Frequently Asked Questions

How is *Air Index Now* useful?

Near real-time air quality data are especially useful to Tucson's growing population of higher risk individuals including the elderly, children, outdoor exercisers and people with heart and lung diseases. Knowing about current air quality in a specific area in Pima county allows citizens to make wise and healthful choices about their activities for the day.

What are the air pollutants of concern?

Pima County Environmental Quality monitors major air pollutants including carbon monoxide (CO), ozone (O3), and particulate matter (PM10 and PM2.5). Each has harmful effects on human health, the health of animals and plants, the environment and property.

How can air pollution be harmful?

On average, 200 people will die from complications due to particulate matter pollution in Tucson each year. Particulates and other pollutants can cause people to suffer from:

- complications with asthma, bronchitis, emphysema, pneumonia and other lung diseases; irritations to the nose, throat and ear canal;
- breathing difficulties, chest pain and headaches;
- increased sensitivity to allergens;
- reduced alertness;
- diminished lung function;
- weakened immune system; and
- increased risk of heart disease.

How many miles do Tucsonans drive each day?

About 22,000,000 miles are driven every day in Tucson. (Pima Association of Governments)

Where does most of Tucson air pollution come from?

About 60% of Tucson's air pollution is caused from motor vehicle usage (cars, trucks, planes, trains, and construction equipment). Even though newer vehicles create less air pollution, Tucson's air isn't getting cleaner because more people are driving more miles. The remainder of Tucson's air pollution comes from other sources including power plants, industries, businesses, our homes and products we use. (Pima Association of Governments)

What is ozone?

Ozone (O3) is a highly reactive form of oxygen. At normal concentrations it is colorless and odorless. At high concentrations (often associated with thunderstorms or arching electric motors) it is an unstable bluish gas with a pungent odor. Ozone is a major component of photochemical smog, although the visibility reduction and odor resulting from smog are produced by other pollutants such as particulates and nitrogen oxides. Ground level ozone in high concentrations is considered an air pollutant, while stratospheric ozone in the upper atmosphere (12 - 30 miles above the ground) is critical for absorbing cancer-causing ultraviolet radiation.

Where does ozone come from?

Ozone is a secondary pollutant formed when nitrogen oxides and volatile organic compounds (VOC) react in the presence of sunlight. Volatile organic compounds come from automobile exhaust, gasoline vapors, and chemical solvents (and also some vegetation). Nitrogen oxides come from burning fuel.

How does ozone affect human health?

The reactivity of ozone causes health problems because it damages lung tissue, reduces lung function, and increases the sensitivity of the lungs to other irritants. Symptoms of decreased lung function include chest pain, coughing, sneezing and pulmonary congestion. Ozone can also act as an irritant to the mucous membranes of the eyes and throat and can reduce immune system capacity. In high concentrations, ozone causes damage to plants and deteriorates materials such as rubber and nylon.

Who is most at risk?

Scientific evidence suggests that ozone affects not only individuals with respiratory problems, but also affects healthy adults and children as well.

How much air do I breathe each day?

On average, people take 24,000 breaths each day. Each minute we breathe about 2 gallons of air. That's close to 3,000 gallons in one day!

Does my jet ski pollute?

Riding a 2-stroke jet ski for an hour produces as much air pollution as driving a newer car 70,000 miles.

Why is dust control important?

Airborne dust

- reduces visibility;
- is a hazard for drivers; and
- adversely affects the ill, the young, and the elderly in our population.

Federal and state government funding for growth in Pima County is tied to compliance with national air quality laws.

What is particulate matter?

Particulate matter (PM10 and PM2.5) is comprised of solid particles or liquid droplets tiny enough to remain suspended or floating in the air for up to weeks at a time. Of greatest concern to the public health are the particles small enough to be inhaled into the deepest parts of the lung. These particles are less than 10 microns in diameter--about 1/7th the thickness of a human hair--and are known as PM10. This includes fine particulate matter known as PM2.5. PM2.5 has a specific range of particles 2.5 micrometers or less. PM10 is a major component of air pollution that threatens both our health and our environment. General PM composition can include everything from fine dust to carbon (soot), and can be microscopic or visible to the naked eye. Particulate matter is generated from a variety of sources including traffic on paved and unpaved roads, combustion, and earth-moving activity such as mining, farming and construction.

What is carbon dioxide?

The gas that humans and animals breathe out and that plants use during photosynthesis to produce oxygen.

What is carbon monoxide?

Carbon monoxide (CO) is a colorless, odorless gas produced by the incomplete combustion of fuels. The major source of CO in our community is motor vehicles, which release over 85 percent of the CO emissions in Pima County. Stagnant weather conditions coupled with reduced engine efficiency associated with cold temperatures cause increased levels of CO in the winter months.

What are hydrocarbons?

Hydrocarbons (also known as volatile organic compounds (VOC)) are compounds made of hydrogen and carbon. They are released from gasoline engines and the evaporation of paint and solvents and are also produced naturally from the decomposition of organic matter and by certain types of plants. Hydrocarbons contribute to the formation of ground-level ozone.

What is an inversion layer?

Situations when air next to the earth is trapped by a layer of warmer air above it, keeping pollution close to the earth.

How can trees help fight air pollution?

- Vegetation purifies the air by removing gaseous pollutants by absorbing them through pores in the leaf surface.
- Particulate pollution is trapped and filtered by leaves, stems and twigs, and is washed to the ground by rainfall.
- Trees absorb carbon dioxide - the main greenhouse gas. One acre of trees can absorb as much as 4 tons of carbon dioxide a year, the same amount as a car driven 26,000 miles.
- Trees save energy. Shade trees reduce air-conditioning needs up to 50%. Reduced energy use means reduced energy production and associated pollution.
- Trees store carbon dioxide and produce enough oxygen from one acre for 18 people every day.

How many monitoring sites are there in Pima County?

Staff in the air quality monitoring unit at Pima County Environmental Quality operate approximately 80 instruments at 18 locations as part of the Arizona statewide network to monitor the levels of pollutants known to affect people's health. In addition to monitoring the *Criteria Pollutants*; carbon monoxide, ozone, sulfur dioxide, oxides of nitrogen, PM10 and PM2.5; for which the EPA has established *National Ambient Air Quality Standards,* PDEQ monitors various meteorological parameters that effect air pollution. These include wind speed, wind direction, temperature, relative humidity, and solar radiation. In addition, staff conduct special air quality studies.

Where does air pollution come from?

Air pollution is created from both mobile, stationary and area sources. Mobile sources include cars, trucks, trains, airplanes and construction equipment. Mobile sources cause about 60% of Pima County's air pollution. The remainder comes from other sources including power plants, industries, businesses, homes and products we use.

How can air pollution affect me?

Ozone (O3) pollution can impair lung function and irritate the mucous membranes in the nose and throat causing coughing and choking. It also aggravates chronic respiratory diseases like asthma and bronchitis, and can irritate the eyes, reduce lung capacity over time and increase sensitivity to allergens.

Carbon monoxide (CO) replaces oxygen in the red blood cells thus reducing the amount of oxygen that can reach the brain, heart and other tissues. CO can cause dizziness, slowed reaction times, headaches, an increased risk of heart disease and may promote the development of arteriosclerosis.

Particulate matter (PM10 and PM2.5) may cause breathing difficulties and respiratory pain, irritations to the nose, throat and ear canal which are often mistaken for allergic reactions. PM can also weaken the immune system, diminish lung function and increase the incidence and severity of acute bronchitis, pneumonia, asthma and emphysema.

What can air pollution do to the environment?

Air pollution can cause a brown haze which reduces visibility and obscures the surrounding natural beauty. This is detrimental for both aesthetic and economic reasons.

Air pollution can block sunlight from reaching the leaves of plants and trees and can react with plant tissue causing lesions. As a result, the quantity and quality of crop yields may be reduced.

Air pollution can be harmful to land animals. Bodies of water can become altered chemically from contaminants washed out of the air by rain which, in turn, endangers aquatic life.

What is air?

Air is made up of 78% nitrogen 21% oxygen, under 1% carbon dioxide, and trace amounts of other gases.

What can I do to reduce air pollution?

- Drive less
- Walk or ride your bike to nearby places
- Ride the bus on your commute to work or school
- Carpool, call 884-RIDE for information
- Use the internet to shop or find out information instead of driving
- Conserve energy since Tucson's main source of energy production causes air pollution
- Use manual or electric powered landscaping equipment instead of gas-powered
- Maintain your vehicle properly
- Refuel after 5:00p.m. to reduce ground-level ozone
- Stop at the click when fueling up to reduce gasoline vapors and spills
- Keep your tires properly inflated
- Use a propane barbecue grill, an electric charcoal starter, or charcoal chimney instead of lighter fluid
- Switch to a gas fireplace instead of a wood burning one, and burn fires less frequently
- Avoid using oil-based paints and solvents
- Use brushes and rollers instead of spray paint
- Recycle, it uses less energy