

Chemical air pollution in daycares

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Pollution sources

In daycares, air pollution of health-hazardous character from chemicals typically comes from three sources:

- 1) Chemicals that are released from products, equipment, materials, etc.
- 2) Chemicals formed by combustion processes.
- 3) Pollution from outdoor air.

Chemical air pollution can quickly disperse throughout the daycare. Therefore, it is important to always keep the doors closed to the room where pollution is generated, e.g., the kitchen when cooking, or workspaces where chemicals such as glue, turpentine, impregnation spray, etc. are used. Always carry out work with harmful chemicals in places with very good ventilation - preferably outdoors - and in places where there are no children nearby.

Harmful chemicals in the indoor air can cause problems such as headaches, but can also increase the risk of cancer, allergies, hormonal disorders, and other serious diseases. Not all chemicals are harmful or occur in harmful concentrations. If children or employees develop allergies, chemicals can trigger allergic reactions even in small concentrations. The safest is therefore to avoid harmful chemicals in the indoor environment altogether. Young children, pregnant women and people with allergies are particularly sensitive to harmful chemicals.

1) Release of chemicals

Chemicals can evaporate as gases from cleaning agents, paint, varnish, cleaning liquids (turpentine, acetone, etc.), furniture, building materials, etc. It can, for example, be PCB, formaldehyde, toluene, etc. Likewise, chemicals can adhere to the microscopic particles that are released through wear and tear toys, clothes, etc. Some chemicals from furniture and toys you clearly smell, while others you do not smell at all. Odourless chemicals are not necessarily less harmful than those we can smell.

The daycare should avoid toys, diapers, etc., which contain fragrances. Harmful chemicals can to a certain extent be avoided by using products with the Nordic ecolabel and the allergy label from asthma societies. If possible, always buy water-based products and products without hazard labels. Spray products should be avoided. Be aware when accepting old toys from well-meaning parents, as they may be from a time when even more harmful chemicals were in toys. A rule-of-thumb is to not accept toys produced prior to 2007.

The general chemical load of the indoor air can be reduced by aerating with a draught (opening all windows) for 5 minutes 3-5 times a day (always once in the morning) - remember to turn off radiators to minimise heat loss. Electronics should be turned off at the main switch when not in use (hot electronics can release harmful chemicals). Finally, frequent and thorough cleaning can remove dust that contains chemicals. Furnish the rooms in a way that is easy to clean by e.g., putting toys in boxes, but remember to clean the boxes regularly.

Air purifiers are generally bad at removing free chemicals in the air but can effectively remove chemicals on dust particles or particles in the air - the best, however, is to avoid health-hazardous chemicals in the daycare altogether rather than cleaning the air. Read more here: <https://godtindeklima.nu/wp-content/uploads/2023/12/air-purifiers-capability-to-reduce-exposure-to-pollution-generated-in-private-homes-med-appendix.pdf>

2) Formation of chemicals

In addition to the particles that are formed by using candles, and cooking, several harmful chemical substances are also formed and released into the air. Pollution can be avoided or limited with the precautions described in the fact sheet: *Particle pollution in daycares*.

3) Pollution from the outdoor air

The outdoor air can contain harmful gases from bonfires, road traffic, wood burning, diesel trains, cruise ships, etc. that are close to the daycare. This can significantly pollute the indoor air when windows and doors are open, or if the daycare has mechanical ventilation that sucks in the pollution. Closed, new windows and doors are usually tight and keep pollution out.

If the daycare is next to a trafficked road, keep windows and doors facing the road closed during rush hour. Keep windows and doors closed if the outside air smells like bonfire, wood smoke, or smoke from diesel trains, etc. If the windows are not tight, replace the windows or buy and install sealing strips.

If the daycare has mechanical ventilation: Filters in the mechanical ventilation do not remove chemicals in gaseous form. That requires an activated carbon filter, which you can consider installing if your ventilation system is compatible and the daycare is close to a trafficked road or you often smell bonfire smoke, wood smoke or diesel exhaust in the air entering the ventilation system. Change the filters when the air from the mechanical ventilation starts smelling like pollution again.

Talk to your neighbour about a good solution if you smell the neighbour's wood smoke. If that does not help, or if the outdoor air or the air entering the ventilation system smells like bonfire smoke, diesel oil, manure, etc., contact the municipality.

Air purifiers are generally bad at removing chemicals - read more in the link further above.

Have measurements made

We can help with measurements and assessments of the indoor environment, and solution options to get a better indoor environment. Contact the Head of secretariat Kaare Press-Kristensen: kaare@godtindeklima.nu / tel. (+45) 22 81 10 27.

More on indoor air pollution and solutions:

www.healthyindoorenvironment.org