Indoor air quality measurement

Indoor air quality is very important for human health. Airborne pollutants can be measured in standardised processes and assessed on the basis of recommended limits. Measurement and assessment procedures have to comply with the rules laid down in the Richtlinie zur Bewertung der Innenraumluft ("Indoor Air Quality Assessment Guideline") which has been issued by the Ministry of the Environment.

Selection of rooms
Rooms selected for measurements must be capable of being closed in such a way as to prevent any significant air exchange. This means that:
- all doors and windows must be in place and capable of being closed;
- there must be no openings that cannot be closed (neither towards the outside nor towards the interior of the building);
- building materials and interior decoration must be standard (e.g. chemicals used in construction, fixtures and furnishings);
- the rooms must be lockable;
- if there is ventilation equipment, it must be capable of being deactivated for measurements.

The measurement rooms have to be selected so as to rule out any interference from outside sources (e.g. asphalt­ing works in front of the window; solvent fumes rising from the basement through shafts to upper levels; cleaning work in the corridors, or similar extraneous sources).
The interior finishing of measurement rooms (particularly panelling and coatings) should be typical for the building in question. Unless otherwise agreed for a specific project, measurements shall always be taken before furniture is placed in the room.
Any deviation from these guidelines will affect the measurement results, potentially up to the point of making them useless.

Preparation of the selected (and adjacent) rooms
All works in the selected rooms have to be completed 28 days before the measurement. After completion of the works, windows, doors and other openings must remain closed throughout; under no circumstances should any follow-up work (such as repairs or cleaning work) be carried out. Before the measurement is taken, the room shall be thoroughly aired and subsequently kept closed for at least five hours (entry prohibited!), any ventilation equipment (air conditioning, etc.) must be switched off. These preparations ensure that the measured substances are spread evenly and reproducibly in the air that is to be analysed.

Measurement
The testing institute takes samples from the air in the room over a defined period of time (usually one hour) by suctioning air at constant volumes through tubes filled with a certain substrate material.
In the laboratory, substances that have collected in the tube are expelled from it by means of a suitable gas, and are then subjected to qualitative (which substances?) and quantitative (how much?) analyses.
Pollutant concentrations in the air in the measurement room are then calculated by putting the measurement results in relation to the total volume of air that was suctioned through the test tube during the sampling.

→ For further information, see “ÖkoKauf Wien” information sheet “Indoor air quality”