

# Effects of Car Pollutants on the Environment



*Updated March 13, 2018 By Jenny Green*

Car pollutants cause immediate and long-term effects on the environment. Car exhausts emit a wide range of gases and solid matter, causing global warming, acid rain, and harming the environment and human health. Engine noise and fuel spills also cause pollution. Cars, trucks and other forms of transportation are the single largest contributor to air pollution in the United States, but car owners can reduce their vehicle's effects on the environment.



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# Global Warming

Car pollution is one of the major causes of global warming. Cars and trucks emit carbon dioxide and other greenhouse gases, which contribute one-fifth of the United States' total global warming pollution. Greenhouse gases trap heat in the atmosphere, which causes worldwide temperatures to rise. Without greenhouse gases, the Earth would be covered in ice, but burning excessive amounts of fossil fuels, such as gasoline and diesel, has caused an increase of 0.6 degrees Celsius, or 1 degree F, in global temperatures since pre-industrial times, and this will continue to rise over the coming decades. Warmer global temperatures affect farming, wildlife, sea levels and natural landscapes.

# Air, Soil and Water

The effects of car pollution are widespread, affecting air, soil and water quality. Nitrous oxide contributes to the depletion of the ozone layer, which shields the Earth from harmful ultraviolet radiation from the sun. Sulfur dioxide and nitrogen dioxide mix with rainwater to create acid rain, which damages crops, forests and other vegetation and buildings. Oil and fuel spills from cars and trucks seep into the soil near highways, and discarded fuel and particulates from vehicle emissions contaminate lakes, rivers and wetlands.

# Human Health

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and metal. These cause skin and eye irritation and allergies, and very fine particles lodge deep in lungs, where they cause respiratory problems. Hydrocarbons react with nitrogen dioxide and sunlight and form ozone, which is beneficial in the upper atmosphere but harmful at ground level. Ozone inflames lungs, causing chest pains and coughing and making it difficult to breathe. Carbon monoxide, another exhaust gas, is particularly dangerous to infants and people suffering from heart disease because it interferes with the blood's ability to transport oxygen. Other car pollutants that harm human health include sulfur dioxide, benzene and formaldehyde. Noise from cars is also harmful, damaging hearing and causing psychological ill-health.

## Reducing Car Pollution

There are several ways that car and truck owners can reduce the effects of car pollutants on the environment. Old and poorly maintained vehicles cause most pollution from cars, but electric, hybrid and other clean, fuel-efficient cars have a reduced impact. When buying a new car, check the fuel economy and environment label. High ratings mean low pollution levels. Maximize fuel economy by removing all unneeded items, such as roof racks, and driving steadily, rather than accelerating quickly and braking hard. Keep your vehicle well-maintained, with regular tune-ups and tire checks, and leave the car at home whenever you can. Walk, bike or use public transportation when possible.

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# What Is the Difference Between Human & Natural Air Pollution?



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The major difference between natural and man-made air pollution is that continuous or temporary natural events cause natural air pollution, but human activities are responsible for man-made pollution. We can't prevent natural air pollution from sources like volcanoes, but

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# In the Air

Air pollutants are gases and particles that harm people or other life, damage materials or reduce visibility. Some air pollution comes from volcanic eruptions, forest fires and hot springs, but most is the result to human activities. Power plants, factories, cars and trucks emit carbon dioxide, carbon monoxide, hydrocarbons, sulfur dioxide, nitrogen dioxides and particulate matter that consists of fine particles suspended in the air. Burning oil, coal, gasoline and other fossil fuels is a major cause of man-made air pollution. Other man-made sources of air pollution include:

- waste disposal
- dry cleaning
- paints
- chemical manufacture
- wood stoves
- flour mills



# Natural Sources of Air Pollution

Natural air pollutants include radon, fog and mist, ozone, ash, soot, salt spray, and volcanic and combustion gases. Radon is a radioactive gas that seeps from the ground in some areas, and fog and mist are both dense water vapor at ground level that obscures vision. Ozone, a chemical formed naturally by the action of sunlight on oxygen, is a pollutant at ground level but beneficial in the upper atmosphere. A molecule made of three oxygen atoms, ozone shields the Earth from harmful ultraviolet rays from the sun, but it damages plants and causes breathing problems in the lower atmosphere. Volcanic eruptions and forest, swamp and grass fires launch soot and ash into the atmosphere, which reduces sunlight and lowers temperatures. Eruptions and fires also produce carbon dioxide, carbon monoxide and other polluting gases.

## Air Pollution Effects

Natural and man-made air pollution harm humans, other life and the environment. Particulate matter from burning wood and fossil fuels lodges in lungs, causing respiratory problems, and settles in a fine film over buildings, trees and crops. Carbon monoxide interferes with the blood's ability to transport oxygen and causes headaches, heart damage and death. Sulfur dioxide, which is a product of burning coal, irritates eyes, damages lungs and makes rain acidic. Acid rain damages buildings and forests and kills aquatic life. Another contributor to acid rain is nitrogen dioxide emitted by vehicles, industrial boilers and other industrial processes. Lead from leaded gasoline, power plants and metal refineries contaminates crops and livestock and causes brain and kidney damage.

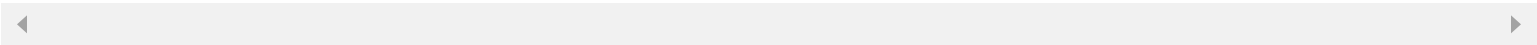
## Global Warming

Greenhouse gases that cause global warming have increased 31 percent since preindustrial times. Carbon dioxide and other gases trap heat in the atmosphere, causing global temperatures to rise. Although carbon dioxide has natural sources, such as volcanic eruptions, human activities have caused an increase from 280 parts per million before the development of industry to 370 parts per million today. Other greenhouse gases include methane and

researchers at the National Center for Atmospheric Research still predict a 90 percent chance that human activities will cause a 1.7 to 4.9 degree Celsius (3.1 to 8.9 degree Fahrenheit) increase in global temperatures by 2100.

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## Examples of Secondary Pollutants



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## TL;DR (Too Long; Didn't Read)

Secondary pollutant form when primary pollutants emitted directly from a combustion process react in the atmosphere. Primary pollutants include ammonia, sulfur dioxide, nitrogen dioxide and carbon monoxide. Secondary pollutants include ground-level ozone, acid rain and nutrient enrichment compounds.

## Ground-Level Ozone

Ozone forms when hydrocarbons and nitrogen oxides combine in the presence of sunlight and stagnant air. It is a colorless, highly irritating gas with a sweet smell that forms just above the

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Burning coal, gasoline and oil in homes, motor vehicles, power plants and industries creates nitrogen oxides. Gasoline combustion, oil and gas production, wood combustion, and the evaporation of liquid fuels and solvents create hydrocarbons. They also come from natural sources such as coniferous forests.

Ozone exposure may cause premature mortality and major health issues. It also affects vegetation, hinders crop productivity and damages synthetic materials and textiles such as cotton and polyester.

## Acid Rain

Acid rain, which is made up of several acidic compounds, forms when sulfur dioxide and nitrogen dioxide react in the air with water, oxygen and other chemicals. The wind carries the acidic compounds into the air, and they later fall to the ground in either dry or wet form.

On the ground, acid rain damages plants and trees and increases the acidity levels of soils and bodies of water, causing damage to ecosystems. Acid rain also causes decay to buildings and can irritate the eyes and airways.

## Nutrient Enrichment Compounds

Nutrient enrichment compounds contain nitrogen and phosphorus. While these nutrients often come from natural sources, human activities such as agriculture, urbanization and industry create excessive nitrogen and phosphorus in the environment. Most of the air we breathe is made up of nitrogen, and both nitrogen and phosphorus occur naturally in aquatic

Nutrient enrichment compounds cause air and water pollution, which leads to the rapid growth of algae. The algae growth affects water quality, food supplies and habitats and decreases oxygen supply to fish and other aquatic life. Large algal blooms may release toxins and bacteria, making water and sometimes the fish and shellfish in it unsafe for human consumption.

High levels of nitrogen in the atmosphere also produce pollutants such as ammonia and ozone, which affect your ability to breathe.

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