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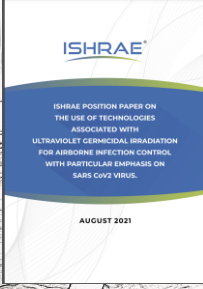
Response in India on Guidelines/Standards for IAQ During and Post COVID-19

Dr. –Ing. Jyotirmay Mathur
Professor, Mechanical Engineering Department
Centre for Energy and Environment
Malaviya National Institute of Technology Jaipur


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ISHRAE COVID-19 GUIDANCE DOCUMENT FOR AIR CONDITIONING AND VENTILATION




**Environmental
Conditions**



Applications



**Maintenance
Startup**



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Temperature and Relative Humidity

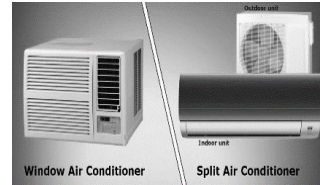
Suggested relative humidity level range: 40%-70%.

Caution against high humidity issues such as mould



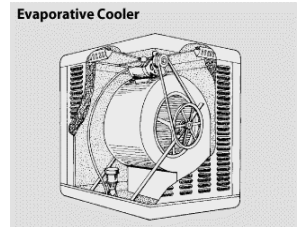
*Set Room Temperature between 24°C and 30°C.
(In humid climates set temperature closer to 24°C for de humidification and in dry climates closer to or at 30°C and use fans to increase air movement).*

Recirculation of cool air by Room Air conditioners, must be accompanied by outdoor air intake through slightly open windows and exhaust by natural exfiltration.



In dry climates, do not allow Relative Humidity to fall below 40% .
Use humidifier if it falls below 40%.

Recommended to **add filter to evaporative cooler** to prevent dust entry



- **Provide adequate Ventilation (Fresh Air and Exhaust).**
 - *A minimum fresh air volume of 8.5 cum/hour per person and 1.1 cum per hour per sqm (5 cfm per person and 0.06 cfm per sq ft) must be provided . The recommendation is to **maximize supply of outside air** within the limits of the system.*
- **Fresh air must preferably be provided by an inlet duct and fan.**
- **Heat Recovery Wheel (HRW) :** It is advisable to **keep this wheel in off mode** to reduce cross contamination.
- **It is advisable to provide a MERV13 or higher filter fitted on the Air Handling Unit.**
- Install UVGI (Ultraviolet germicidal irradiation) for larger Ducted Units and AHUs to keep Coils continuously clean and disinfected.

- Minimum air changes of around **10-15 ACH** (Air Changes per Hour, of the Volume of the Space) is advised .
- The mechanical **exhaust air shall be 70% to 80% of fresh air quantity** to maintain necessary positive pressure in the space.
- In cases of evaporative cooling / air washers it is advisable to disinfect the water using UVGI or Ionization or chemical dosing.
- In case of re-circulating system, it is recommended to limit return air circulation. **The return air system could be converted to an exhaust system.**

The same process must be followed in case evaporative cooling is used for a commercial facility.

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- ***Convert the room into a non-recirculatory system (100% once through system).***
- Make sure that the AHU will have provision to receive adequate outdoor air supply.
- The outdoor air source for the AHU shall not be from within the building and all care shall be taken to avoid intake of outdoor contaminants, to the best possible extent.
- ***Independent exhaust blower shall be provided to extract the room air and exhaust out into the atmosphere, preferably, after suitable "exhaust air treatment".***

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- The exhaust air quantity shall be greater than the supply air quantity such that a negative pressure of minimum 2.5Pa (preferably >5 Pa) is achieved in the room .
- *It is advisable to install differential pressure meters to measure this metric.*
- The supply air quantity shall be such that it will provide a minimum of **12 air changes per hour**.
- The position of the extract air in the room shall be just above the head of the patient's bed.

- *Treatment by HEPA filtration minimum of H13 (EN1822-1) filter class or equivalent.*
- Treatment of exhaust air by Chemical disinfection.
- *When both the methods are not viable, the exhaust air shall be let off into the atmosphere through an upward plume at a height of 3 m above the tallest point of the building.*
- The other two options available for exhaust air treatment being **UV irradiation and heating**.

Air filters for general ventilation – A special task executed for BIS

Request by Bureau of Indian Standards to ISHRAE.

Standard to support Indian industry

- Harmonize with International Standard ISO 16890
- Particularly keeping MSME in consideration

Published as National Difference to the international standard ISO 16890 adopted by BIS.

Scope:

- Classification of particulate air filters for general ventilation purpose
- The test equipment – 5 channel test method and calculation for measuring the fractional efficiency of air filters through a laboratory test

Post COVID initiatives

Modification in ISHRAE IEQ Std. 2024 version (draft)

- A new annexure added for ventilation
- Special mention about what is to be done during epidemic

Modification in Energy Conservation Sustainable Building Code 2024

- A new chapter on IEQ added
- Emphasis on source control
- Special mention about what is to be done during epidemic

Many forgotten good practices came back to practice:

- Humidification
- Exhaust air treatment in healthcare facilities
- Awareness and extent of filtration use increased
- Separate healthcare guide prepared by ISHRAE
- IAQ monitoring increased
- Epidemic ready design coming in practice and codes

Thanks!!

Contact:

jmathur.mech@mnit.ac.in
jyotirmay.Mathur@gmail.com

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