



VOS - Vluchtige organische stoffen

What are VOCs? (Volatile Organic Compounds) Volatile Organic Compounds are a collection of substances belonging to different chemical families. The only thing they have in common is that they evaporate quickly at room temperature. They are made up of carbon and hydrogen.

They can be from:

- anthropogenic origin: from refining, the evaporation of organic solvents, unburned gases, etc.;
- natural origin: emissions from plants or certain fermentations are

Depending on each case, they biodegrade faster or slower by bacteria and fungi, and even by plants, or degradable by UV or ozone. Their volatile nature allows them to disperse near or far from their emission site.

They can have direct and indirect effects. They, along with nitrogen oxides, are precursors of tropospheric ozone and also of greenhouse gases.

What is the impact of VOCs on health?

The total VOCs are an indicator for the organic pollution of the indoor environment. But contrary to popular belief, VOCs in their entirety have no direct effect on health.

- In the first place, it is the effects of the individual substances that have to be investigated. Some are more problematic than others. Some are harmless at normal concentrations in indoor air (ethanol), some have effects on the respiratory tract (formaldehyde), others are allergenic (limonene), still others are carcinogenic (benzene, formaldehyde),... For each of the substances of the family of the VOCs, an evaluation of the specific risks is therefore necessary.

- **The « cocktail effect »** of some compounds of substances present in the environment **should not be confused with the effect of VOCs in general**. Indeed, a mixture of pollutants from different sources can have a detrimental effect on the environment or health, while the individual substances, taken separately, do not have these effects. But it is not necessarily about connections between VOCs. For example, the effect of particles on the lungs is exacerbated by the presence of formaldehyde (which is a VOC).



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The main VOC (Volatile Organic Compounds) to watch out for in the indoor environment are:

- (+/-) alpha-pinned: deodorant, home perfume, essential oils, maintenance products
- 1,4-dichlorobenzene: moth repellents, deodorant, mole repellents
- 1,1,1-trichloroethane: glue
- 1,2,4-trimethylbenzene: oil solvent, fuels, tar, varnish
- 1-methoxy-2-propanol: lacquer, paint, varnish, soap, cosmetics
- 2-butoxyethanol: paint, varnish, fungicides, herbicides, wood treatment, silicone caulking
- 2-ethoxyethanol: paint, varnish, varnish
- 2-ethoxyethyl acetate: unknown sources
- 2-ethyl-1-hexanol: aqueous solvents
- Benzene: fuels, cigarette smoke.
- Butyl acetate: parquet, solvents
- Cyclohexane: paint, varnish, glue
- Dean: white spirit, floor glue, wax, wood varnish, floor, carpet, carpet
- Ethylbenzene: fuels, wax
- Formaldehyde (6.2.2.5): wooden boards, plywood boards, detergents, paint, textiles, do-it-yourself products, smoke from candles/incense, gas stove, additional gas or oil heating, tobacco smoke, glue, polyurethane insulation material, ... Formaldehyde is an ubiquitous compound, which can be found everywhere.
- Isopropyl acetate: unknown sources
- Limonene: deodorant, home perfume, essential oils, wax, floor cleaners
- m/p-xylene and o-xylene: paint, varnish, glue, insecticides
- Styrene: plastic material, insulation material, fuels, cigarette smoke
- Tetrachloroethylene: dry cleaning, carpet, carpet
- Toluene: paint, varnish, glue, ink, carpet, carpet, silicone caulking, petrol vapour
- Trichloroethylene: paint, varnish, glue, metal degreaser
- Undecane: white spirit, floor glue, wax, wood varnish, floor cleaners

With the air quality meters of **HUMA-i** you can measure the combined presence of these substances. With the patented **PURESYS** air filters one can remove all these aforementioned Volatile Organic Substances plus all other substances, including viruses that are harmful to health from the air.

