Energy efficiency and healthy indoor environment

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The indoor air quality (IAQ) in buildings directly impacts occupant health, comfort and work performance. Well-established, serious health problems resulting from poor IAQ include Legionnaires' Disease, lung cancer from radon exposure, airborne infection such as pulmonary tuberculosis (TB) and severe acute respiratory syndrome (SARS), and carbon monoxide (CO) poisoning. Building occupants frequently report discomfort and building-related health symptoms, and sometimes develop building-related illnesses. Excessive dampness or moisture in buildings is responsible for a range of problems including mould, dust mites and bacteria; and exposure to damp environments is associated with respiratory problems including asthma attacks. In its recent report The European Federation of Allergy and Airways Diseases Patients' Associations (EFA) confirmed the worrying estimation that 1 in 2 Europeans may suffer from an allergy by 2015, many of them related to indoor air quality.

A recent research project EnVIE supported by EU DG RESEACH estimated that EU countries loose about 2 million adjusted life years annually due to exposure to various pollutants in the indoor air. Many of these negative health effects could be avoided by paying proper attention to the technology for good indoor environment and energy efficiency.

It is extremely important that the pursuit of improved building energy efficiency of building does not worsen the indoor air quality but, vice versa, simultaneously improves it. If the focus on EU regulations is only on energy efficiency the member states and citizens may ignore the indoor air quality and pay for their mistakes later by incurring various health problems and related costs.

Europe should learn from the lessons of the first energy crisis in the 1970´s, when, due to improper energy saving measures, buildings were made too tight ignoring ventilation and indoor air quality issues. Moisture and mould problems increased the prevalence of respiratory illnesses. The sick building syndrome was created due to unprofessional energy saving techniques. It is important that when the energy efficiency of a building is improved, that attention is also paid to the indoor air quality. Actually, without simultaneously specifying the indoor environment, the energy declaration does not make any sense – the most effective way to save energy in buildings is to shut down all heating and lighting but what is the use is that kind building? We need energy efficient buildings which support health and better working conditions and therefore productivity. Energy efficiency means that energy is used efficiently to maintain and maximise a good, healthy indoor environment.

Energy efficiency and a good, healthy indoor environment are not necessarily conflicting objectives. Several technologies are available to achieve both goals simultaneously. These technologies include: heat recovery from the ventilation air, ventilation control by demand (by actual air quality), filtering and cleaning of air, low emission usage, clean building materials, moisture proof constructions etc. Many of these technologies are described in the European standards such as EN. But the problem is that the standards are voluntary consensus documents and are not mandatory in the member states. The results of an ongoing project "HealthVent" supported by DG SANCO show that regulations in EU countries are very heterogeneous and none of member states have binding comprehensive regulations on indoor air quality for non-industrial buildings. The overall aim of the HealthVent project is to develop health-based ventilation guidelines for protecting people in places like homes, schools, kindergartens, and offices against health problems caused by poor indoor air quality, and at the same time ensuring that energy is utilized efficiently. Articles on Ventilation systems in Europe, Ventilation rates and IAQ in national regulations and European ventilation standards are based on the REHVA work in this project.