

Understanding Ozone and How to Use it

We hear so much about ozone or activated oxygen these days that it is easy to become confused. Questions such as, "What is ozone?" Is it safe? How is it being used in sanitation and purification today?" are often asked. The following will hopefully answer these questions and provide insights into this growing market for retailers of cleaning and purification equipment.

Ozone is basically supercharged oxygen. It is often referred to as activated oxygen. Regular oxygen is O₂ and ozone is simply O₃. Nature regularly transforms oxygen into ozone through forces such as lightning and ultra-violet light striking the earth. O₃ then acts as a natural sanitizer. After a short period of time the ozone reverts back to regular oxygen at ground level.

How We Learn About It

We learn about ozone in the news primarily in two different ways. The first is in relation to the ozone layer. This layer in the upper atmosphere helps to reduce the amount of ultra-violet light that strikes the earth. The layer is gradually being depleted as a result of specific pollutants such as aerosols and the older refrigerant gases. Steps have been taken to reduce these pollutants, but there is an ongoing concern about protecting the ozone layer.

The second way we learn about ozone is the ground level ozone in polluted cities such as Los Angeles. Automobiles and industry put out excessive levels of hydrocarbons into the air through exhaust emissions. When ultra-violet (UV) light from the sun strikes hydrocarbons, ozone is created. For millions of years, nature has created ozone by sunlight striking hydrocarbons, emitted from decaying matter, as one way it keeps the earth clean. This is nature's response to pollution in the air. When the exhaust emissions are high, the ozone levels become high as a response to the hydrocarbons. The level of ozone in cities such as Los Angeles can exceed 200 parts per billion (PPB) on days when pollution is high.

On the other hand, without ozone and UV light the earth would be an odorous place with mold, mildew and viruses running rampant. The forces of nature are designed to keep the outdoors clean and healthy. Unfortunately, there is normally very little ozone in our indoor spaces where we spend nearly all of our time. This is because the buildings where we live and work are designed to shut nature out.

How We Use It

Ozone is also intentionally created by man for use as purifying agent. It is injected in nearly all bottled waters and is widely used in Europe for treating municipal water supplies. Ozone or activated oxygen can also be utilized for air treatment. The issue becomes using ozone in a manner that is both safe and effective indoors.

The typical way ozone is used commercially for air treatment is by blasting a high level of ozone into an unoccupied room for a short period of time. For example, if a

hotel wants to change a smoking room to a non-smoking room, they often use an ozonator such as the LightningAir Industrial Cleaner to pull odors out of the carpet, drapes, bedding, etc. Smoke damage restoration services also use ozone to get rid of odors. In addition, water damage restoration companies employ ozone generators to get rid of odors as well as mold and mildew. Now restaurants, bars and casinos are starting to use ozone at relatively low levels to keep the air smelling fresh and clean at all times. So ozone is being generated for both high level and low level air treatment.

High Level Use

With an air purifier, such as one in the LightningAir XP series, you can blast a room or the entire home to reduce mold, mildew and microorganisms or to accelerate the dissipation of chemicals from new carpet, furniture and paint. Simply close off the problem area or shut the windows and doors in your entire home. Next, set the ozonator dial at a high level. Then leave the area for 20 minutes to several hours depending on the size of the space and severity of odors. Once you return, open the doors and windows to let in fresh air until the ozone is gone. Perform this procedure as often as necessary until the odors are removed. This is the most effective way to reduce strong odors and micro-organisms because it allows the activated oxygen to go after pollution at the source.

Many users put their purifier on a timer so that it comes on everyday for a few hours while they are at work and then it shuts off a couple of hours before they return home. When they walk in the air smells fresh and clean and the ozone has reverted back to normal oxygen.

Low Level Use

The other way is to keep the ozonator at a relatively low setting while in the home or office. This will hold down odors and microorganism growth while keeping the air smelling fresh and clean. Each home is different so it requires a trial and error process to get the right setting.

First, set the ozonator dial at a modest level and let it run for a couple of hours. If you smell ozone when you walk into the room, turn the dial setting down slightly. On the other hand, if you smell household odors, turn the dial up. Repeat the process until you walk into the room and do not smell household odors or the activated oxygen--just clean fresh air.

Moderation is the Key

People with allergies and other respiratory problems often benefit from a low level of ozone. This is because it helps to reduce the irritants in the air they are reacting to without bombarding the space with chemical air fresheners. However, excessive ozone concentrations can cause mucus membrane or respiratory irritation. Individuals with severe respiratory problems such as emphysema should consult their physician before use. Those with a poor sense of smell should also exercise caution for continuous use, especially if they experience a

dry throat, cough or watery eyes. So, proper adjustment and moderation is the key for low level use in occupied spaces.

The level of ozone generated at a particular setting on the dial will vary with humidity, altitude, household contents, level of pollutants in the space and other factors. The average person is able to smell ozone as the level approaches 20 PPB indoors. The FDA has determined that a level of 50 PPB for continuously occupied spaces is safe for sensitive persons such as the very young, the elderly and the sick. The EPA has set a target level of 80 PPB for outside air but that is regularly exceeded. So setting dial where you smell little or no ozone is a good rule of thumb in order to stay within the limits for occupied spaces.

The Opportunity

Most purifiers that produce activated oxygen also have ionizers that drop dust and other particulate out of the air. Not only do these products have the ion purification that has been advertised so much on TV, they also have the built in sanitizer to go after indoor air pollution at their source. The ionizer on the LightninAir XP, for example, is designed to run full time and needs no adjustment. In addition, the purifier tends to blend in much better with the average home décor. This opens the door to a great opportunity in an expanding market!

Since the beginning of time, nature has produced ozone to keep the earth fresh and clean. It is now being used very effectively in both air and water for purification and sanitization. Retailers have a unique opportunity to introduce these products to homes and offices as well as to bars, restaurants and commercial cleaning services. They simply need to educate the consumer to its benefits and how best to use it. Over time, a positive response from satisfied customers is always the best advertising available. Those retailers that market quality, time-tested air purifiers will enjoy considerable growth in their business!