



## INDOOR AIR QUALITY

### Indoor Pollution

Our success in insulating and sealing our homes from the elements has also been responsible for keeping airborne pollutants within the home. We have created cocoons of pollution to live in. The medical community is realizing that many physiological and psychological discomforts and disorders that were often once attributed to one's imagination, are in fact, a by-product of exposures to pollutants in their indoor environment. Individuals can go through periods of heightened sensitivity during childhood, old age, stress, pregnancy and hormonal cycles. During these periods their bodies are sometimes unable to cope with the added stress of metabolizing airborne pollutants. The result in many cases, is a reaction triggered by the body's immune system.

During the past decade, Second Wind has been a pioneer and leader in the development and manufacturing of ultraviolet air purification equipment and technologies. We have exhaustively tested our products to insure that we offer you, our customer, dependable solutions to indoor air pollution. To understand the significant role Second Wind Air Purifiers play in solving many of the indoor air quality issues that we face today, you must first understand the basic fundamentals and physical makeup of air pollution.

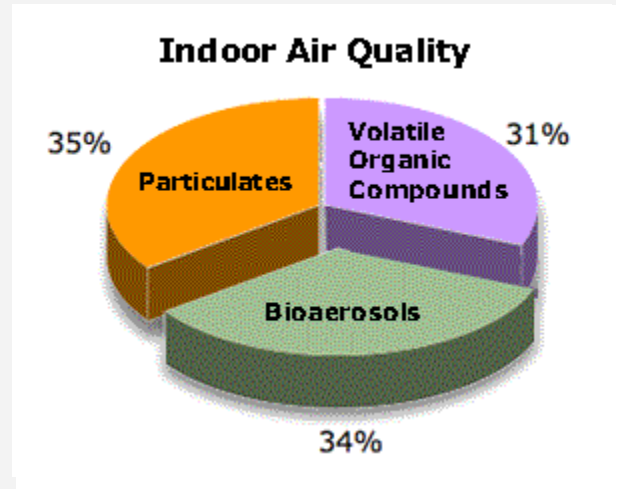
Site pages outline in easy to understand language, the components and terms used to describe poor indoor air quality. Much of the dangers found in our homes and places of work often can't be seen and may have no detectable odor, unfortunately these silent invaders are responsible for all types of allergies and disease, which for many results in a poor quality of life and sometimes even death. Few of us realize that items such as laundry and dishwasher detergent, polishes, paints, wood based building material, carpets, cosmetics, etc., generate measurable air pollutants.

Listed below are the categories that pollutants fall into:

1. **Particulates:** dust, smoke, etc.
2. **Bio-aerosols:** micro-organisms such as viruses, bacteria, mold, etc.
3. **Volatile Organic Compounds (VOCs):** chemical or odor causing gases etc.

Click on the above pages for more detail and definitions.

Of the three categories of contaminants mentioned above, the [Center for Disease Control](#) has reported that bio-aerosols and volatile organic compounds combine for over 65% of our indoor air pollution and are the main contributors or causes of allergies, asthma, respiratory problems and general poor health.





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## Particulates

This category refers to particles that are often thought of as dust, but are often combinations of Dirt, Dust, Dead Skin, Pollen, Building materials and Smoke. Particulate are considered inert, meaning not alive, but living organisms like dust mites can live on those particles. During the course of a year, the average home accumulates approximately 40 lbs of household particulate.

Inert particulate alone usually cause the least amount of health problems, but for some, may become a severe irritant, causing reactions or life threatening illnesses such as cancer and heart disease. An example would be asbestos or cigarette smoke. Most basic HVAC filters are inadequate to cope with the many different sizes and types of particulate.

Heavier particulate is usually removed by vacuuming and dusting. Lighter migratory particulate or dust can be removed by portable or fixed filtration systems. Particulate of under 2.5 microns can infiltrate the lining of our lungs.

Filters are great and a necessity of an airflow system in just about every home. However, (**Filtration Alone is Inadequate**) to address other airborne agents that are potentially more harmful. Many microscopic organisms can flow through some of the best filters, as do chemicals and viruses,

Although airborne living organisms (bioaerosols) are often referred to as particulate when determining the total suspended particulate (TSP) or respirable suspended particulate in a building, we have separated this classification into it's own category for explanatory purposes.

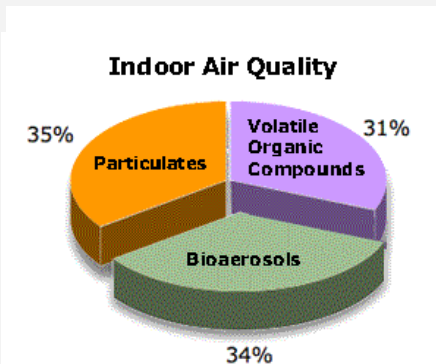
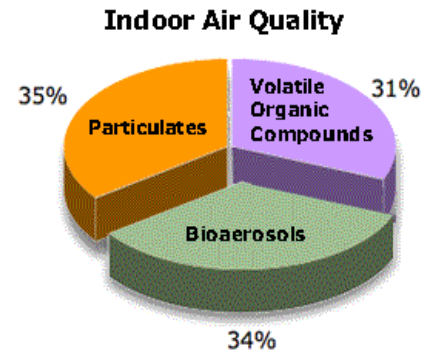
Second Wind offers several options for filtration in its All-In-One Solutions for your home. Please see our products section and look at the 9000 & 9200 series.

## Bio-aerosols

Molds, Bacteria, Viruses are examples of living organisms that flow through airstreams of home's and businesses. These living organisms require reduction, as the present the GREATEST THREAT TO OUR HEALTH. Untreated, they can live for days at a time. You will never totally reduce your exposure to the pathogens.

The behavior or movement of these pollutants are governed by the forces of gravitation, electromagnetism, turbulence or diffusion to move through the air. Bioaerosols can create disease and allergic reactions. The size of bioaerosols can range from less than one micron to around 100 microns.

All Second Wind products that employ Ultraviolet light systems provide a dependable line of defense against indoor airborne contact from these pathogens and aid in the reduction of the pollutants.





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### Volatile Organic Compounds or VOCs

Your home or office's airflow is a super-highway for chemical compounds that create odors, fumes and off-gasses. Indoor Chemical Pollutants, called Volatile Organic Compounds (VOC's) can come from household cleaners, building materials, carpeting, electrical components...the list is endless. No home or office is immune from generating and recirculating these pollutants.

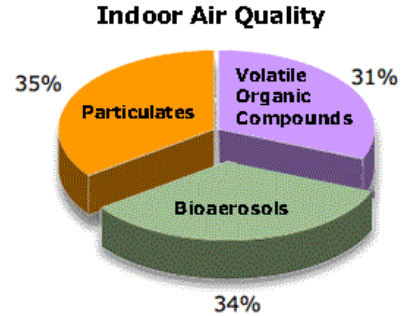
#### What are VOC's?

"Volatile" refers to the ability of a substance to evaporate or readily vaporize at room temperature.

"Organic" refers to compounds containing hydrocarbons.

"Compounds" consist of two or more elements, substances, ingredients or parts.

Put it altogether and what does it mean: VOC's are hydrocarbon based compounds which involve life or the products of organic life that will evaporate or vaporize when placed at room temperature. Petroleum products such as gasoline for example, is a byproduct of once living organisms that will vaporize at room temperature. Glues, which are often made up of boiled animal parts, (hydrocarbons) that are often used in the production of wood products and the installation vinyl flooring etc., will also vaporize or off-gas formaldehyde as they cure. This is where the term "off-gassing" comes from.



What makes the understanding of VOC's a bit more difficult, is that we usually consider evaporation or vaporization as the change of a solid or liquid to a gas or liquid vapor. Vaporization in this case refers to the diffusing or scattering of matter. This is why mold for example, has been referred to as a VOC, even though it is often considered a bio-aerosol belonging to the fungi family. Mold has the property of vaporizing (scattering) spores which often contain proteins that can be extremely dangerous to humans. Likewise, the fecal material of dust mites can vaporize which also contain harmful proteins that can affect the lining of the lung.

Paints, Cleaners, Shoe Polish, Carpeting, Cupboards, Furniture...again the list is endless. These all play a significant role in polluting our indoor environment with sometimes benign but more often dangerous emissions that have both short and long term effects on our health.

An installed Second Wind Product with our Patented Photo-Catalytic Oxidation (PCO) process is ideal to control VOC's, off-gasses and odors in your home.



**Breathe Easy, Second Wind is Taking Care of Your Air!**