

# The Facts about Ozone

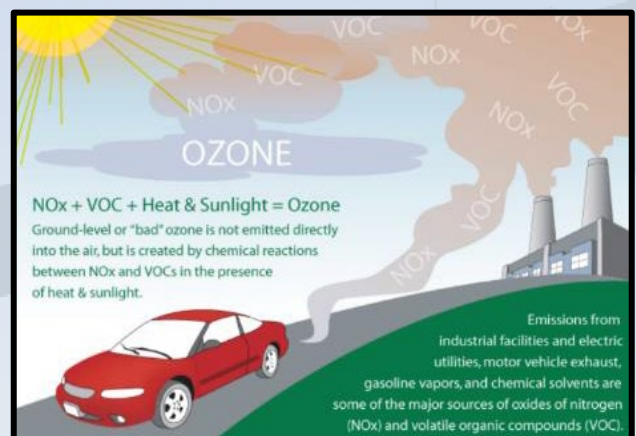
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## What is ozone?

Ozone is a gas that occurs both in the Earth's upper atmosphere and at ground level. Ozone can be "good" or "bad" for your health and the environment depending on its location in the atmosphere. The so-called "good ozone" occurs naturally in the upper atmosphere, far away from where people live, and protects life on Earth from the sun's harmful ultraviolet rays. This contrasts with "bad ozone" – sometimes called "smog" – which is produced closer to the Earth's surface, near ground level, which is harmful to breathe. Ground-level ozone is regulated as an air pollutant.

## What causes ozone pollution to form?

Ozone is not emitted directly into the air but is formed by chemical reactions between two common air pollutants, oxides of nitrogen ( $\text{NO}_x$ ) and volatile organic compounds (VOC). This happens when the  $\text{NO}_x$  and VOC emissions from motor vehicles, industrial plants, consumer products and other sources interact under the influence of sunlight and heat. Ozone levels are highest during the summer months when the influence of direct sunlight is greatest.



## What are the harmful effects of ozone pollution?

Exposure to unhealthy levels of ozone can cause lung and airway inflammation, decreases in lung function and capacity, and other respiratory problems such as coughing and pain when taking a deep breath. As with any health issue, some people are more sensitive to ozone than others and the severity of health effects can vary widely among individuals. Children, older adults, people with pre-existing disease and anyone working, exercising, or playing outdoors are at a greater risk of health impacts from ozone exposure. Ozone also damages vegetation, reduces crop yields and corrodes building materials.



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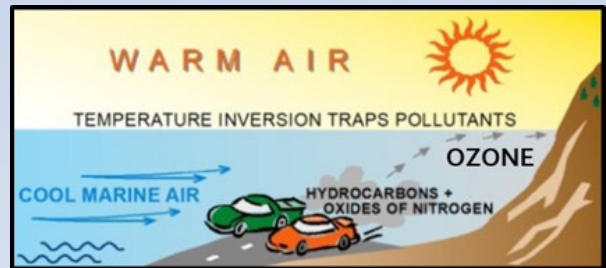


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## Where are ozone pollution levels highest in the region?

Ozone pollution levels are continuously monitored by the APCD at several locations throughout the region. Ozone pollution is typically highest during hot summer days in the inland foothill community of Alpine, which is because of how and where ozone is formed. Emissions from motor vehicles, factories and other sources in the populated coastal plain are blown inland by the onshore breeze, all the while chemically reacting under the abundant sunshine to form ozone. The onshore flows also create a temperature inversion, trapping the ozone pollution below it and against the lower mountain slopes, where it builds up.



## Does climate change affect the region's ozone pollution levels?

Yes. The rising temperatures and calm, stagnant air conditions associated with climate change can accelerate the formation and build-up of ozone pollution. Additionally, climate change can influence the frequency and severity of wildfires, which release potentially massive quantities of ozone-forming emissions and other harmful air pollutants. Accordingly, efforts to combat climate change will bring about co-benefits in the fight against ozone pollution.

## What is being done to reduce ozone pollution levels in the region?

The U.S. EPA has established national clean air standards for ozone pollution that are designed to protect public health and the environment. In order to clean up our air and attain these standards, over the past several decades the APCD has developed and expanded its regulatory programs to cut emissions from factories and other stationary sources and grown its incentive-based programs to achieve emissions reductions from mobile sources (such as cars, trucks, and off-road vehicles and equipment) beyond what is required by law or regulation. As a result of these ongoing efforts to improve air quality, in 2019 the region experienced record-low levels of ozone-forming emissions and the fewest exceedances of the national ozone standards since air quality monitoring began here in the 1950s. However, further reductions in ozone-forming emissions are still needed in order to attain the national ozone standards throughout the region.

## What are the next steps to attain the national ozone standards?

The APCD has drafted a proposed new Ozone Attainment Plan demonstrating how the region will further reduce emissions to attain the national ozone standards by specified deadlines. Regionwide ozone attainment is within reach through the ongoing implementation of comprehensive regulatory and incentive-based measures at the local, State and federal levels.



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