

There have been questions about the Airmaster and ozone safety, and misconceptions about how the Airmaster produces ozone to do its job. This article should clarify any concerns you or your customers may have.

PURIFYING YOUR HOME WITH OZONE

FOREWORD

We've designed this article to provide you with a better understanding about ozone and its application in indoor air treatment. You may have questions regarding the use of ozone as an acceptable method of reducing odors in their homes or businesses. We hope this information will help with any discrepancies or confusion that have been associated with ozone.

WHAT IS OZONE?

Ozone is an allotropic form of oxygen with three oxygen atoms bonded together (O₃) instead of the common two atoms form (O₂). It occurs naturally in the atmosphere to destroy bacteria, viruses and odors. The word "ozone" is derived from the Greek word for "smell." Outdoor air always has a low level of ozone. At low concentrations ozone has a sweet, clover-like odor you might smell after an electrical storm. Ozone is an unstable molecule - it readily reverts back to O₂, typically within a few minutes to an hour, as it comes in contact with other chemical molecules or is exposed to ultraviolet energy. As O₃ reverts back to O₂, the third oxygen atom aggressively combines with other chemicals - this process is called oxidation. Ozone may be used as an oxidizing tool when we wish to convert harmful chemicals or kill pathogens. It is used throughout the world to purify water and disinfect air. The largest water treatment plants in the world use ozone to purify their drinking water.

GOOD OZONE VS. BAD OZONE

When the oxygen (O₂) that is all around us rises to the upper atmosphere and is exposed to the sun's ultraviolet rays it naturally turns into ozone (O₃). That is what we know as

the "ozone layer". It protects us from the sun's harmful UV rays. That is the good ozone.

Bad ozone is formed when the carbon dioxide given off by cars and power plants reacts with sunlight. Those chemicals are a mixture of nitrogen oxides (NO_x), volatile organic compounds (VOCs), methane, (CH₄) and carbon monoxide (CO). The result is smog - the air pollution that we see and smell. At high levels ozone can contribute to smog, but a common fallacy is that ozone is smog. Ozone is not smog. Smog is caused mainly by automobile emissions and it is the greatest source of airborne pollutants in many cities today.

ROOM IONIZERS VS. AIRMASTER PURIFICATION SYSTEM

Airmaster ozone generators and room ionizers are similar devices in that they clean the air we breathe. They both produce ozone but are very different, and here's why.

Room ionizers are located in the same rooms that come in contact with humans. This can cause problems because concentrations of ozone will vary with distance from the unit, and may exceed safe limits in the immediate vicinity of the unit. They also claim to remove dust and dirt with the use of filters. Room ionizers simply move particles to other places. That's NOT air cleaning because the dust remains in the room. Don't be fooled by other manufacturer's claims that ionizers are better. Ionizers have NO ability to destroy bacteria or mold spores.

The best location for a home air purification ozone generator is in the most central location in the home's forced air heating and cooling system. This location will ensure that ozone concentrations coming out of the ducts will be much lower than at the unit's source. Airmaster puts no ozone in the living area as it is all consumed in the ductwork - leaving only oxygen when it reaches each room. Using two UV lamps, the Airmaster air purifier produces low levels of UV energy and ozone, silently and invisibly removing odors and sanitizing the air flowing through the ventilation system. So what does that mean? It means that the entire system is

contained in a controlled environment outside of your living space. Once installed and ready for operation, the Airmaster unit produces ozone only when the HVAC fan is running.

OZONE SAFETY

Ozone in excessive concentrations, measured either in parts per billion (ppb) or parts per million (ppm) is unhealthy for respiratory tissues - those found in your nose, trachea and lungs. Because of this, government agencies such as the United States Environmental Protection Agency, Food and Drug Administration, and Occupational Health and Safety Administration have standards for maximum ambient concentrations of ozone.

The Airmaster air purification system has been independently tested and the lab results verify that Airmaster is effective at killing airborne microorganisms including bacteria and molds in ductwork. Airmaster will not kill microorganisms outside of the ductwork, nor will it kill molds living on other home surfaces.

Worker exposure levels are not to exceed 0.002 g/m³ in the air for an 8-hour work day or 0.1 ppm by volume. Fortunately, this is well above the threshold a person is able to detect by smell.

When installed correctly, the Airmaster air purification system will not exceed government guidelines for continuous safe exposure.

OSHA - Occupational Safety and Health Agency has stipulated that the safe allowable level of residual ozone is .08 ppm. This is supposedly based upon the historical safety of ozone. This permissible level is for continuous exposure throughout an entire 8-hour day for 5 days a week.

FDA - Ozone concentrations of 0.05 ppm (parts per million) are within most recommended safe exposure levels for air purification levels

NIOSH - Recommends an upper limit of 0.10 ppm, not to be exceeded at any time.

EPA - The National ambient air quality standard for ozone is a maximum 8-hour average outdoor concentration of 0.08 ppm. If an ozone air purifier is on with people present, the EPA recommends the proper settings should be selected so that the ozone level is less than 0.08 ppm.1

FAQ'S

Q: Is Ozone Safe?

A: Ozone is safe when used properly. Unlike room air products that make ozone right where you are breathing, Airmaster low level of ozone is made in your heating ductwork, and naturally dissipates before being circulated through your home.



Ozone will not explode. It is not a fire hazard. And in the dose required for the Airmaster purification system, ozone does not produce harmful fumes.

Q: I've read claims that state ozone shouldn't be used in the home as an air purifier because it's a carcinogen?

A: False. The majority of the publicity surrounding the negative effects of ozone exposure refers to high concentrations as compared to the extremely low concentrations we are dealing with when using the Airmaster air purification systems that we sell. And remember, the Airmaster unit is installed in the central ductwork in your home, so we maximize the amount of air exposed to ozone. The Airmaster unit produces ozone only when the HVAC fan is running. This safety feature ensures that excessive ozone concentrations do not buildup inside the ductwork. Independent laboratory testing has confirmed that ozone levels at a distance of 12 feet from the unit were undetectable (below 0.01ppm).

Q: Has anyone ever been injured using ozone?

A: No one has ever been injured or claimed a worker's related death due to ozone exposure. Remember, ozone is unstable. Once it's produced, it does its work then it disappears - leaving oxygen as it's only residual. Ozone, like oxygen, does not accumulate in the human body.