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CONSIDERATION OF THREE PROCESSES INDOOR AIR QUALITY - RISK ASSESSMENT / RISK MANAGEMENT – THE ARCHITECTURAL DESIGN PROCESSES

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ABSTRACT

The building is one of the major factors which affects indoor air quality (IAQ) and contributes serious health problems. Architects' resposibility for people's health is determine the triangular relationship between IAQ, the building itself and its users, and to produce alternative design solutions in terms of IAQ.

Indoor air pollutants and their concentration levels affect IAQ. The pollution of indoor air is one of the situation. The other situation is improving this worse condition to a better level. The improvement of indoor air covers both reducing indoor air pollutants emissions, and controlling their concentration levels. Indoor air pollution and indoor air improvement actions are compilations of a series of actions and have interrelationships. Thus, they become two main parts of IAQ; and combining a series of indoor air related actions make indoor air quality a process (IAQP).

During the whole life of a building, evaluations are necessary to make judgements on whether it meets people's needs or there is a failure of its quality. From this, requirements within the building evaluation help to set the performance and economic values of the building. But, still there are the possibilities that unpleasant or undesirable things might happen and causes danger within the building. Therefore, those uncertainties should be considered to complete the total qualitative evaluation of the building. This is the risk evaluation of the building.

Building design is the creative process in which a building is produced theoretically. The Architectural Design Process (ADP) is the core of the whole building design. The decisions for the physical appearance of the building and the living conditions within the building are actively taken during ADP. Besides demonstrating their creativity, the designers aim to reach functional suitability and the utility of the building, flexibility in the design for possible changes, and structural and environmental performance of the whole building.

IAQ affects directly people's health, and should be considered as a risky factor. Missing its importance can cause hazardous effects from headache to death of a person. Therefore, IAQ should be covered by Risk Assessment / Risk Management

Work. Beside this, IAQ is part of the indoor physical environment and affects the environmental performance of the building. One of the remedial actions to control indoor air pollution is the control of building design. Therefore IAQ should be taken into account during the ADP.

Because IAQ related studies are mostly done either in science or in engineering, the results are either in the form of mathematical models or in the form of technical devices. Sometimes it is difficult to interpret these results into architectural design. Therefore they are required to be in a form that architects can relate above three interrelated factors. The most accepted way is systematic thinking.

In this paper a systematic approach is presented to consider IAQ, Risk Assessment / Risk Management and ADP. The outcomes of the propesed condideration model are,

- Considering IAQP and Risk Assessment / Risk Management process will help people who are involved in the existence of the building and affected by IAQ to understand the occurence of health risk chain related to IAQ.
- Considering IAQP - Risk Assessment / Risk Management and ADP will help architects to make design decisions related to the improvement of IAQ.
- Consideration model of IAQP - Risk Assessment / Risk Management also allows other professions to place their decision-making activities instead of ADP to produce IAQ related solutions.

The life of IAQP is determined by the life of the building. The conceptual existence of the building leads the conceprual existence of IAQP. If IAQ is taken into account during the architectural design stage of the building preventive design solutions can be produced to reduce the effects of an indoor air pollution event before it occurs.

Keywords: IAQ, IAQ process, risk assessment, risk management, architectural design process.