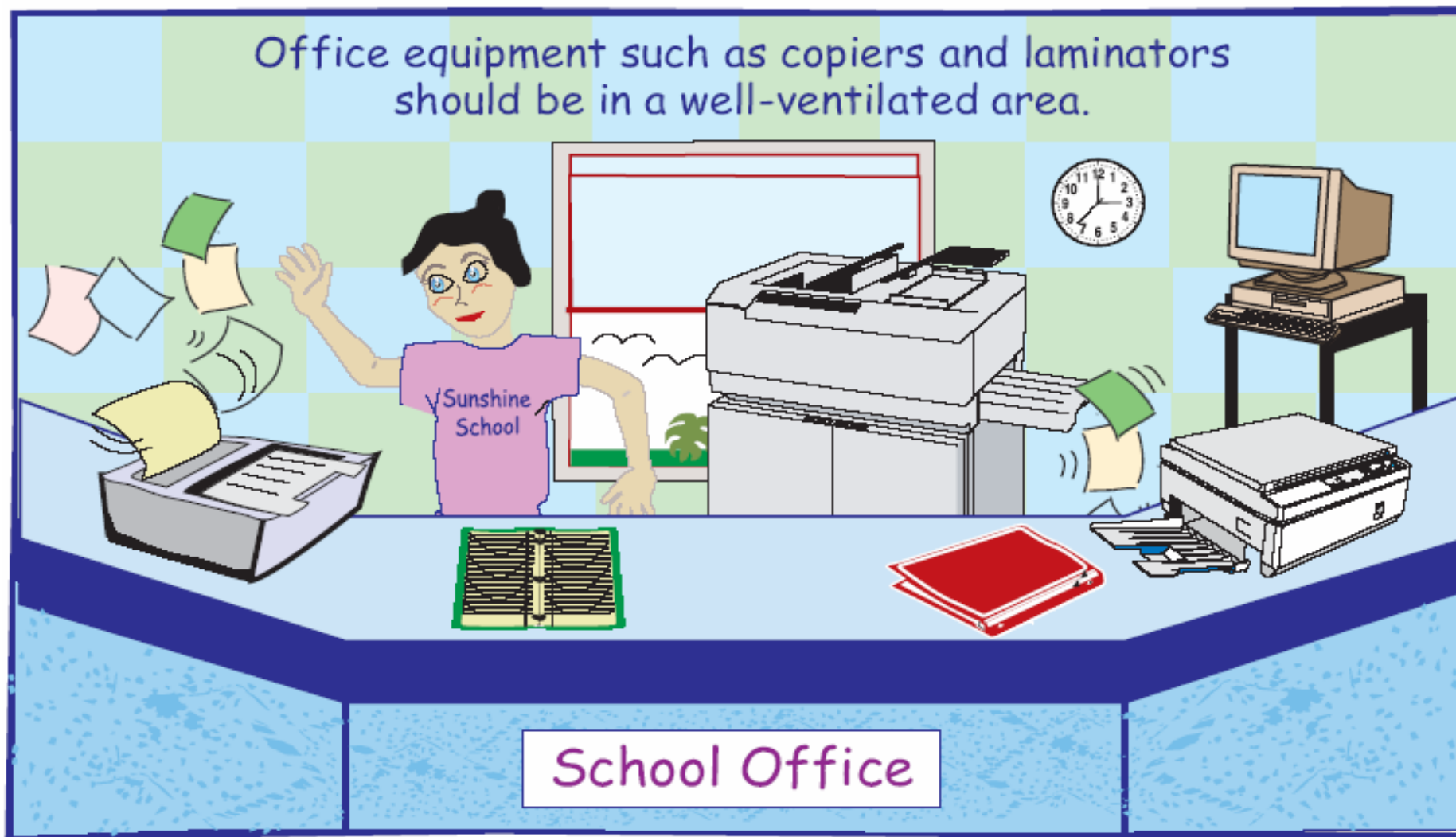


If you have ventilation controls like this in your room, cut out this diagram and place it near the controls to explain how they should be set.

Indoor Air Quality (IAQ) in Schools Comic Book



Indoor Air Quality (IAQ) in Schools Comic Book



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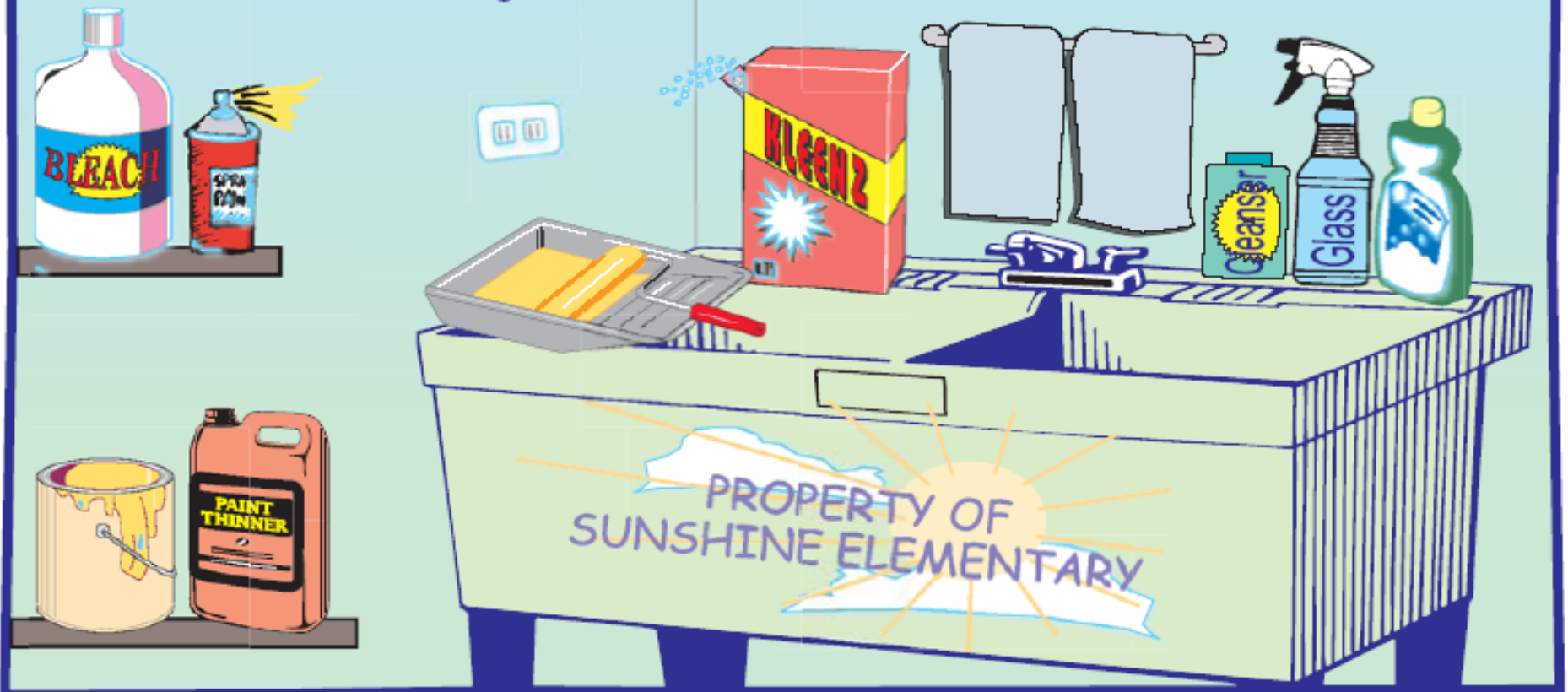
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Indoor Air Quality (IAQ) in Schools Comic Book

Make sure caps and lids of paints and cleaners are closed tightly. If you don't need these, dispose of them properly. School staff should keep all chemicals stored in a locked area away from students. Bleach should never be mixed with products containing ammonia. Poisonous fumes are released.



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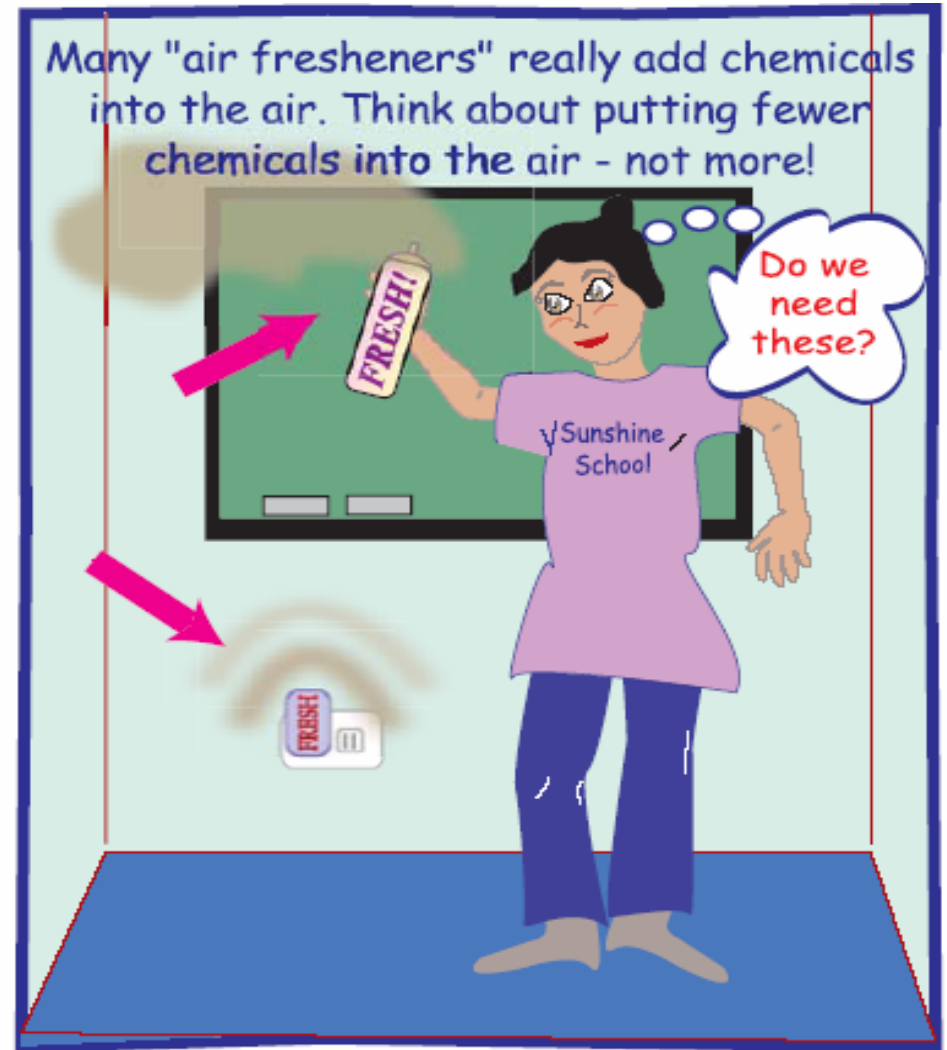
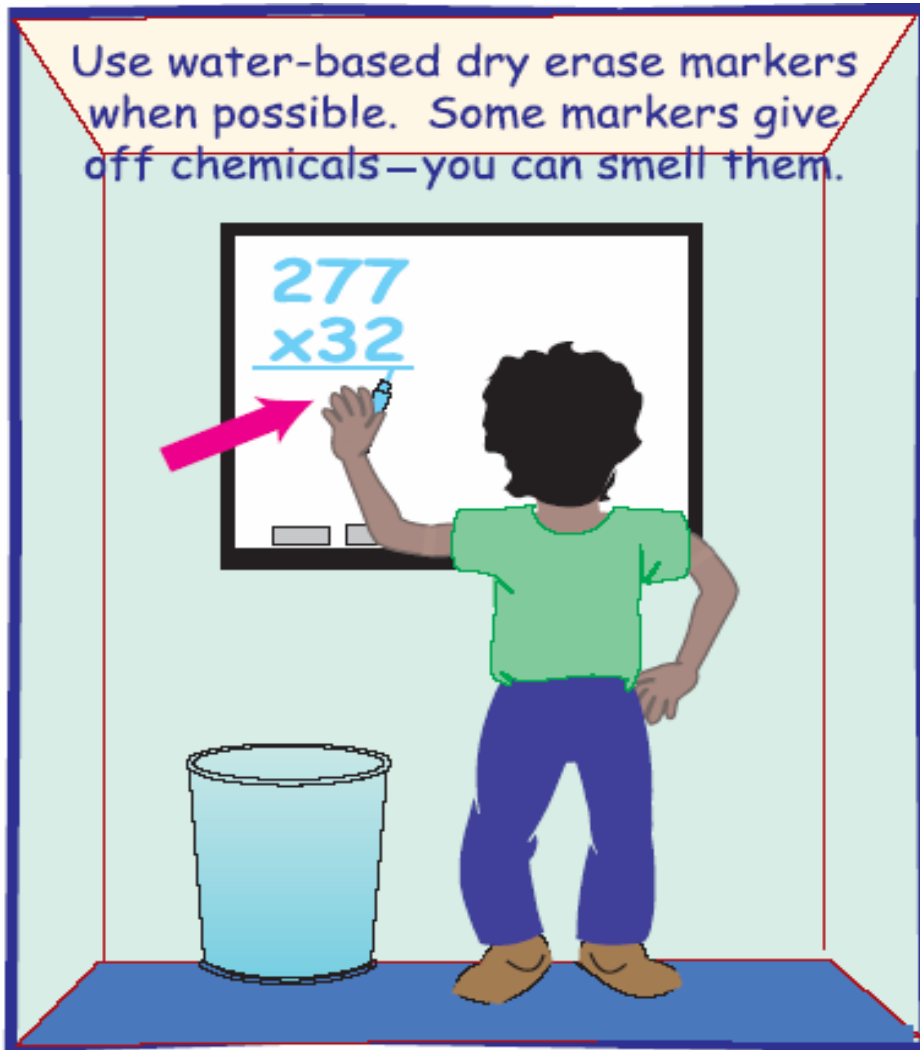
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If the school's vacuum cleaner doesn't have a good filter bag, it's just putting dust back into the air.



Indoor Air Quality (IAQ) in Schools Comic Book



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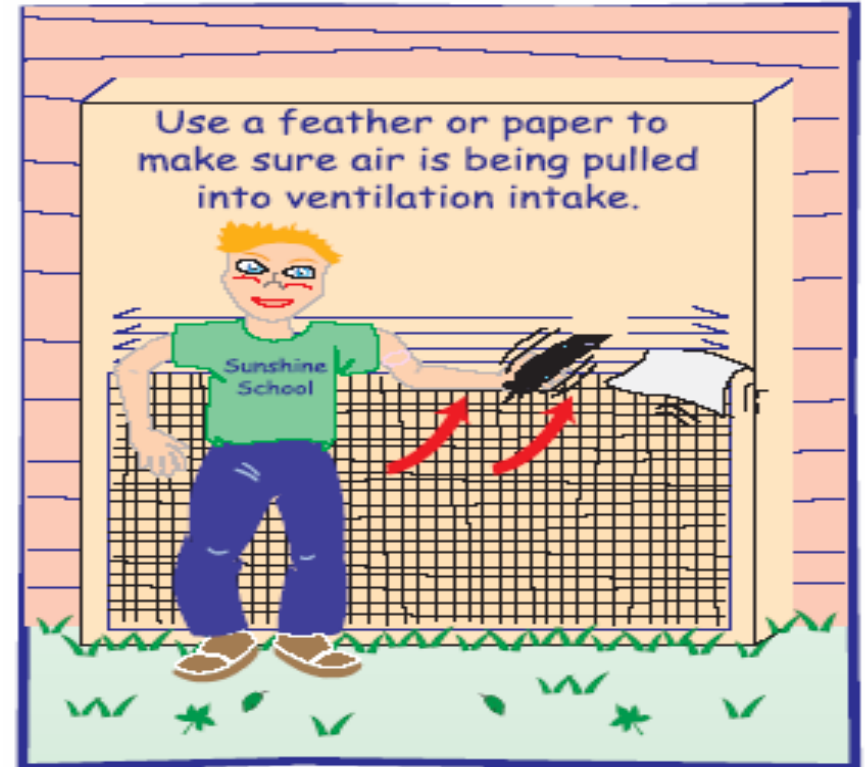
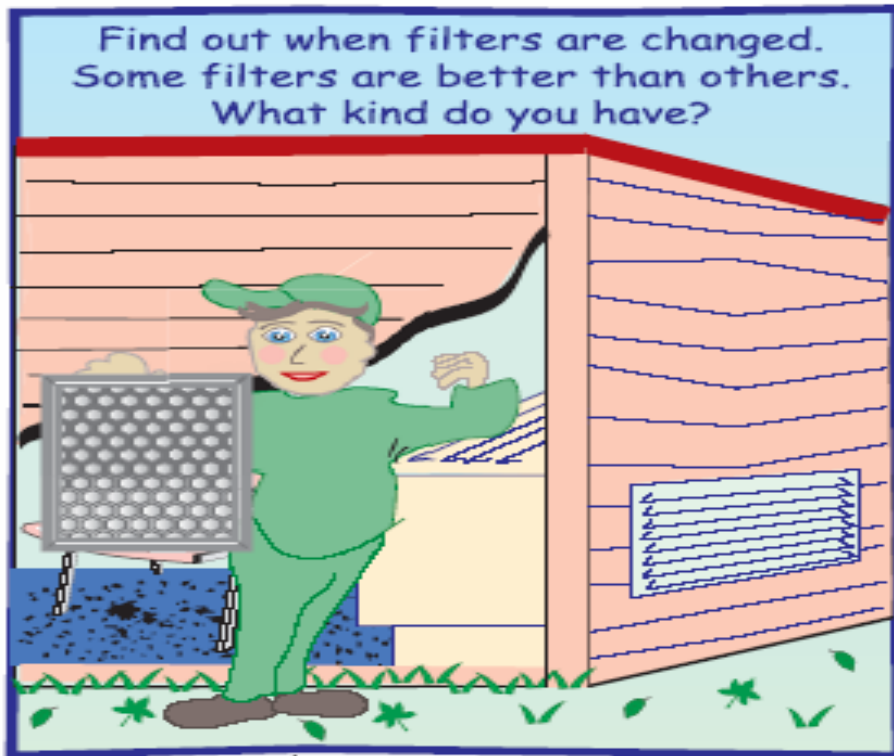
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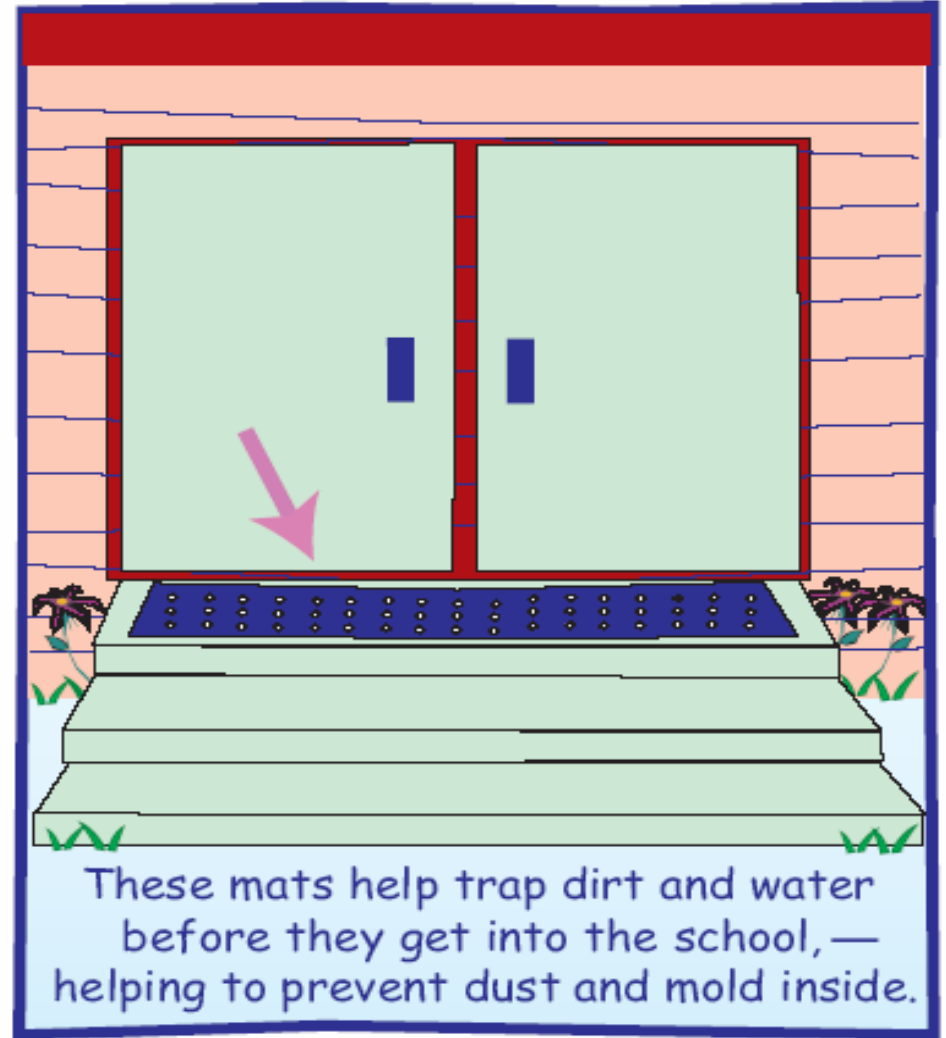
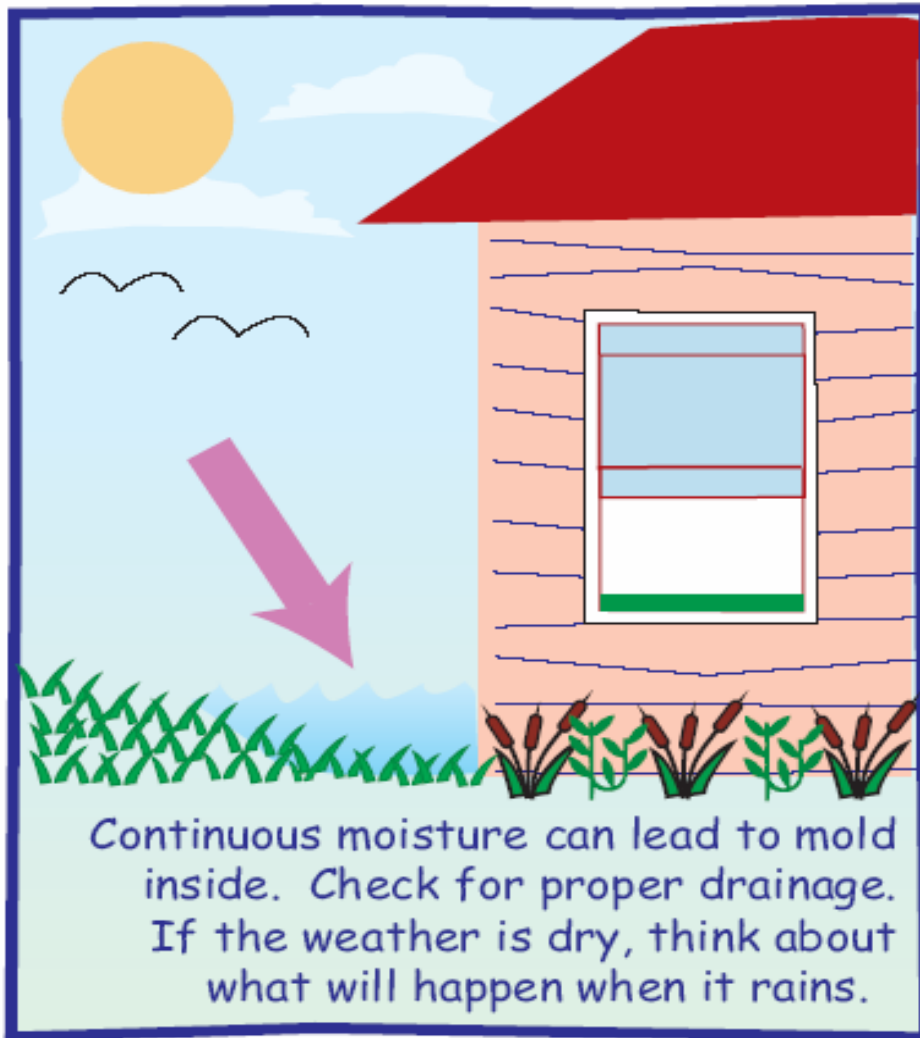


The American Society of Heating, Refrigeration & Air Conditioning Engineers (ASHRAE) recommends that ventilation systems supply 15 cubic feet of outside air per minute per person, constantly while the room is occupied. Many states have adopted this recommendation into their ventilation codes. It takes special equipment to measure air flow, but at least we can make sure that air is being drawn in.

Indoor Air Quality (IAQ) in Schools Comic Book



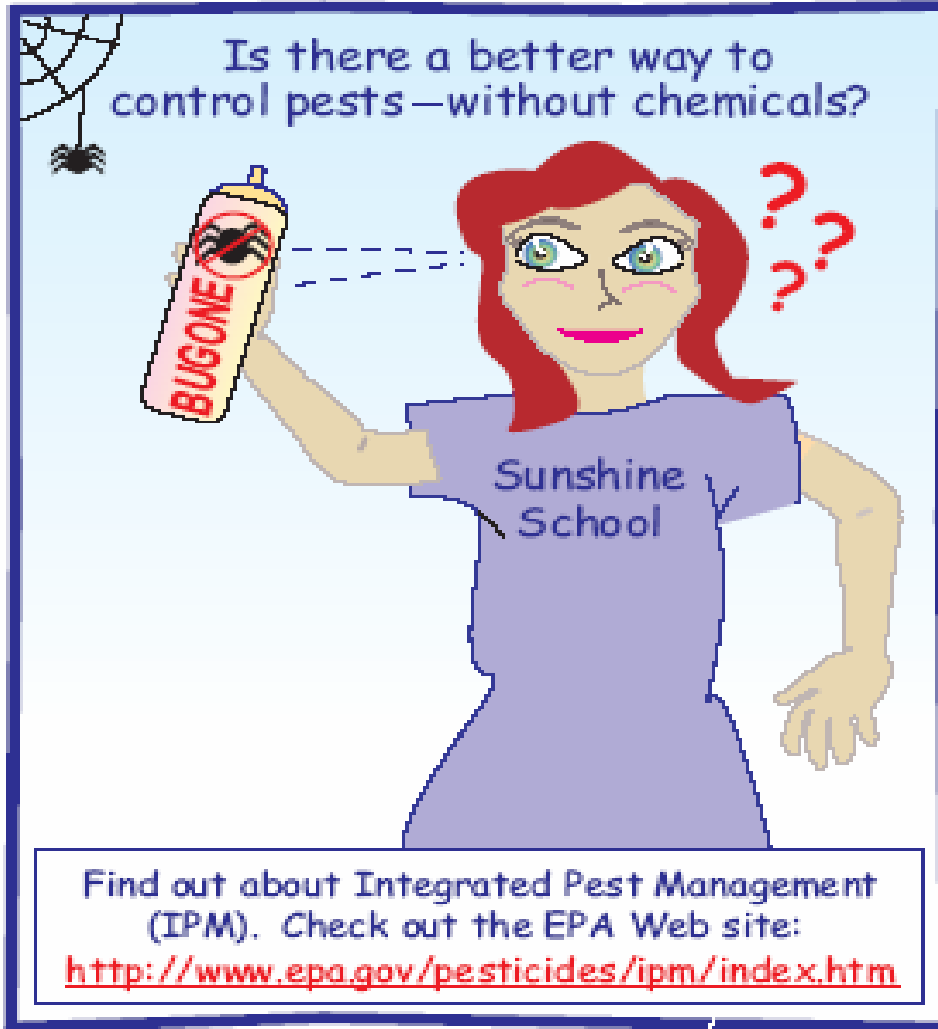
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Indoor Air Quality (IAQ) in Schools Comic Book



Now use this guide to identify sources of indoor air contaminants and activities which lead to poor IAQ at your school.

Use your own drawings or photographs to create an "owner's manual" for your school.