Something in the air: Air pollution and health

Dear Alice,

What are the effects of air pollution on your health?

Answer

Dear Reader,

Odorous airs and hazy horizons — air pollution not only causes unpleasant sights and smells, but it may have more serious effects as well. Air pollution, a general term referring to excessive or harmful amounts of certain substances in the air, has been linked to serious health problems, such as cancer, infertility, and birth defects. Air pollution is largely a result of human activity: cars, agricultural practices, and factories are just a few of the sources of harmful chemicals in the air.

Air pollution not only affects us when we breathe, but it reaches us in other ways as well. Polluted air may contaminate land and bodies of water with toxic chemicals. Plants or crops that grow in contaminated land also carry these chemicals and pass them onto animals that eat them. In this way, toxic chemicals enter our bodies through the food we eat and the water we drink.

Some of the most common chemicals that pollute the air include:

**Nitrous oxide (N2O)** is a gas that is formed when fossil fuels (such as oil, gasoline, and coal) are burned at high temperatures. These gases mostly come from automobiles, power plants, and factories. Nitrous oxides contribute to a number of problems:

- **Ground-level ozone** (a.k.a., smog, a combination of smoke and fog) is created by reactions between nitrous oxides, sunlight, and other chemicals in the air. Smog may damage lung tissue and reduce lung efficiency. It may also damage crops and vegetation.
- **Acid rain** happens when nitrous oxides combine with sulfur dioxide (a chemical that also comes from burning fossil fuels — more info on this a little further down) and react with other chemicals to create acid in the atmosphere. When this acid falls through rain, snow, or fog, it contaminates farmland and bodies of water.

Climate change happens when nitrous oxide collects in the atmosphere with other greenhouse
gases (e.g., carbon dioxide, methane), which are gases that trap heat in the atmosphere, contributing to a gradual rise in the earth’s temperature. Climate change may also change weather patterns, which could hurt farming, food production, and facilitate the spread of many climate-sensitive diseases.

**Carbon dioxide (CO\(_2\))** is a greenhouse gas released both naturally through the environment, like people breathing, and artificially through human activities like burning fossil fuels (such as oil, natural gas, and coal), burning trees and wood products, and performing other common manufacturing chemical processes. Carbon dioxide is a main contributor to climate change.

**Sulfur dioxide (SO\(_2\))** is a gas that is formed when sulfur-rich fuels (such as oil and coal) are burned, when oil is processed to produce gasoline, and/or when ores are processed to produce metals. As mentioned earlier, sulfur dioxide may react to form acid rain. The chemical may also gather in the lungs, aggravate pre-existing health conditions, and cause breathing problems.

**Carbon monoxide (CO)** is a gas that comes from automobiles that burn fossil fuels, factories, and wood burning. The chemical interferes with the body’s normal delivery of oxygen to its organs, and in high levels, carbon monoxide is poisonous to humans. Lower levels may affect the central nervous system, resulting in vision problems, trouble learning and performing complicated tasks, and decreased dexterity. Carbon monoxide may have particularly harmful effects on individuals with heart disease, such as angina or clogged arteries. Even low levels of the chemical may cause chest pain and reduced ability to exercise.

Air pollution and climate change are complicated and sometimes controversial topics. If you're interested in learning more, many resources are available. Many organizations are politically active and focus on air pollution and climate change. Some advocate for laws that will make the air cleaner, while others teach people ways to pollute less and inform the public about pollution- and climate change-related health risks. To find out more, check out the [Sierra Club][2] and the [Natural Resources Defense Council (NRDC)][3].

Whether it is contributing to an existing health condition or leading to new ones, air pollution affects everyone. Each person has a shared responsibility for reducing air pollution and improving the health of all. As they say, a journey of a thousand miles begins with a single step. Here’s to cleaner air with every green step you take!

Alice!

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- Body Maintenance [5]
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