



**GREEN
DOCTOR**

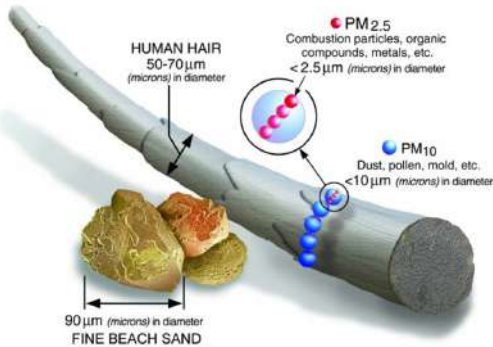
THERE IS SOMETHING IN THE AIR

- > COMMON INDOOR AIR POLLUTANTS AND THEIR SOURCES IN THE HOME
- > THEIR IMPACT ON HEALTH
- > TIPS TO IMPROVE YOUR INDOOR AIR QUALITY



Particulate Matter (PM)

Particulate matter is a term used to describe microscopic solid particles and/or liquid droplets found in the air. The burning of fuels is the main source of particulate matter in UK homes, such as burning candles, solid fuel burners, gas boilers, gas cookers and cigarettes, and the cooking of food. Particulate matter is defined by the size of the particle with PM10 being coarse particles, PM2.5 being fine particles and PM0.1 being ultra fine particles. Particulate matter is inhaled, the smaller the particle the further it can enter the lungs and the greater the risk to health.



Carbon Monoxide (CO)



Carbon monoxide is an odourless, colourless, poisonous gas which can be produced when fuels are burnt. Sources of carbon monoxide in the home could be from faulty or improperly installed boilers, gas cookers and heating appliances, cigarettes and solid fuel burners.

It is recommended that a carbon monoxide detector with an alarm is installed into your home. You should also service your boiler regularly.

Volatile Organic Compounds (VOCs)



Volatile organic compounds are chemicals that readily evaporate into the air at room temperature. There are a wide range of man made and natural sources of VOCs in the home. These can include aerosols such as deodorants and air fresheners, cleaning products, fragrances, candles, paints, and furniture. Volatile organic compounds can also be formed from microbes including mould and bacteria.



Nitrogen Oxides (NOx)

Nitrogen oxides are formed when nitrogen and oxygen from the air can react at high temperatures. The high temperatures that are required to form nitrogen oxides are reached when fuels are burned in gas cookers and boilers.

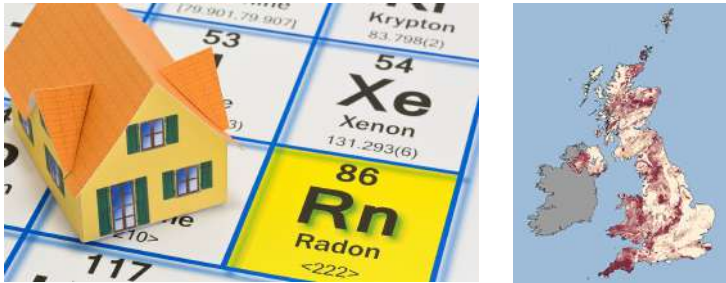


Radon

Radon is a naturally occurring radioactive gas released from the decay of uranium within rocks and soil. Radon gas enters homes through the gaps in the floors. The radioactive elements formed by the decay of radon can be inhaled and enter our lungs. These elements continue to decay and emit radiation – alpha particles. Alpha particles are absorbed by nearby tissue, they are highly energetic and cause damage to cells and can lead to cancer.

You can check if your home is in an area with high radon levels using the radon map.

<https://www.ukradon.org/information/ukmaps>



Bioaerosols

Bioaerosols are airborne particles of biological origin. They can consist of whole organisms such as bacteria, viruses and fungi or material emitted from organisms such as fungal spores, pollen, pet allergens. There are a wide range of sources of bioaerosols in the home including moulds and bacteria formed due to damp conditions, humans (coughing and sneezing), pets, dust mites, and pollen from plants.



Environmental Tobacco Smoke (ETS) and Vaping

Environmental tobacco smoke consists of more than 5,000 chemical compounds including carbon monoxide, particulate matter and volatile organic compounds.

At least 70 of the chemicals found in tobacco smoke are classified as carcinogens (Cancer causing).

Environmental tobacco smoke can also accumulate in indoor environments such as walls, flooring, furniture, clothes, and dust, which recirculates to form secondary pollutants (termed third hand smoke).



Electronic cigarettes are also known as e-cigarettes or vapes. They heat a liquid that becomes a vapour people can breathe in. They usually contain nicotine, which is the addictive chemical in cigarettes. E-cigarettes do not contain tobacco, which is the harmful part of cigarettes that causes cancer.

Pollutant	Possible Health Impact
Particulate Matter PM10, PM2.5, PM0.1	<p>The smaller the particulate size, the greater the danger to health, this is because they can penetrate deeper into the respiratory system and can pass from the lungs into the blood and to other organs in the body. Particulate matter can Reduce lung function, increase the risk of heart and respiratory diseases, irritate the airways which can result in coughing, wheezing, and asthma attacks. There is also an increased chance of developing some cancers and cognitive decline.</p>
Carbon Monoxide	<p>Carbon monoxide binds to the hemoglobin in red blood cells, preventing oxygen being transported to cells around the body. Mild effects at low level exposure include headaches, dizziness and nausea.</p> <p>It can result in death with in minutes at high levels of exposure.</p>
Volatile Organic Compounds	<p>There are a wide range of health implications including irritation of the airways, coughing, wheezing, asthma attacks and, allergies. Some VOCs can cause damage to organs such as the liver, kidneys and nervous system, and can increase the risk of some cancers.</p>
Nitrogen Oxides	<p>Irritation of the airways, coughing, wheezing, and difficulty breathing.</p>
Radon Gas	<p>Lung cancer</p>
Environmental Tobacco Smoke (ETS)	<p>Lung cancer, asthma attacks, decreased lung function, COPD</p>
Vaping	<p>There is currently limited evidence regarding pollutants emitted during vaping, therefore current knowledge of the health implications are also limited.</p>
Biological Aerosols	<p>Exposure to biological aerosols are necessary to the development of a person's immune system. However, exposure to airborne microbes can also cause infectious diseases such as colds and flu. Microbes associated with damp and mould can cause a range health effects including asthma, wheezing, coughing and respiratory infections. Some biological aerosols can cause allergies.</p>

Top Tips to Improve Indoor Air Quality in Your Home

- > Ventilate your home - let fresh air in through open windows and trickle vents. Try to ventilate for a short period each day.
- > Smoke and vape outside the home.
- > Reduce the chance of damp conditions forming in the home - dry wet clothes outside if possible, open windows when cooking or when taking a bath or shower, and try keeping your home warm. This will reduce the chances of mould forming.
- > Avoid burning candles, incense and solid fuels.
- > Minimise the use of aerosols such as air fresheners and deodorants.
- > Reduce the use of cleaning and personal care products which contain fragrances.
- > Vacuum regularly.
- > Add lids to pans when cooking and try use use electric hobs when possible.

Useful Links

- > The Royal Society of Chemistry - Soot Formation from Candles

https://www.youtube.com/watch?v=RU_Nobzk60o

- > NHS - Advice on Quitting Smoking

<https://www.nhs.uk/live-well/quit-smoking/nhs-stop-smoking-services-help-you-quit/>

- > NHS - Advice on Carbon Monoxide Poisoning

<https://www.nhs.uk/conditions/carbon-monoxide-poisoning/>

- > For more information about Radon

<https://www.ukradon.org>

If you need to get back in touch:

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