

By post and by fax at 2827 8040

29 October 2013

Director of Environmental Protection
Environmental Protection Department
Air Policy Group
33/F, Revenue Tower
5 Gloucester Road
Wanchai, Hong Kong

[Attn: Mr John Y K KWAN]

Dear Mr KWAN

Views on Guidelines on Indoor Air Temperature and Humidity

Thank you for your invitation of 23 September 2013 to the Institution for views on the captioned subject.

In response to your invitation, we are pleased to provide herewith our views and suggestions on the subject for your consideration.

Thank you.

Yours sincerely



Monica YUEN (Mrs)
Chief Executive and Secretary

Enc

MY/WC

Enclosure

Views from the Hong Kong Institution of Engineers on Guidelines on Indoor Air Temperature and Humidity

Introduction

The Hong Kong Institution of Engineers (HKIE) supports the Administration's initiative for improving indoor air quality (IAQ) and promoting the public awareness of it.

IAQ Objectives, Certification Scheme and Management Programme

2. Regarding the IAQ Objectives for Office Buildings and Public Places established by Environmental Protection Department (EPD) in 2003 comprising 12 parameters to be used for evaluating and assessing IAQ, the HKIE supports that the indoor temperature would be removed from IAQ Objectives list, not only because it contradicts with the energy conservation initiative, but both room temperature and relative humidity are mainly considered to be indirect factors that influence perceived air quality due to their influence on indoor air pollution sources.

3. Also, we suggest that EPD should review the effectiveness of IAQ certification process and how to use this as a platform for enhancing public awareness education. We are of the view that when appropriate, the Administration should consider a time frame for conducting a review of the legislative framework for the control of IAQ.

4. Furthermore, we recommend that EPD should update the chemical/ biological pollutants list under the IAQ Certification Scheme with reference to World Health Organisation (WHO)'s guidelines¹. For instance, having considered Hong Kong's circumstance, it is suggested that airborne fungi should be added into the list as one of the mandatory certification parameters.

5. However, regarding EPD's public consultation on the subject of IAQ Management Programme in 2011, the Institution would suggest that views of the various stakeholders' and professional bodies could be consolidated and released for public reference in order to have detailed background on the study of the subject and fruitful exchange of views.

Guidelines on Indoor Air Temperature and Humidity

6. In regard to the draft Guidelines on Indoor Air Temperature and Humidity (the Guidelines), we note that Hong Kong Green Building Council (HKGBC) and BEAM Society have developed a series of BEAM plus² standards, which include a list of

¹ [1] Development of WHO Guidelines for Indoor Air Quality, October 2006, WHO

[2] WHO guidelines for indoor air quality: Dampness and Mould, July 2009, WHO

[3] WHO Guidelines for Indoor Air Quality: Selected Pollutants, December 2010, WHO

² BEAM Plus, <<http://www.hkgbc.org.hk/eng/beamplus-main.aspx>>

parameters to be assessed under the Indoor Environmental Quality (IEQ) category. It is anticipated that much simpler and easier guidelines on green office will be developed in near future for public use. It is hoped that the guidelines on room temperature and relative humidity settings can be suitably included into those green office guidelines and promulgated via its public education.

7. We suggest that that monitoring of the implementation of the Guidelines should be further discussed if mandatory approach is not to be adopted. We would also like to put forth further views as elaborated below for consideration.

Thermal Comfort

8. The HKIE agrees to set referencing temperature and relative humidity (RH) for the purpose of thermal comfort, energy saving and preventing microbial growth in the indoor environments. However, we opine that thermal comfort is a very complicated issue, and are concerned that it will be misleading by just spelling the isolated specifications of these two parameters (i.e. temperature and humidity) which could not ensure a healthy, safe and green indoor environment.

9. According to ASHARE, the following factors shall be addressed when defining conditions of thermal comfort: air temperature (dry bulb), air velocity, relative humidity, radiant temperature, metabolic rate and clothing insulation. In case a range of temperature and/or RH is to be specified, the assumptions such as the clothing insulation and nature of occupancy etc. must be stated clearly. EPD may make reference to Table A.3 and Table B.6 of BSEN 15251:2007 “Indoor environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics” and establish similar tables for various types of building/ space suitable for Hong Kong.

10. Apart from air temperature and humidity, air movement is a key factor of indoor air thermal acceptability. According to the “Guidance Notes for the Management of Indoor Air Quality in Offices and Public Places” prepared by Indoor Air Quality Management Group of the Government of the HKSAR, it is mentioned that greater air movement can help produce a more comfortable environment in the hot and humid summer months but too much air movement results in draughts and excessive cold. Therefore, an optimal air movement with higher room temperature/ relative humidity can provide same level of thermal acceptability and can also save energy. It is suggested to include such into the Guidelines.

11. Nevertheless, the Institution would have no objection to make reference to international guidelines such as ASHRAE Standard 55-2010 in recommending a suitable indoor temperature range for Hong Kong. We opine that the standard of comfort zone as in Figure 5.2.1.1 of ASHRAE Standard 55-2010 should be observed. In this connection, instead of the proposed fixed temperature of 25.5°C, we suggest that the Guidelines should have a recommended range of room temperature (e.g. 24-26°C), which will be in line with the “Energy Saving Charter in Indoor Temperature” promoted by Electrical and Mechanical Services Department.

Energy Conservation

12. We support the concept of optimising the indoor air temperature and humidity with a view to reducing the energy consumption. However, it should be cautioned that the indoor air temperature and humidity should fall within the comfort zone as referred to in Figure 5.2.1.1 of ASHRAE Standard 55-2010.

13. We agree that operation of the heating facilities should be refrained as far as possible. However, if indoor air condition is outside the comfort zone of Figure 5.2.1.1 of ASHRAE Standard 55-2010 (i.e. about 19 to 20°C), heating facilities shall be provided to give a comfortable and healthy working environment for the occupants. Also, consideration should be taken on the situation that in winter months when Cold Weather Warning is issued by the HK Observatory as well as over the potential negative impact of low indoor air temperature on those physically weaker persons.

Prevention on Microbial Growths

14. We support to make reference to the WHO Guidelines for IAQ – Dampness and Mould 2009 to prevent the persistence of dampness and microbial growth. However, just by maintaining a RH at 70% as quoted in Paragraph 5.2 in the Guidelines would not be effective in stopping mould and fungal growth, while this figure might give the public incorrect impression that keeping the RH at 70% could prevent microbial growth.

15. We are aware that the EPD's consultant in previous study report has recommended that a set of guidelines on the control of humidity, design, operation and maintenance of the ventilation system and other relevant factors would be prepared together with a set of performance checklist. As such, it is suggested that EPD could elaborate more on the relationship between the Guidelines and the other proposed guidelines for "airborne fungi" and the performance checklist.

Measurement and Monitoring

16. While it is not clearly stated in Paragraph 6.2 in the Guidelines, we suggest that the use of thermometer containing mercury shall be discouraged.