



Air Purifiers/Cleaners - Ozone

Information Sheet

Scientific Background

Ozone is a molecule composed of three atoms of oxygen. Two atoms of oxygen form the basic oxygen molecule--the oxygen we breathe that is essential to life. The third oxygen atom can detach from the ozone molecule, and re-attach to molecules of other substances, thereby altering their chemical composition. It is this ability to react with other substances that forms the basis of manufacturers' claims.

The same chemical properties that allow high concentrations of ozone to react with organic material outside the body give it the ability to react with similar organic material that makes up the body, and potentially cause harmful health consequences. When inhaled, ozone can damage the lungs (see - "Ozone and Your Health" - www.epa.gov/airnow/brochure.html). Relatively low amounts can cause chest pain, coughing, shortness of breath, and, throat irritation. No device produces "acceptable" levels.

Ozone may also worsen chronic respiratory diseases such as asthma and compromise the ability of the body to fight respiratory infections. Healthy people, as well as those with respiratory difficulty, can experience breathing problems when exposed to ozone. Recovery from the harmful effects can occur following short-term exposure to low levels of ozone, but health effects may become more damaging and recovery less certain at higher levels or from longer exposures (US EPA, 1996a, 1996b).

Though ozone in the stratosphere is protective, ozone in the atmosphere - which is the air we breathe - can be harmful to the respiratory system. The harmful concentrations of ozone in the atmosphere are often accompanied by high concentrations of other pollutants, including nitrogen dioxide, fine particles, and hydrocarbons. **Whether pure or mixed with other chemicals, ozone can be harmful to health.**

Reference: <http://www.epa.gov/iedweb00/pubs/ozongen.html#how%20is%20ozone%20harmful>

Discovery

- For all practical purposes, ozone does not react at all with chemicals. People often mistakenly identify the "bleachy" odor as "clean," when it is actually toxic.
- For many of the chemicals with which ozone does readily react, the reaction can form a variety of harmful or irritating by-products
- Ozone does not remove particles (e.g., dust and pollen) from the air, including the particles that cause most allergies.

Fixing the Problem

A HEPA filtration system is best. A HEPA filter removes 99.97% of particles over 0.3 microns. It, of course, removes much finer particles too, for example, 95% of 0.1 micro particles. Additionally, it is good at removing gases from the air if an activated carbon filter is added.

- IQ Air health Pro Series Plus (www.iqair.com)
- E.L. Foust Series 400 (www.foustco.com/)
- Austin Air Health mate Plus (www.austinair.com)
- AllerAir (www.allerair.com) – also good for those with chemical sensitivities

According to the U.S. EPA (Environmental Protection Agency)¹ *"Manufacturers and vendors of ozone devices often use misleading terms to describe ozone. Terms such as "energized oxygen" or "pure air" suggest that ozone is a healthy kind of oxygen. Ozone is a toxic gas with vastly different chemical and toxicological properties from oxygen. Several federal agencies have established health standards or recommendations to limit human exposure to ozone."* Ozone generating units can be useful to sanitize rooms, bedding, etc ... but should be used only in unoccupied buildings.

¹ www.epa.gov/iedweb00/pubs/ozongen.html