

Air Quality News Breezes into Local Classrooms

The Breeze is a new publication for teachers, produced by the Hamilton County Department of Environmental Services, Air Quality Management Division.

This publication is designed to provide teachers with a greater understanding of the air we breathe and the resources that are available for their classroom. Each issue will have current air quality news and an education corner that will include: classroom presentation information, a learning activity, suggested on-line resources, and other air quality information.



Lynn White, Public Affairs Specialist, is responsible for air quality outreach and education.

Do you have a great air quality learning idea that you would like to share with other educators? Send your ideas, information, or requests to Lynn White (information on the back of this newsletter).

Watch for *The Breeze* to blow into your school each Spring and Fall.

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What's in the Air? A Closer Look at Pollutants

By Lynn White, Public Affairs Specialist

There are many different types of pollutants in the air we breathe. Nature has successfully handled natural types of pollution, such as volcanic ash, for millions of years. However, in recent centuries, people have pumped millions of tons of pollutants into the air, overwhelming the Earth's natural ability to recover. Unfortunately, this has had serious impacts on the health of humans and the environment.

The Environmental Protection Agency (EPA) carefully watches and restricts six criteria pollutants that are thought to do the most harm to the health of people and the environment: carbon monoxide, ozone, particulate matter, lead, sulfur dioxide, and nitrogen oxides. Ozone, for example, can make it difficult for us to breathe, causing coughing and throat irritation. In nature, ozone can damage forest ecosystems.

Many people site industries when asked "where does the most air pollution come from?" However, industries are more tightly regulated than ever, whereas the average person has few restrictions. Many everyday actions can produce vast amounts of pollution. We are driving more miles than ever before, with a 143% increase since 1970. Mobile sources, such as cars and trucks, are the main polluters in our area. Every time we use energy for driving, heating, or manufacturing the things we buy, we produce more air pollution.

It's not all doom and gloom. Levels of most monitored air pollutants have dropped significantly in Ohio over the last 20 years, and we hope that they will continue to do so. There are many reasons for the decline. Lead, banned from gasoline in 1986, has dropped to trace levels in the air. Particulate matter (dust, ash, smoke, etc.) has been decreasing since the 1960s in the Cincinnati area due to greater pollution control strategies and enforcement actions taken by the Hamilton County Department of Environmental Services.

To continue this trend, we all need to do our share by driving less, conserving electricity, and educating others. For ideas, please visit our website at www.hcdoes.org.

air Facts

- One tree provides enough oxygen for four people.
- You can save a tree with every 4 foot stack of paper you recycle.
- A bus with as few as 7 passengers is more fuel-efficient than the average single occupant automobile used for commuting.
- Lawn and garden equipment users spill 17 million gallons of fuel each year while refilling their outdoor power equipment, adding to air quality problems. That's more petroleum than spilled by Exxon Valdez in the Gulf of Alaska.

FREE Outreach Programming

Free air quality classroom presentations are available to K-12 teachers in Butler, Clermont, Hamilton, and Warren counties. Presentations last approximately 45 minutes and cover a wide variety of topics, including: alternatively fueled vehicles, air quality and your health, and plants and air pollution. If there is a particular topic that you are interested in, please contact Lynn White. Remember that we live in a complex environment and many subject matters can relate to air quality. We will be happy to help you make that connection with your students.

FREE Classroom Materials

Grade Material Available

K-2	<i>Friends for Clean Air</i> Coloring Book
3-6	<i>Kids Cloud Express</i> activity sheets
K-12	Air Quality Index Magnets
K-12	Air Quality Manual Fans
K-12	<i>Living with Allergies</i> Brochure
K-12	<i>Transportation and Air Quality</i> Booklets
K-12	Air Quality Data Report (Butler, Clermont, Hamilton, & Warren counties)

For FREE Outreach and Classroom Materials, contact Lynn White at 513-946-7754 or lynn.white@hamilton-co.org

air websites

www.planetpolluto.com

This webpage has fun, educational interactive games for your students and allows you to order a free cd-rom that takes the experience even further, teaching the causes of air pollution and what your students can do to help.

www.broward.org/kidsclub.htm

Broward County, Florida, has developed a fun site that educates students about the main pollutants, what they can do to help, and provides fun games and activities.

Visit www.hcdoes.org for more air quality education ideas!

www.hcdoes.org

Yes, this is our site! What you may not know is that there is a new air quality education area with lesson plans, weblinks, and resources for teachers. There is also a kids section with games, and activities. This is in addition to pollen and mold information, local air conditions, and much more.

Need More Information?

If you would like to receive *The Breeze* by email, please email lynn.white@hamilton-co.org with the subject box stating "add to The School Breeze list."

For Free Outreach or Resources, contact Lynn White at 513-946-7754 or lynn.white@hamilton-co.org



The Greenhouse Effect Activity Grades 3 and up

When a car is in the sun, heat is absorbed in many parts of the car. If the windows are closed, the absorbed heat has nowhere to escape. This is similar to the greenhouse effect on Earth.

The Earth absorbs the sun's energy and temperatures rise. The layers of the atmosphere trap the heat, increasing the Earth's temperature. By adding pollutants to the atmosphere, we add to the greenhouse effect by reflecting even more escaping heat back towards the Earth.

Global temperatures have been noted to increase by about one degree Fahrenheit over the last century, possibly due to these pollutants. However, without the greenhouse effect, the temperatures of the Earth would not be as we know them today. In fact, the average global temperature would be about 63 degrees Fahrenheit cooler.

**Please share
The Breeze
with other
teachers who
may be
interested!**

Purpose: Using the simple analogy of a car in the sun, introduce students to global warming.

Materials: 2 thermometers (mercury free). 2 glass jars with lids (that the thermometer can fit inside).

Procedure: Place one thermometer inside a glass jar and seal the lid, then place in the sun. Place the second thermometer inside the other jar with no lid and place in the sun.

Students can record the temperature of each jar at 5 minute intervals, for 30 minutes. Have students graph the results and discuss.