







Volatile Organic Compounds (VOCs) are a large group of carbon-based chemicals that easily evaporate at room temperature. While most people can smell high levels of some VOCs, other VOCs have no odour. Odour does not indicate the level of risk from inhalation of this group of chemicals. There are thousands of different VOCs produced and used in our daily lives.





Some common examples include:

- Acetone
- Benzene
- Ethylene glycol
- Formaldehyde

- Methylene chloride
- Perchloroethylene
- Toluene
- Xylene



Where do VOCs come from?

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Many products we have in our homes release or "off-gas" VOCs. Some examples of sources of VOCs are:







Building Materials

- Carpets and adhesives
- Composite wood products
- Paints
- Sealing caulks
- Solvents
- Upholstery fabrics
- Varnishes
- Vinyl Floors







Home and Personal Care Products

- Air fresheners
- Air cleaners that produce ozone
- Cleaning and disinfecting chemicals
- Cosmetics
- Fuel oil, gasoline
- Moth balls
- Vehicle exhaust running a car in an attached garage





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Behaviors

- Cooking
- Dry cleaning
- Hobbies
- Newspapers
- Non-electric space heaters
- Photocopiers
- Smoking
- Stored paints and chemicals
- Wood burning stoves



Studies have shown that the level of VOCs indoors is generally two to five times higher than the level of VOC's outdoors. VOC concentrations in indoor air depend on many factors, including the:

- Amount of VOCs in a product;
- Rate at which the VOCs are released;
- Volume of the air in the room/building;
- · Ventilation rate or the area; and
- Outdoor concentrations of VOCs.



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What are the health effects of VOC exposure?

The risk of health effects from inhaling any chemical depends on how much is in the air, how long and how often a person breathes it in. Scientists look at short-term (acute) exposures as hours to days or long-term (chronic) exposures as years to even lifetime.

Breathing low levels of VOCs for long periods of time may increase some people's risk of health problems. Several studies suggest that exposure to VOCs may make symptoms worse in people who have asthma or are particularly sensitive to chemicals.









<u>Short-Term (Acute) to</u> <u>high levels of VOCs</u>

- Eye, nose and throat irritation
- Headaches
- Nausea / Vomiting
- Dizziness
- Worsening of asthma symptoms







Long-Term (Chronic) to high levels of VOCs

Increased risk of:

- Cancer
- Liver damage
- Kidney damage
- Central Nervous System damage







What levels of VOCs is safe?

The best health protection measure is to limit your exposure to products and materials that contain VOCs when possible. If you think you may be having health problems caused by VOCs, try reducing levels in your home.

One of the most effective way of reducing VOC in your home is to use MAMCO Filter (deodorizer) for Air Conditioner to eliminate all VOCs for a better and healthy life.



Most health related studies have been conducted on single chemicals. Less is known about the health effects of exposure to combinations of chemicals. Because the toxicity of a VOC varies for each individual chemical, there are no Minnesota or federal health-based standards for VOCs as a group.





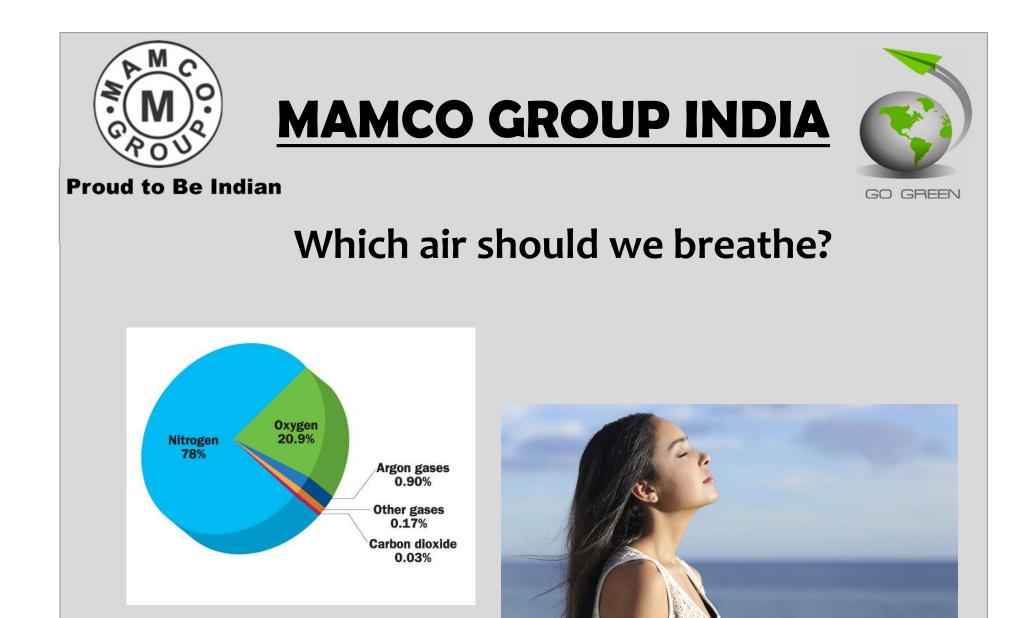


Are some people at greater risk from VOC exposure than others?

People with respiratory problems such as asthma, young children, elderly & people with heightened sensitivity to chemicals may be more susceptible to irritation and illness from VOCs.



A green solution ... as



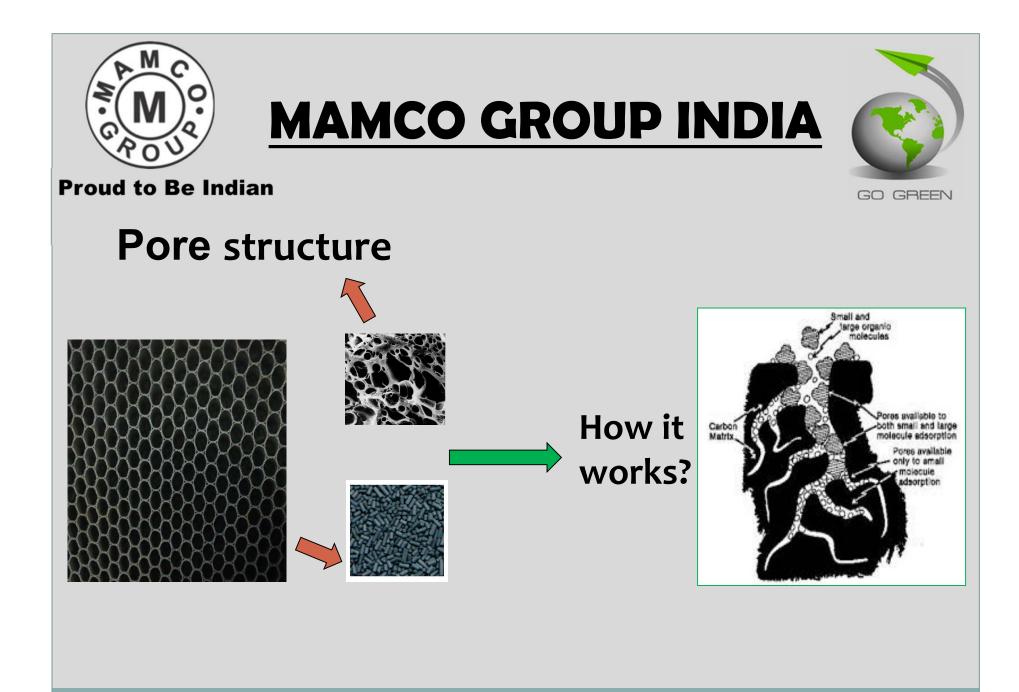






<u>How do I reduce the levels</u> of VOCs in my home?

MAMCO Activated carbons are specifically developed for effective removal of concentrations of odours and contaminants from vapour streams. The particle size and pore structure have been specifically designed to provide the best adsorption of impurities from vapour steam with the least flow resistance and also to adsorb by-products. These are produced from selected grades of quality coconut shell charcoal so as to have high density, high surface area and low ash content





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Activated Carbon Filter neutralizes

- Volatile organic compounds (VOCs)
- Hydrocarbons
- Formaldehyde
- Odour and foul smell & Chemical vapours
- Specific uses : H₂S; Radioactive elements; NH3; suitable for IT rooms / c



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Specification Of Nano Silver ACF Deo Filter

| S.No. | Properties | Nano Ag ACF Deo |
|-------|---|--------------------|
| 1 | ${ m S}_{ m BET}$ Surface Area (Sq. mt. per gm) | 1000 <u>+</u> 150 |
| 2 | pH | 3.5 <u>+</u> 0.7 |
| 3 | Ash (%) | 2.5 ± 1 |
| 4 | Decomposition temp. (deg. C) | 500 <u>+</u> 50 |
| 5 | Carbon Percentage (%) | 95 ± 5 |
| 6 | Nano Silver | 0.20% |
| | | |

- * Higher BET Surface Area will useful for the adsorption capacity of the vapours & odours present in the refrigerator.
- * Low Ash content will indicate the purity of the product.
- * Decomposition temperature indicates the purity of the Carbon content.
- * Higher the carbon percentage higher the adsorption capacity.

* Nano Silver having anti-bacterial, anti- fungal and anti-microbial properties



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