

DEQ Kids: Air Quality in Idaho



IDAHO
DEPARTMENT OF
ENVIRONMENTAL
QUALITY

1410 North Hilton
Boise, ID 83706
208/373-0502

www.deq.state.id.us/

The air we breathe is made up of many elements like oxygen, carbon, and nitrogen and combinations of elements, called compounds, like water. There are even small particles of dirt and dust in the air. In the right balance, elements and compounds make up the air we breathe. If not in balance, elements and compounds can become pollutants that affect the quality of the air. Polluted air can make animals or people sick, can cause buildings to deteriorate and even damage our water and land.

The Air Quality Division of the Idaho Department of Environmental Quality makes sure our air is clean for us to breathe. Working closely with citizens, communities, and businesses, the Air Quality Division tracks the quality of our air and helps keep it clean by enforcing Idaho's air quality laws.

Air quality laws

Laws exist that help protect the quality of our air by limiting the amount of pollutants released into the air. Businesses, for example, must get a permit that limits how much pollution they can create. Residents have emissions tests done on their cars once a year to make sure they do not emit too much pollution. Sometimes DEQ restricts outside burning, including campfires, if the smoke could hurt air quality and make people sick. These laws help keep our air clean.

How is air quality measured?

Special machines called monitors help keep track of the quality of our air throughout the state of Idaho. DEQ scientists use these monitors to measure the chemical make-up of air including the amount of dust, sulfur, nitrogen and other potential pollutants. If a particular pollutant is found to be over a safe limit, DEQ takes action to reduce that pollutant in the air.

What affects air quality?

Pollutants

When too many of the wrong elements or compounds get into our air, they can affect the quality of the air and have negative effects on animals, plants, land and water. Some pollutants are natural, such as the gases emitted from a volcano or smoke from a natural forest fire. Others are human-made, such as smoke from

a campfire, emissions from an industrial factory or gases from the tail pipes of cars. Wind blowing over dusty roads can create air-pollution by stirring up dust and dirt that can stay in our air.

Climate

Air quality is often affected by climate as well. Rain, wind, water in the air called humidity, and temperature can all affect the types and amounts of pollutants in the air.

Humidity and the temperature of the air affect how many pollutants the air can hold. If the right combination of humidity and temperature exist, pollutants can become more concentrated and dangerous. New pollutants also can form when elements and compounds combine with each other.

Ever heard the phrase, a breath of fresh air? Wind can have a positive impact on air quality. Wind brings cleaner air from miles away into a polluted area. The wind helps disperse pollutants into the air or carry them away. If mountains block the wind however, pollutants can become trapped and build up.

Rain can also help clean the air. Rain washes through the air, picking up small pieces of dust, dirt and pollutants in the air and washing them onto the ground.

What are some common pollutants?

Particulate Matter (PM)

Particulate matter is made up of fine particles of smoke, dust and dirt that come from factories, or are stirred up behind your car on dry roads, or come from fires. Some of the smaller particles become suspended in the air. If too many particulates are in the air, the air becomes polluted affecting visibility and our health. Idaho's dry, dusty climate make particulate matter a pollutant of concern in our state.

Sulfur Dioxide (SO₂)

Combinations of sulfur and oxygen atoms called sulfur oxides are air pollutants. The most common type has one sulfur atom and two oxygen atoms and is called sulfur dioxide. Sulfur dioxide can harm vegetation, including agricultural crops. Combined with ammonia, it forms very fine particulate matter. Mixed with moisture in the atmosphere, sulfur oxides can make rain acidic. Acid rain, can harm humans, animals and vegetation and discolor or damage buildings.

Sulfur dioxide forms when substances containing sulfur are burned such as coal, gas and oil. When burned, the sulfur is released into the air, creating pollution.

Nitrogen Dioxide and Oxides (NO₂, NO_x)

Nitrogen oxides are comprised of nitrogen and oxygen. One common type, nitrogen dioxide is a gas that appears yellowish or brownish depending on how dense it is.

When NO_x combines with other elements, it can form other pollutants. For example, when NO_x combines with other pollutants and warm temperatures, it results in a chemical reaction that produces a pollutant called ozone. Mixed with moisture in the atmosphere, NO_x can contribute to acid rain, which can harm humans, animals and vegetation, as well as damage buildings. If mixed with ammonia in cold moist conditions, NO_x forms particulate matter. In the winter, particulate matter made up of nitrogen oxides often contributes to Idaho's famous inversions.

Nitrogen oxides form when fossil fuels are burned in motor vehicles, trains, airplanes, power plants, heating devices, and factories.

Carbon Monoxide (CO)

Carbon monoxide is a colorless, odorless gas made up of one carbon atom and one oxygen atom. Carbon monoxide is produced by burning fossil fuels such as gasoline, diesel, natural gas, fuel oil, or coal. Cars are a major source of carbon monoxide in the air. Wood burning, agricultural burning, industrial combustion and forest fires also produce carbon monoxide.

Lead (Pb)

Lead is a dangerous pollutant. Before the 1970s, high concentrations of lead were found in the air. Back then, lead was used in paint for our homes and in gas for our cars. As we drove, lead was emitted from cars into the atmosphere and polluted the air.

In 1970, the federal government banned the use of lead in paint and gasoline. Since then, the lead in our atmosphere has dropped by 97%! Next time you're at a gas station, look for the words "unleaded" on the gas pump.

What can you do to reduce air pollution? Lead by example!

Ride your bike or walk. Don't always ask your parents to drive you!

Cars emit pollutants to the air. By walking or biking to school or to your friend's house instead of having your parents drive you, you can help protect Idaho's air - and get some exercise!

Arrange to carpool with friends, when you need to go farther. One car on the road is better on the air than many.

Plant a tree!

Trees naturally clean the air by taking in carbon dioxide and emitting oxygen.

Turn off the lights!

To produce electricity, power plants emit some pollutants into the air. By turning off the lights, you not only save your parents money on your energy bill but help protect Idaho's air quality too.

Become your family's air quality expert!

Click here to check out the air quality in your area.

For more information...

Visit the U.S. Environmental Protection Agency's Web site at www.epa.gov/kids/air.htm for more information on air quality and the environment.