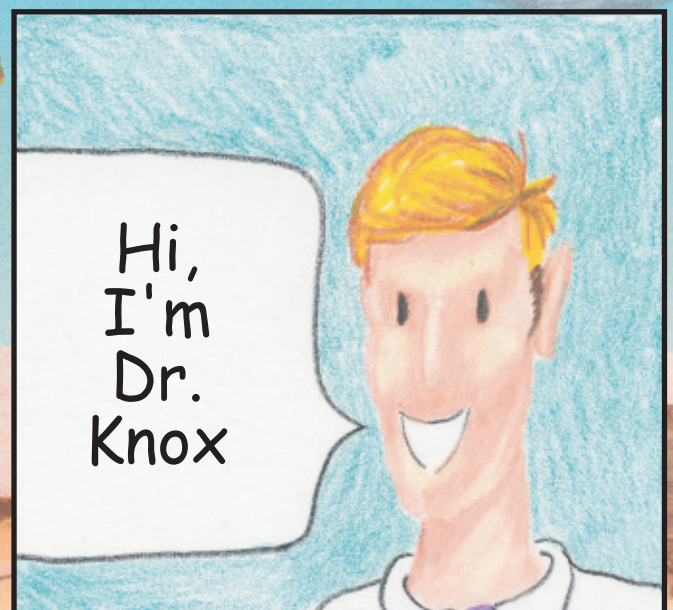


Understanding Air Pollution in Oklahoma



Understanding Air Pollution in Oklahoma

Our Narrator, Dr. Knox, is on his way to visit a site where air pollution is likely to occur and to visit with environmental personnel in action.

Here we are in Oklahoma trying to understand air pollution. It's a complex problem with many factors.



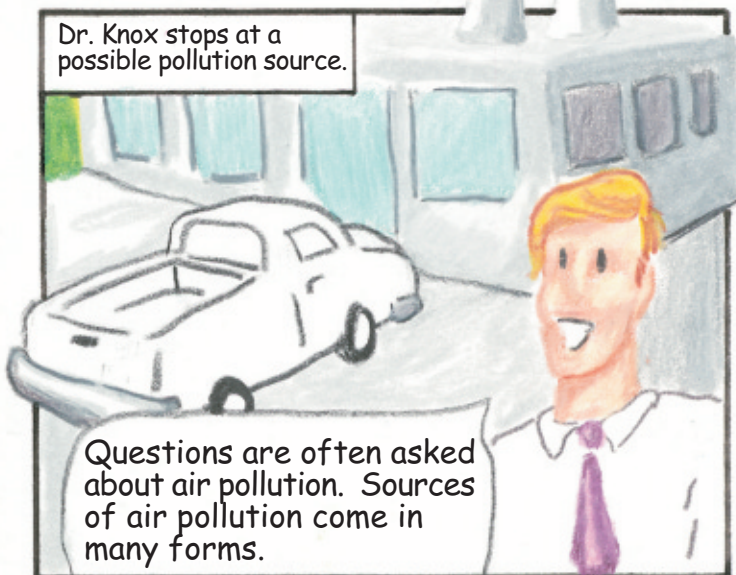
Come join us as we learn about air pollution and how to control it.

A Pollution Critter

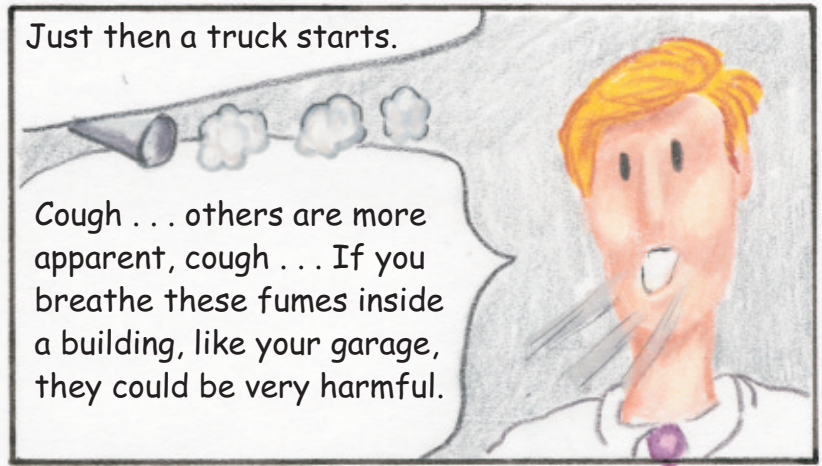
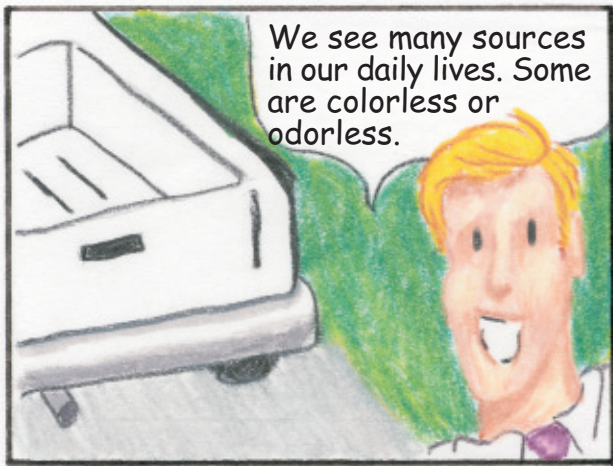
Today we hope to view a pollution source and visit with environmental specialists from the Oklahoma Department of Environmental Quality.



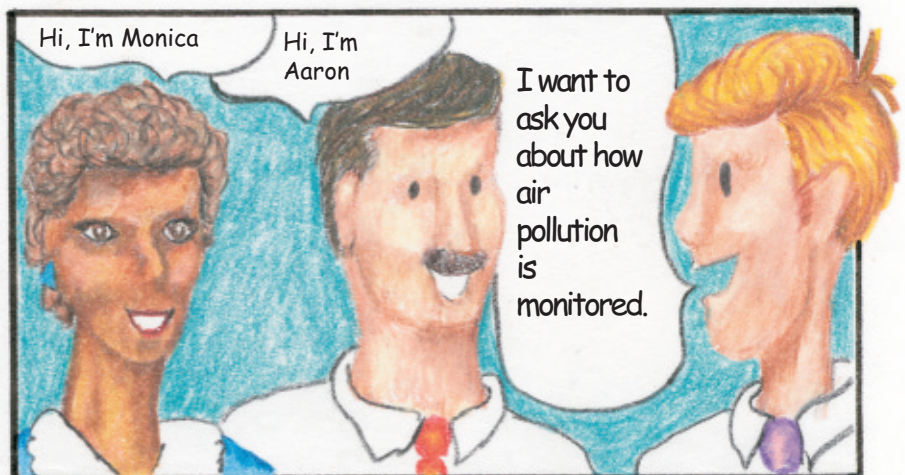
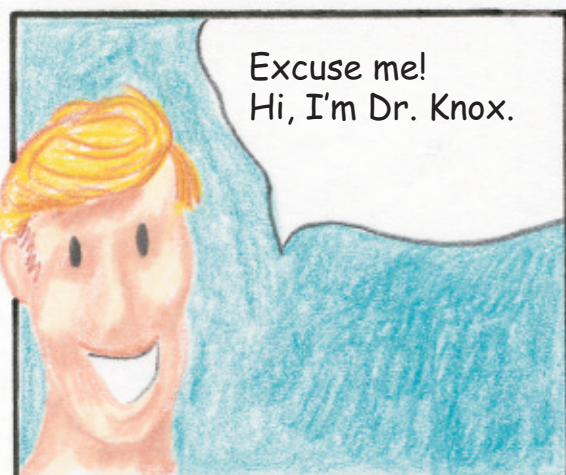
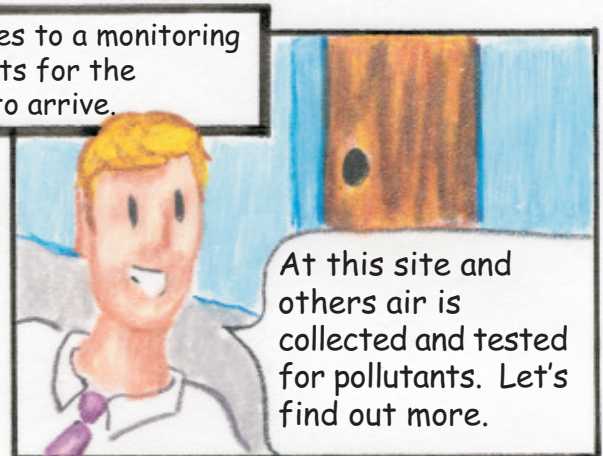
Dr. Knox stops at a possible pollution source.



Questions are often asked about air pollution. Sources of air pollution come in many forms.



Dr. Knox goes to a monitoring site and waits for the specialists to arrive.





You've come to the right place. We would be glad to discuss it.



PM 10, PM 2.5 and lead are very small dust-like particles called particulates. Nitrogen dioxide, sulfur dioxide, carbon monoxide and ozone are gases that are much smaller and more difficult to see.

CRITERIA POLLUTANTS
PM₁₀, PM_{2.5}
LEAD
NITROGEN DIOXIDE
SULFUR DIOXIDE
CARBON MONOXIDE
OZONE



There are other sources of particulate pollution.

Burning wood or coal is a major source of particulate pollution. Agricultural and construction activities also contribute to particulate pollution.



PM₁₀, PM_{2.5}

That's interesting, but what is PM 10 and PM 2.5?

PM 10 and 2.5 stand for particulate matter less than 10 or 2.5 microns in size. These are dust-like particles that can go deep into your lungs.



Another type of particulate pollution is lead. Most lead pollution came from lead in fuel. Lead did not burn and was emitted into the air. Lead has now been removed from motor fuels.



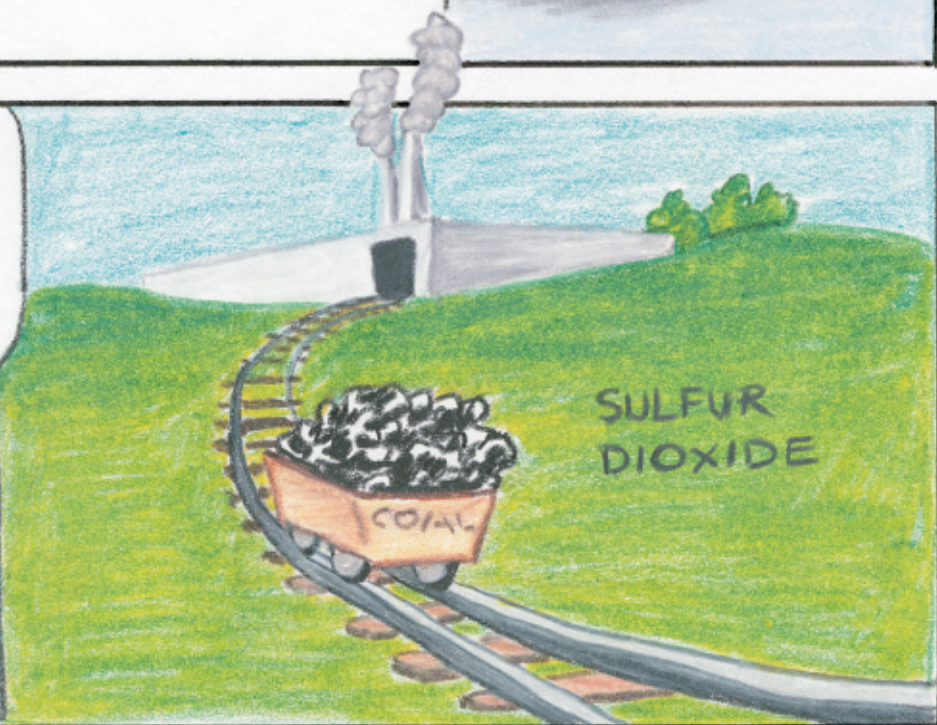
How are other pollutants formed?

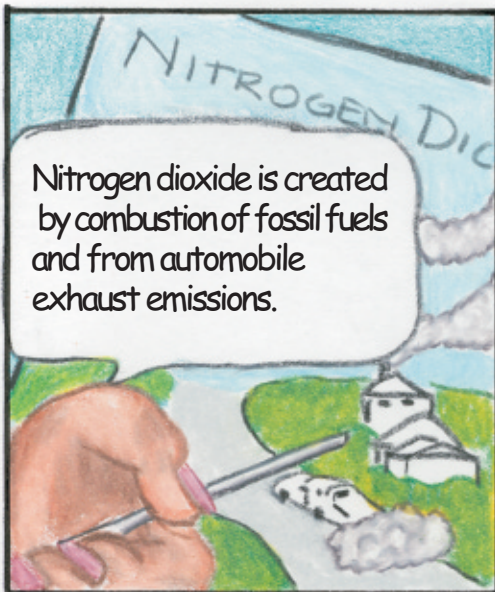
The primary source of carbon monoxide is from the incomplete combustion of fuels such as gasoline. One way to reduce the amount of carbon monoxide produced is to make sure that automobiles are properly tuned.

CARBON MONOXIDE

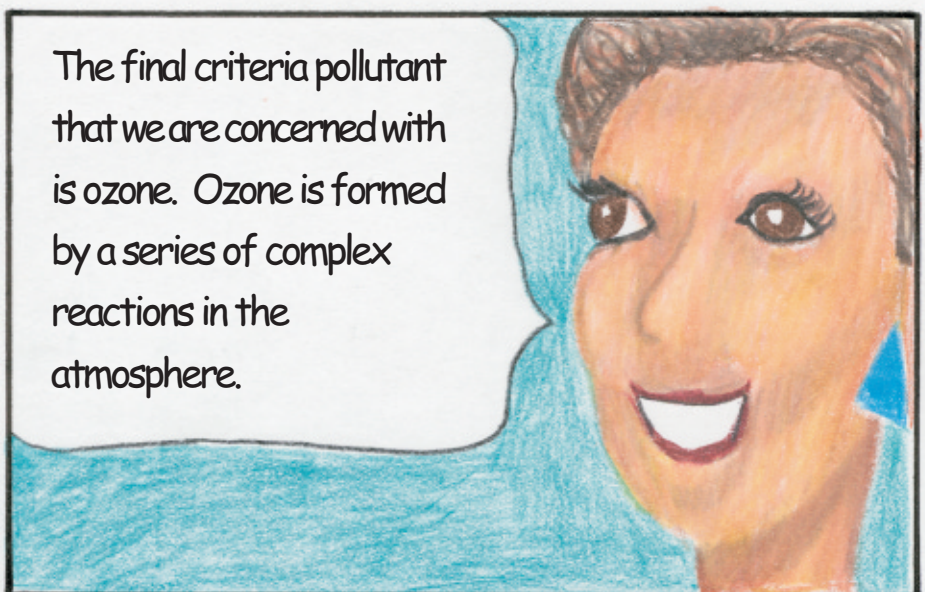


Sulfur dioxide is created by burning sulfur. Sulfur is primarily found in certain fossil fuels such as coal.

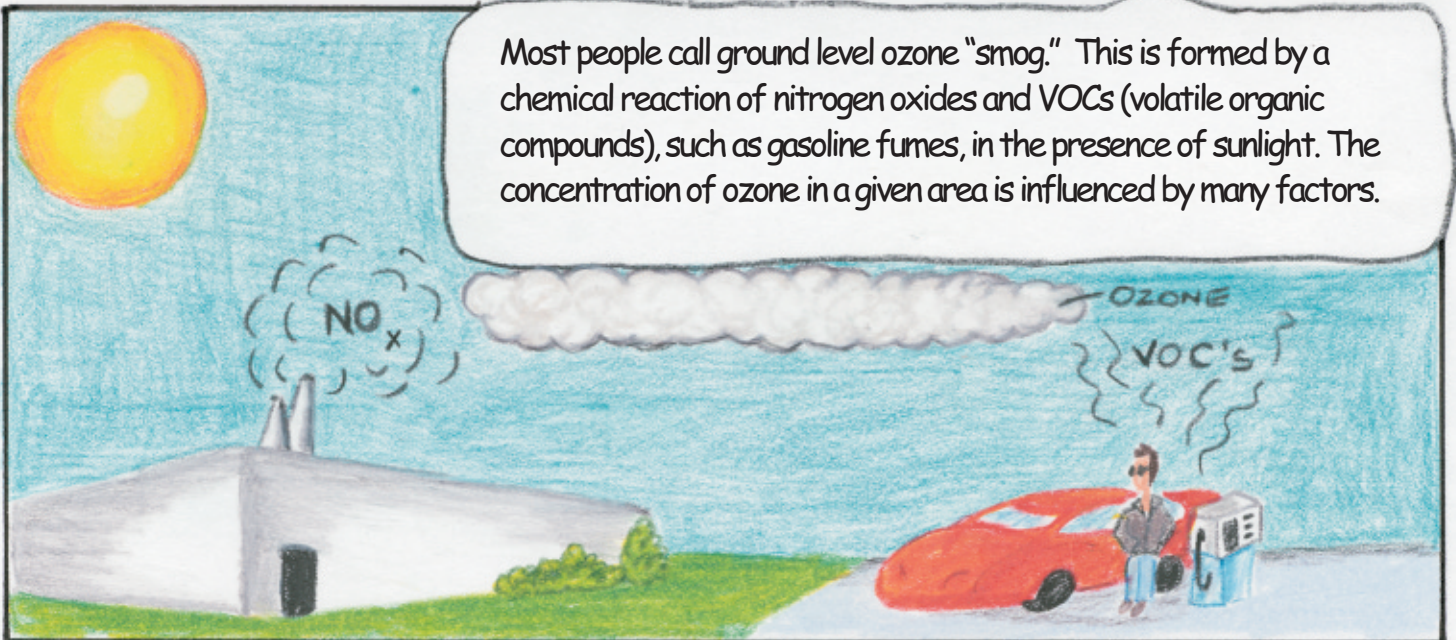




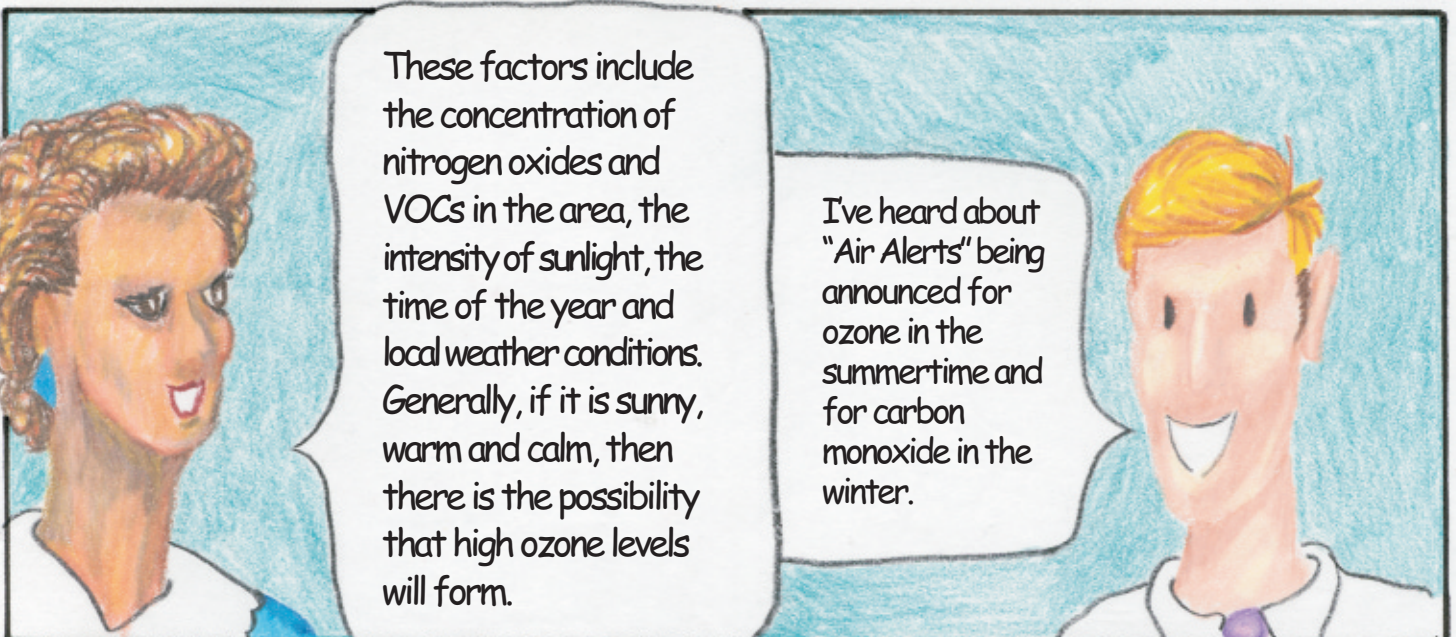
Nitrogen dioxide is created by combustion of fossil fuels and from automobile exhaust emissions.



The final criteria pollutant that we are concerned with is ozone. Ozone is formed by a series of complex reactions in the atmosphere.



Most people call ground level ozone "smog." This is formed by a chemical reaction of nitrogen oxides and VOCs (volatile organic compounds), such as gasoline fumes, in the presence of sunlight. The concentration of ozone in a given area is influenced by many factors.



These factors include the concentration of nitrogen oxides and VOCs in the area, the intensity of sunlight, the time of the year and local weather conditions. Generally, if it is sunny, warm and calm, then there is the possibility that high ozone levels will form.

I've heard about "Air Alerts" being announced for ozone in the summertime and for carbon monoxide in the winter.

How do these "alerts" relate to high pollution levels?

Air pollution alerts are announced on days when the formation of increased ozone is predicted. Air alerts are also announced when high levels of carbon monoxide are predicted.

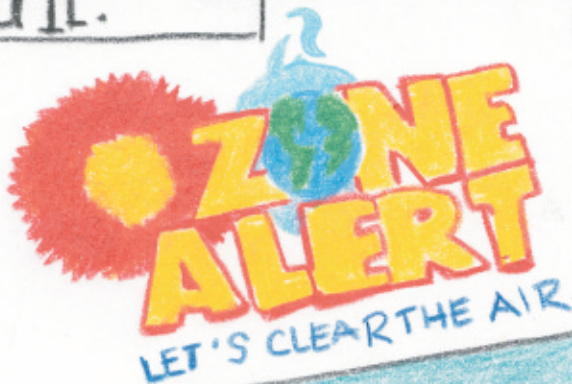


The metropolitan areas of Oklahoma City and Tulsa experience ozone problems each summer, and carbon monoxide is a potential problem for each metro area in the winter.

What can we do to help on "Alert" days?

We can Avoid activities that cause air pollution.

Let's
clear the
air.



This can be done by carpooling to work, riding the bus and avoiding unnecessary trips in your car.

ATTENTION! TOMORROW IS AN AIR ALERT DAY YOU CAN HELP

- CARPOOL TO WORK
- ELIMINATE UNNECESSARY TRIPS
- AVOID FUELING YOUR VEHICLE OR USING PRODUCTS CONTAINING HYDROCARBONS
- SKIP MOWING YOUR LAWN
- RIDE THE BUS WHEN POSSIBLE



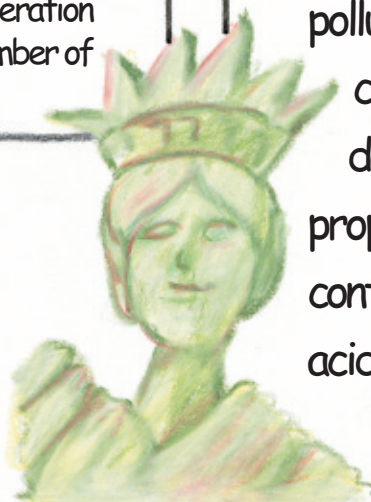
Small gasoline engines are even worse at emitting pollutants, so avoid mowing your lawn. You should also wait until evening to fill up your car because of the fumes emitted while pumping gas.

These activities are okay on non-alert days, but you shouldn't do them on alert days when pollution levels are more likely to rise.

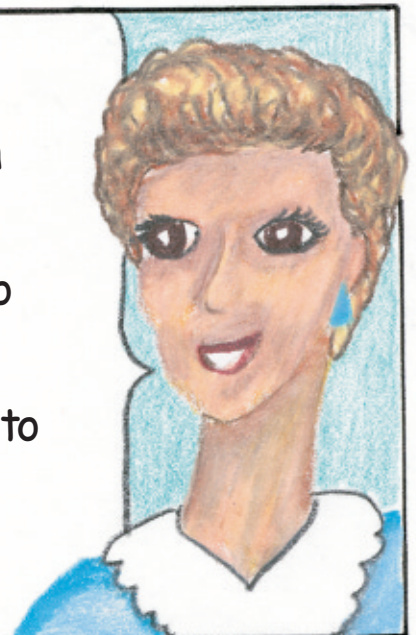


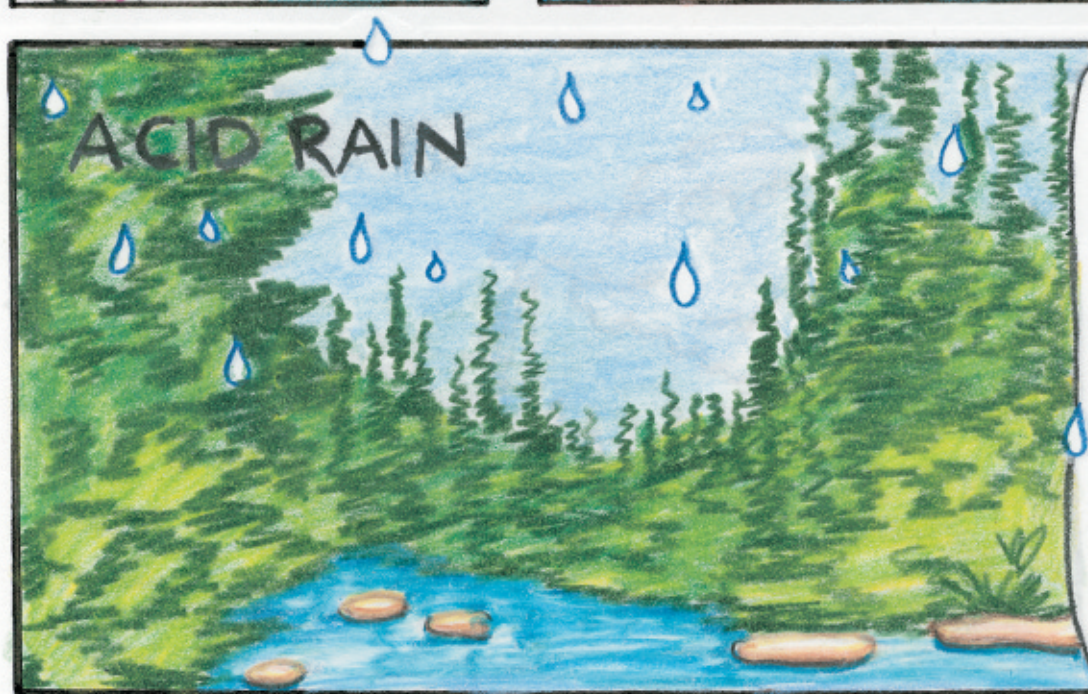
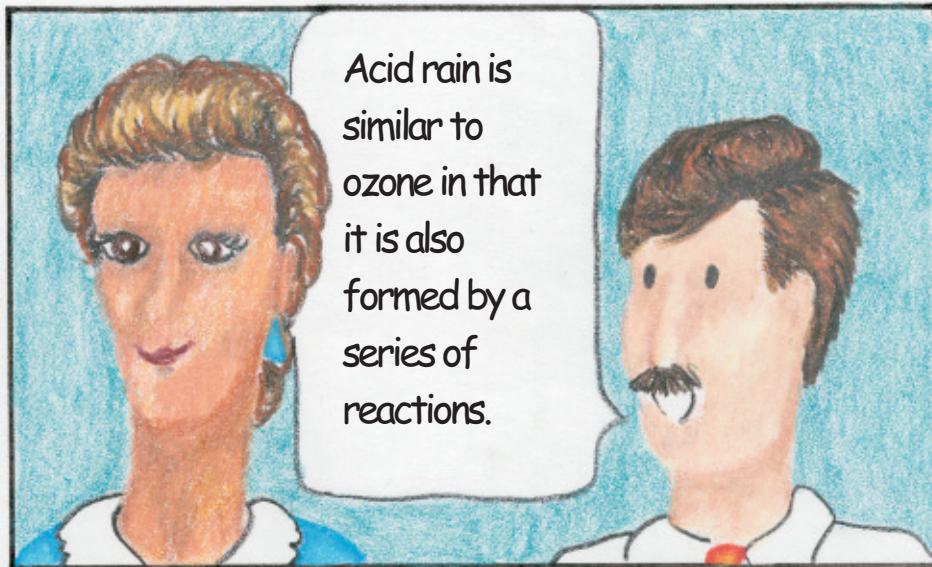
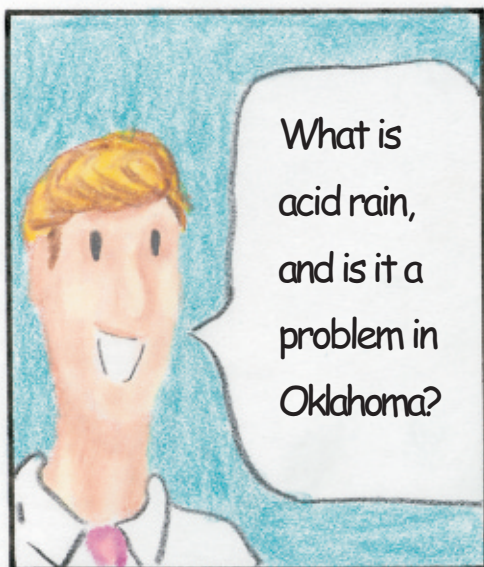
How do ozone and other pollutants affect us? Why should we be concerned?

The air pollution we breathe into our lungs has a direct affect on our health. Extremely small particles and gases can affect the operation of our lungs. Ozone can affect the number of days you feel sick.

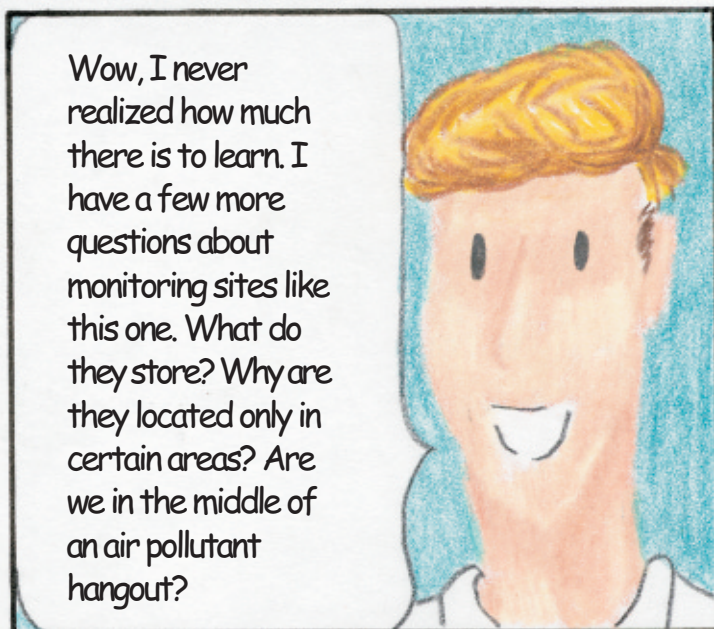
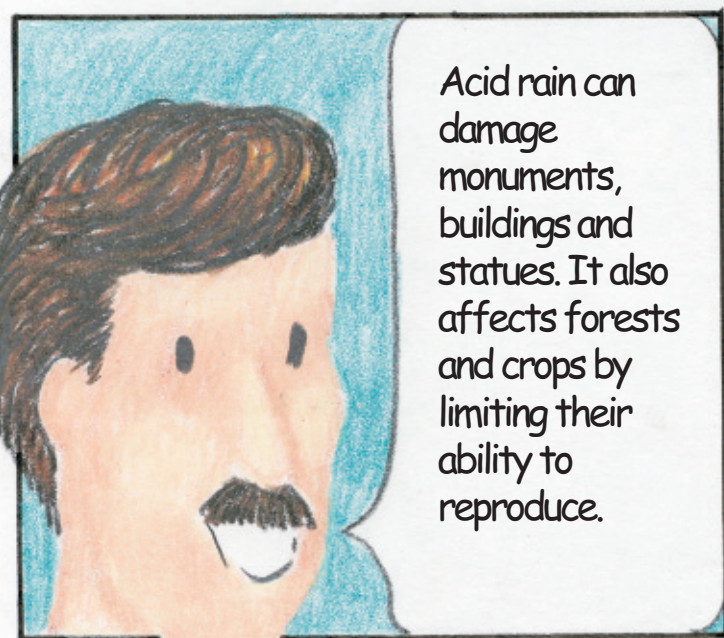


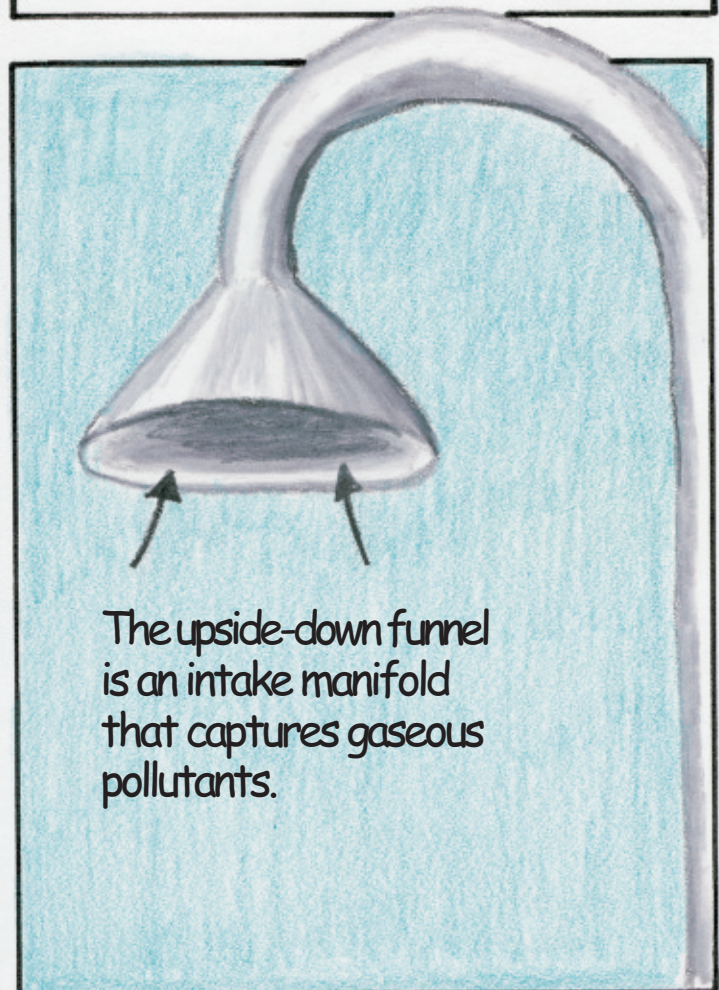
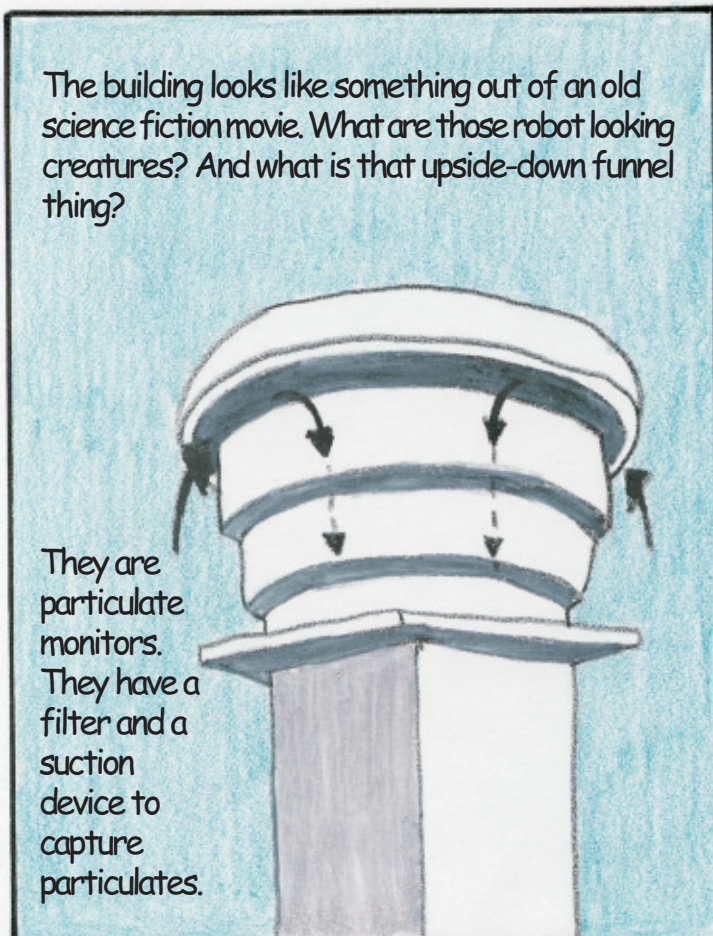
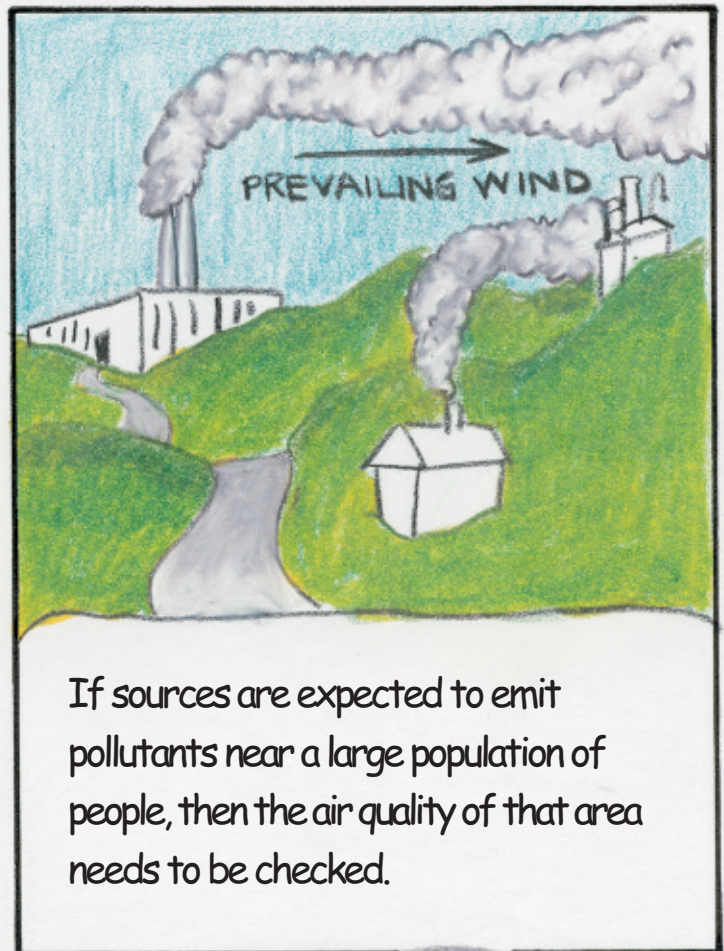
Also, air pollution can cause damage to property by contributing to acid rain.

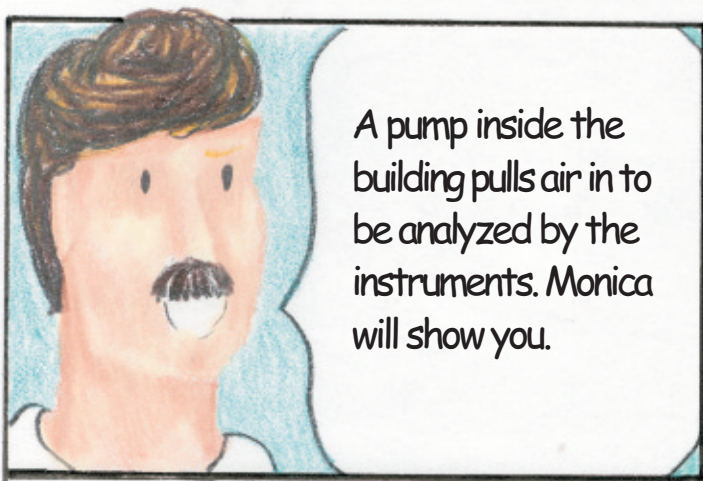




Acid rain is formed when pollutants like sulfur dioxide and nitrogen oxides change into acids in a moist atmosphere. While acid rain is not a problem in Oklahoma, it is common in other areas of the country.





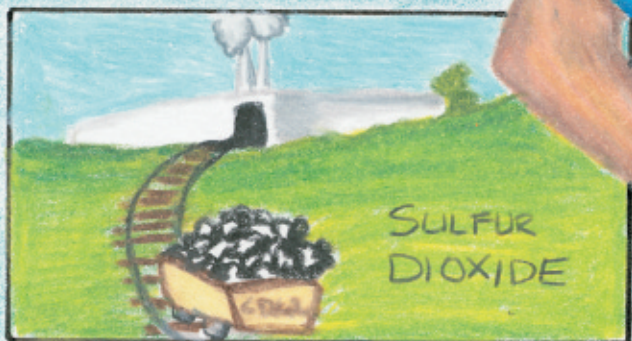


A pump inside the building pulls air in to be analyzed by the instruments. Monica will show you.

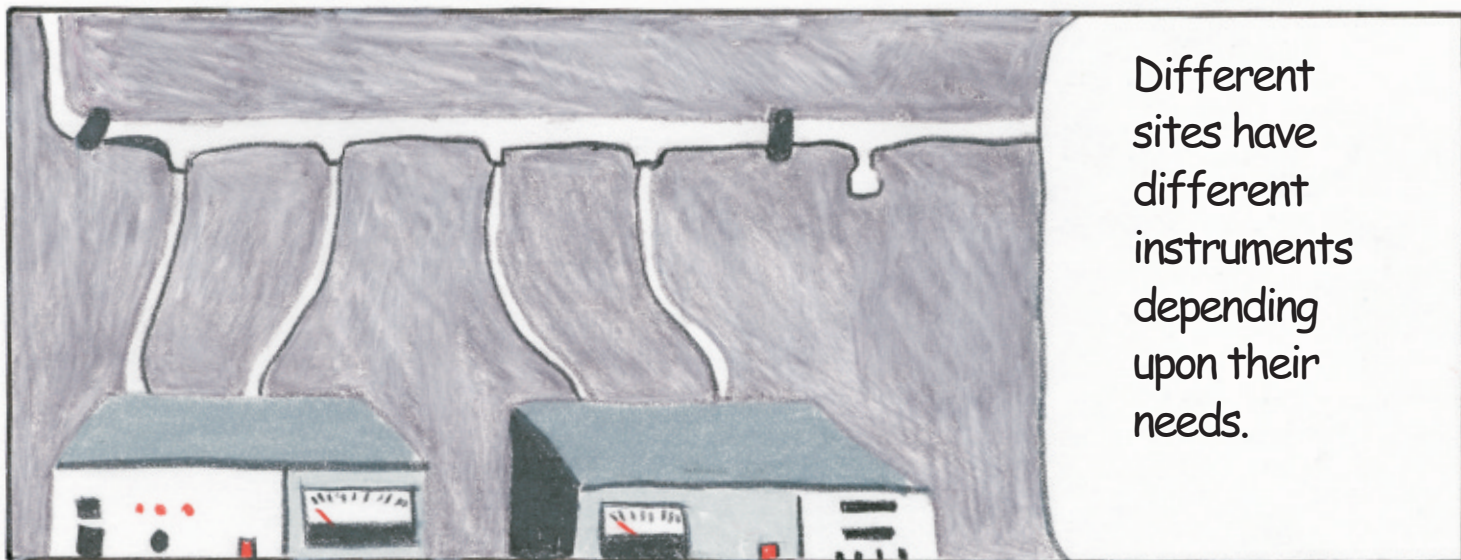
Wow, I expected to see garden tools in this shed. What do these machines do?

The instruments analyze the suspected pollutants in the surrounding air.

Dr. Knox and Monica look at the equipment inside the building.



For instance, if there were an industrial site upwind that uses coal as fuel, we would install a sulfur dioxide instrument here. Also, because of the industrial site and cars in this vicinity, we may need a nitrogen dioxide analyzer and the PM 10 or PM 2.5 monitors like those that are up on the roof.



Different sites have different instruments depending upon their needs.



We visit the site routinely to collect the sample filters and see if the instruments are working properly.

That's fascinating!

So, are you like an environmental guardian?

Yes, we like to be sure that the air quality in Oklahoma is safe for everyone to breathe.

That's great! Thank you for the time you spent helping us understand air pollution in Oklahoma.

I'd like to thank everyone at the Department of Environmental Quality for this exciting journey into air pollution control. But, before we sign off, let me

see if I have this right. Here are the things we can do to help prevent air pollution in our state:

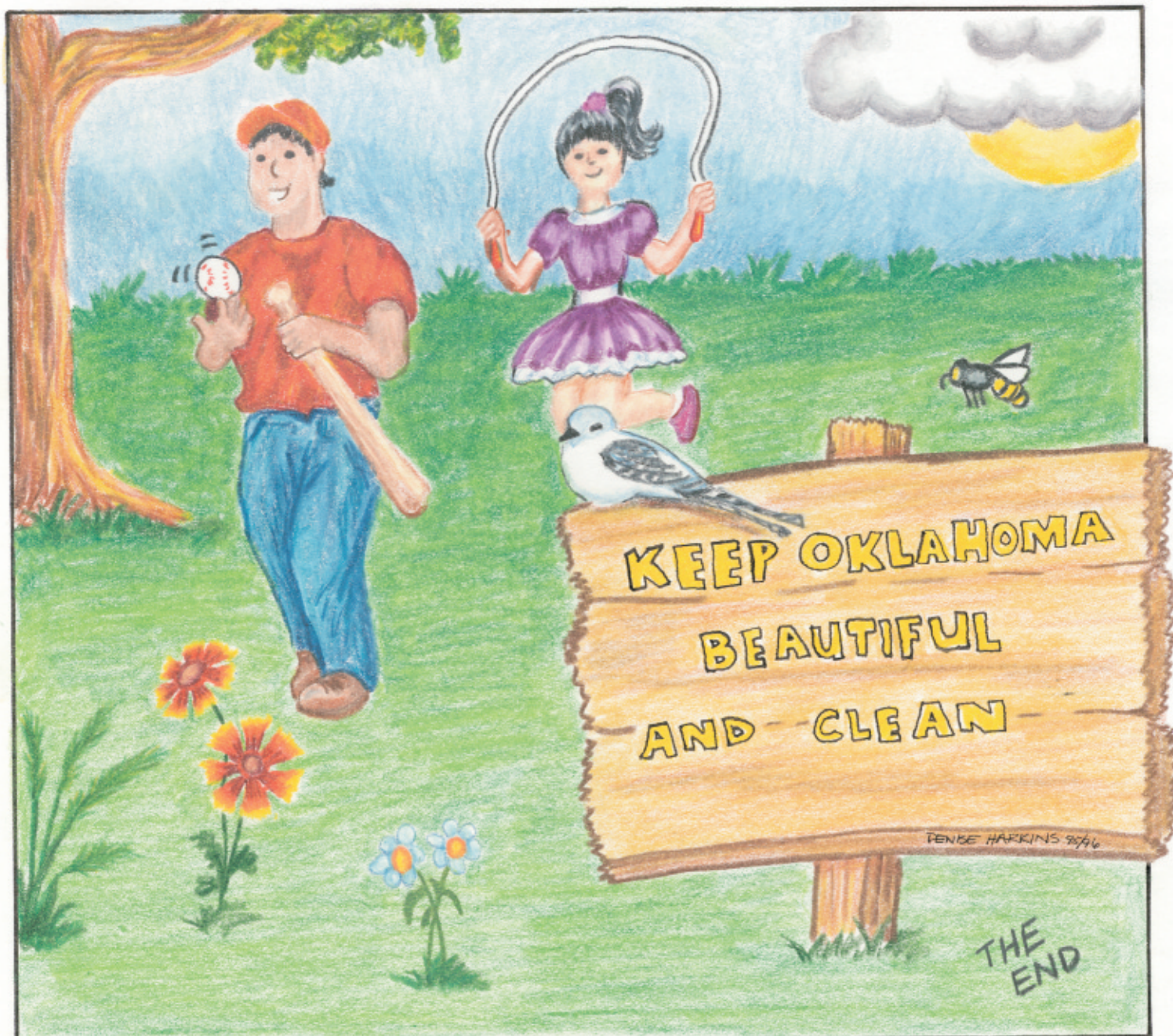
1. Carpool
2. Eliminate unnecessary trips in your car.
3. Avoid fueling up your vehicle during peak traffic hours.
4. Avoid mowing your lawn on "Alert" days.
5. Ride the bus when possible.
6. Teach a friend about pollution and how to prevent it.
7. Plant trees.
8. Don't use your fireplace on calm days.
9. Buy recycled products.
10. Buy non-aerosol products.





Wow, Dr.Knox, you learn fast. If everyone will take what we have learned and put it into practice, we can expect our children and grandchildren to grow up in a clean, healthy environment.

If you see or suspect someone polluting, call our environmental hotline. The toll-free number is 1-800-522-0206.





This comic book was developed by the Air Quality Education Committee of the Oklahoma Department of Environmental Quality for the youth of Oklahoma.

The DEQ Mission

The Department of Environmental Quality will serve Oklahomans by restoring, protecting and enhancing our air, land and water resources for current and future generations.

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