

Indoor air quality (IAQ) refers to the quality of air within a room in a house or other buildings. It is determined mainly by factors such as dust, gases, temperature, and humidity, and it affects the health and comfort of those in the room.

IAQ in homes and offices affects health and state of mind.

Have you ever had the experience of yawning repeatedly or being absent-minded or suffering headaches and other symptoms when spending a long time in your living room or in a company meeting room?

The effects of IAQ on people's health and state of mind are significant.

There are three factors that have a major effect on IAQ: the amount of particulates, the amount of gaseous substances, and the temperature and humidity.

The first factor, particulates (basically dust), includes lint from clothes and bedding, dead skin and hair from humans and pets, dead insects, bacteria, and pollen. Among the particulates, fungal spores and the dead bodies and excrement of mites cause allergic diseases in people, such as bronchial asthma and atopic dermatitis, if inhaled continuously.

The second factor, gaseous substances, refers mainly to carbon dioxide (CO₂) and volatile chemical compounds (VOC) as well as carbon monoxide (CO), nitrogen oxides, and various odor-causing substances. Sick house syndrome became a big health issue around the year 2000 when it was pointed out that adhesives and paints used in construction materials and furniture are gasified into chem-

ical substances (such as formaldehyde) and cause various health problems.

The third factor, temperature and humidity, does not directly pollute air, but many people use air conditioners, humidifiers, or dehumidifiers to prevent excessively high or low temperature or humidity. Maintaining temperature and humidity at appropriate levels not only provides a comfortable room environment but also protects us from heat stroke in summer and "heat shock"*1 in winter.

Ventilation is essential for airtight houses. Energy conservation and removal of pollutants from air are also important.

In Japan, government policy promotes the improvement of airtightness and insulation of houses and buildings to raise energy efficiency (efficient cooling and heating). Airtight houses and buildings, however, tend to cause the stagnation of indoor air. Thus, ventilation is essential for the improvement of IAQ. Currently in Japan the Building Standards Act mandates the installation of 24-hour mechanical ventilation equipment (extractor fans, air supply and exhaust openings, etc.) capable of replacing entire room air every two hours in newly constructed houses.

However, there is no guarantee that the IAQ will be improved by those ventilation

methods and conditions. Air pollution caused by fine particles (PM2.5*2) has recently become a major problem. Hazardous substances and allergens should be removed from outside air before the air is introduced into houses and buildings.

At the same time, energy-saving measures are also necessary. The latest ventilation equipment utilizes heat exchange technology to recover exhaust heat for warming outside air before it enters a house or building in order to conserve energy.

Enhancement of IAQ cannot be achieved without improvement of the above-mentioned three factors in a balanced manner. When you ventilate or clean your room, keep in mind the importance of IAQ and pay attention to the quality of air.

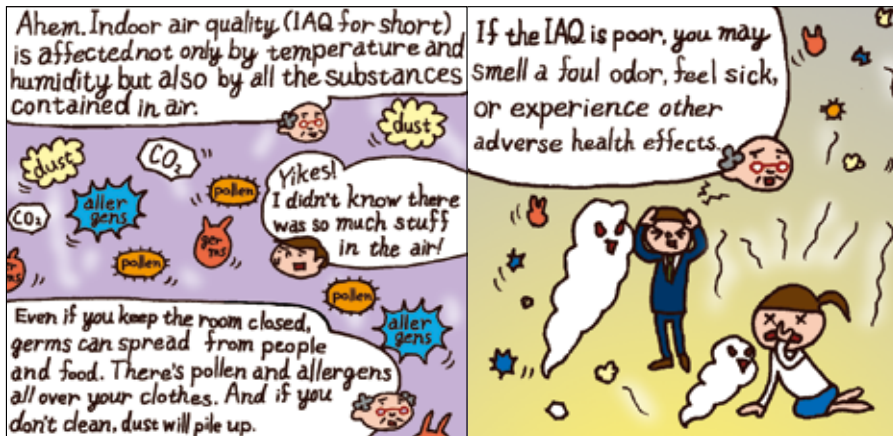
*1. "Heat shock" in winter

Sudden temperature changes in winter, known as "heat shock" in Japanese, can cause health problems such as heart attack or irregular pulse. The risk is especially high for older people if they take a bath or use the toilet in an unheated bathroom in winter.

*2. PM2.5

A general term for microscopic particles measuring 2.5 micrometers (0.0025 mm) or less in diameter. PM2.5 includes soot contained in exhaust gases from diesel engines and in cigarette smoke. Since PM2.5 can enter deep into the lungs, there is concern about its serious effects on the respiratory system and circulatory system.

Room temperature/humidity sensors not only measure temperature and humidity with high precision but also can detect and recover from measurement drift due to pharmaceutical substances in the air in research and production environments. These products offer long-term, reliable measurement of temperature and humidity in environments where organic solvents and pharmaceutical substances are present in the air.



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