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Indoor air quality

Every day, living organisms are present in many environments and breathe the air. By their nature and due to their needs, humans choose to gather together in various communities. "We spend 90% of our time indoors in developed countries, and yet all the focus, when it comes to pollution, is on the 10% of our time that we spend outdoors," says Nicola Carslaw, a professor of indoor air chemistry at the University of York. Also, and as society shifts more toward working from home, we now spend more time indoors and the quality of our indoor air is more important than ever. But what are the main types and sources of pollutants you can find inside homes? In this article, I will answer these questions and share solutions to reduce their exposure to pollutants.

According to Lisa Gross, a writer on toxic chemicals, we can make a list of three best candidates: Firstly, we have phthalates that are substances added in plastics to increase flexibility and durability. Primarily used to soften polyvinyl chloride (PVC), they are one group of endocrine disruptors and can, for example, impair fertility. Secondly, we have polyfluoroalkyl substances (PFAS; see articles in ASEQ-EHAQ newsletters, summer 2020 for more details) and they can, among other things, affect pregnancy (risks of preeclampsia and overall hypertensive disorders). Thirdly, we have flame retardants which are in a group of chemicals that are added

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to manufactured materials or surface finishes. When they are absorbed by the body, they have the potential to interfere with the child development. Thus, these three families of chemicals are united under the name of “triple crown of toxicity.”

However, they aren't the only classes of chemicals that can affect indoor air quality. Another major category corresponds to the volatile organic compounds (VOCs). Present both in indoor and outdoor air, they are easily found in vapors or gases and are sometimes odourless. Inside homes, VOCs can be emitted by many sources such as cigarette smoke, building materials (including paints, glues and varnishes), household products (including air fresheners, cleaning products, fabric softeners, etc.), automotive products and personal products (such as perfumes/fragrances found in a variety of products). Note that these chemicals commonly enter the body through inhalation and skin contact. A short exposure to VOCs may cause breathing problems, irritation to the eyes and respiratory tract or headaches. But a long-term exposure to VOCs may cause nausea, dizziness or cancers. It's important to note that vulnerable populations exposed to this family of chemicals are people with asthma, young children and people suffering from multiple chemical sensitivity (MCS).

In addition, indoor air pollution comes from a range of activities and common sources. Fine particles are released from activities such as cooking (frying and roasting in particular), cleaning (including vacuuming) as well as combustion from fire places or woodstoves, and candles. When inhaled, these tiny particles can be hazardous to human health. Also, airborne chemicals such as glues used in furniture or from other VOC releasing sources and combustion gases can accumulate at far higher concentration indoors. Indoor air can also contain other pollutants include mould spores and mould fragments resulting from dampness, condensation and water-damaged buildings.

Here are some tips to reduce indoor air pollutants.



Two obvious solutions are source removal and ventilation. With the first solution, you can:

- Choose all products and items that you bring into your home or indoor space carefully by reading labels and asking questions. For help, you can visit ASEQ-EHAQ's Eco Living Guide (www.EcoLivingGuide.ca);
- Avoid aerosol sprays and use solid or liquid cleaning agents;
- Choose unscented indoors products;
- Use an electric cooker rather than a gas cooker
- Try to ensure that indoors appliances are installed, used and maintained correctly. If they need to vent to the exterior, make sure this is done properly.

For the second solution, you can:

- Open a window to help air circulation—except on smog days or if you live near heavy traffic or other pollution. In this case wait till the smog clears or open windows at low traffic periods;
- Consider investing in a renowned air purifier that does not have plastic parts. If you have a forced-air system, a whole-house air purifier is a good idea;
- Utilize a HEPA (High Efficiency Particulate Air) filter to remove tiny particles;
- Use mechanical ventilation such as turning on your stove/kitchen exhaust fan while you cook;
- Have a plant or a little tree inside your house to remove pollutants (gases and particles) from the air.

Online links:

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- The best trees to reduce air pollution, by Vittoria Traverso, BBC Future planet, published on May 4th 2020, <https://www.bbc.com/future/article/20200504-which-trees-reduce-air-pollution-best>
- Living in lockdown: How to improve the air quality in your home, Dyson USA newsroom, last update on June 16th 2020, <https://www.dyson.com/newsroom/overview/update/june-2020/living-in-lockdown-improve-air>
- The 3 scariest chemicals to watch out for in your home, by Erik Vance, The New York Times, published on August 26 2020, https://www.nytimes.com/2020/08/26/parenting/home-toxic-chemicals.html?fbclid=IwAR3VAs3apKc47fcRI91t8oVMTkxqwASait5mrP4zzFTBW9X5W_qEXky3Gng
- The surprising dangers of cooking and cleaning, by Matthew Keegan, BBC Future, pollution section, published on September 9th 2020, https://www.bbc.com/future/article/20200909-why-indoor-air-pollution-is-an-overlooked-problem?fbclid=IwAR0hTJwBtJoG-toQgMIOuXmzXECE2XzMrwVpOLsqRVc_RcTXsifRdBgLWhU
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