

IEQ NEWS

*We care about indoor air*

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What's New?**Fact Sheet: Get the Mold Out: Mold Clean-Up Guidance for Residences****Fact Sheet: Indoor Environmental Quality****Fact Sheet: Ozone Generators (available soon)**www.dph.state.ct.usEnvironmental and Occupational Health
Assessment Program

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**FOCUS: Ozone Generating Air Purifiers**

The use of air purifiers that intentionally produce ozone, called “ozone generators,” is hazardous and should be avoided. Ozone generators cause indoor air pollution, and they do not clean the air.

What is Ozone?

Ozone, or O₃, is a molecule made from three oxygen atoms. The three oxygen atoms form an unstable toxic gas that is highly reactive with other gases in the air. Ground level ozone is a major component of smog. Ozone found high up in the atmosphere, called stratospheric ozone, protects us by shielding us from harmful ultraviolet (UV) light. This “high in the sky” ozone and its beneficial effects should not be confused with the harmful “low to the ground” ozone, or smog.

Code Words for Ozone

Manufacturers of air purifiers that generate ozone sometimes use words like “activated oxygen,” “super oxygen,” “trivalent oxygen,” “allotropic oxygen,” “saturated oxygen,” “mountain-fresh air,” or “energized oxygen” when talking about ozone. These words give readers a false picture, by implying that ozone is a “healthy kind of oxygen.” *This is untrue.* Because ozone reacts with some other molecules, manufacturers claim that the ozone produced by these devices can purify the air and remove airborne particles, chemicals, mold, viruses, bacteria, and odors. However, ozone is not effective at cleaning the air except at extremely high, unsafe ozone levels, and then it is only partially effective.

Health Effects of Ozone Exposure

Ozone is a pulmonary toxicant. It can impair breathing and lead to permanent lung damage. Exposure to O₃ can inflame the lungs and lining of the respiratory tract. Symptoms to watch for include coughing, shortness of breath, and chest tightness. In asthmatics, it can trigger asthma attacks and worsen symptoms. In people already in poor health, repeated exposure to high levels of O₃ can increase the risk of dying.

Ozone combines with other volatile organic compounds (VOCs) in the air to form dangerous breakdown products that may be more irritating than the parent chemicals.



Technically Speaking: Ozone Generators

What are Ozone Generators?

They are air purifiers that intentionally emit ozone.

Are there other types of Air Purifiers that produce ozone?

Electrostatic precipitators (ESPs), and ionizers (ion generators) are two types of air purifiers that produce ozone as a byproduct. Ionizers and ESPs are designed to electrically charge particles and remove them from the air; ozone is released through the charging process. These devices typically emit less ozone than ozone generators, and therefore are less of a concern.

Frequently Asked Questions



Q: Why are ozone generating air purifiers on the market if they are ineffective and pose a health risk?

A: There is no government agency with the authority to fully regulate these devices; some state and federal agencies have taken actions in an attempt to address the issue.



Tools for Techs

The CT Technical School system is in the midst of an exciting project to implement Tools for Schools (TfS) in each of its 17 campuses across the state. The Technical High School Division of the CT Department of Education, along with the CT DPH, the Vocational Federation of Teachers, affiliated with the CT American Federation of Teachers, and the UConn Indoor Environments Program have been collaborating for the past 2 years to develop a special version of the TfS program for technical high schools. Technical high schools have a number of special trade shops - carpentry, food service, plumbing, HVAC - that require specific tools and training to be able to collect the information needed to assess and remediate IEQ problems in these schools. At this time, 4 schools are in the process of implementing the program. This is a pilot project that could be used nationally. Further funding is being sought.

What Ozone Emitted from Ozone Generators Does:

- o Produces unsafe levels of ozone which can effect breathing.
- o Combines with other household chemicals, especially citrus and pine scented fragrance products to form dangerous breakdown products (VOCs), that can be inhaled.
- o Increases the total number of chemical compounds (VOCs) indoors where ozone generators are used.
- o Masks the odor of other indoor air pollutants by deadening the sense of smell.

What Ozone Emitted from Ozone Generators Does NOT Do:

- o Purify the air
- o Remove carbon monoxide
- o Kill bacteria, viruses or mold
- o Remove smoke, dust, or other particulates

Other Ways to Clear the Air:

- o Eliminate or reduce exposure to pollutant sources through source control by using environmentally preferred cleaners, and by restricting smoking to the outside.
- o Increase outdoor ventilation by using exhaust fans, opening windows, or upgrading filters on air handling units.

For more detailed information about ozone and air purifiers refer to the new DPH Ozone Generator Fact Sheet available soon and the websites referenced below.



Literature Review

Ozone Generators that are Sold as Air Cleaners (EPA)

Comprehensive look at ozone and ozone generators including: What is ozone, health effects, "good" and "bad" ozone, effectiveness of ozone generators in controlling indoor air pollution, other methods to control indoor air pollution.

www.epa.gov/iaq/pubs/ozonegen.html

Helpful Web Links

www.consumerreports.org: Consumer Reports. Articles - Air Cleaners: Even the Most Effective Could be a Questionable Investment; New Concerns about ionizing air cleaners.

www.arb.ca.gov/research/indoor/ozone.htm: California Air Resources Board. Survey of Use of Ozone-generating Air cleaners, list of hazardous ozone generators sold as air purifiers and more.

