ASHRAE’s COVID-19 Response

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ASHRAE Epidemic Task Force

• Formed in March 2020
• Objectives: to deploy technical resources to address the challenges of the COVID-19 pandemic and possible future epidemics related to the effects of heating, ventilation, and air-conditioning systems on disease transmission
• Guidance developed for several building types and operational conditions, including for schools, commercial, residential, and health care
• Comprised of 26 members led by Dr. William Bahnfleth
• Teams focus on specific areas; about 150 team members involved
• Coordinate with ASHRAE technical and standards committees, along with other organizations
“Transmission of SARS-CoV-2 through the air is sufficiently likely that airborne exposure to the virus should be controlled. Changes to building operations, including the operation of heating, ventilating, and air-conditioning systems, can reduce airborne exposures.”

- ASHRAE Guidance based on the precautionary principle
- Primary pathway is believed to be large virus-laden droplets – most fall to the ground near the infected individual
  - This is why social distancing and wearing masks is so important
- ASHRAE Guidance focuses on HVAC-related measures to reduce infectious aerosol exposure
- Engineering controls
  - Ventilation/Exhaust/Pressurization
  - Air cleaners – germicidal ultraviolet and others
  - Room air distribution
  - Particle filtration
- Fundamental challenge: making specific recommendations in the absence of robust data regarding transmission risk
Information provided in this presentation is a service to the public. While every effort is made to provide accurate and reliable information, this presentation is advisory, and is provided for informational purposes only.

These are not intended and should not be relied upon as official statements of ASHRAE.
ASHRAE’s Basic Guidance

• Based on the following principles and hierarchy:
  • Do no harm
  • Increase amount of clean outside air being supplied to buildings and spaces
  • Increase the efficiency of filtration to MERV 13 or better, where possible
  • Install air cleaning and disinfection technologies such as UVGI
  • Supplement existing systems that cannot be modified or upgraded with
    • Portable HEPA filtration units
    • Air cleaning, such as upper room and portable UVGI
Guidance for Building Re-opening and Continuing Operations

- **Reopening: Building Readiness**
  - General guidance

- **Schools and Universities**

- **Healthcare**
  - Surge issues/alternate site design
  - Two-person rooms
  - Room turnover

- **Industrial Facilities***

- **Commercial**

- **Retail**

- **Residential**
  - Creating isolation and protected spaces
  - Water Systems
  - Forced Air Systems
  - Multifamily

- **Laboratories***

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*Guidance being developed; not yet published

[www.ashrae.org/covid19](http://www.ashrae.org/covid19)
## General Information
- Building Readiness Intent
- Building Readiness Team
- Building Readiness Plan

## Epidemic Conditions in Place (ECiP)
- Systems Evaluation
- Building Automation Systems (BAS)
- Increased Ventilation
- Increased Ventilation Control
- Building and Space Pressure
- Pre- and Post-Flush Strategy
- Upgrading and Improving Filtration
- Energy Savings Considerations
- Exhaust Air Re-entrainment
- Energy Recovery Ventilation Systems Operation Considerations
- UVGI Systems
- Domestic Water Systems
- Maintenance Checks
- Shutdown a Building Temporarily-FAQ
- System Manual
- Reopening During Epidemic Conditions in Place

## Post-Epidemic Conditions in Place (P-ECiP)
- P-ECiP: Prior to Occupying
- P-ECiP: Operational Considerations once Occupied
- P-ECiP: Ventilation
- P-ECiP: Filtration
- P-ECiP: Building Maintenance Program
- P-ECiP: Systems Manual

## Additional Information
- Acknowledgements
- References
- Disclaimer

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Additional Guidance

✓ Filtration/Disinfection
  - Mechanical Air Filters (MERV)
    High-Efficiency Particulate Air (HEPA) Filters
  - Electronic Air Filters
  - Gas-Phase Air Cleaners
  - Air Disinfection
    Ultraviolet Energy (UV-C)
    Photocatalytic Oxidation (PCO)
    Bipolar Ionization/Corona Discharge
    Ozone
  - Surface Disinfection
    Ultraviolet Energy (UV-C)
    Vaporized Hydrogen Peroxide
    Ozone
    Pulsed Xenon Lamps
    405 nm Visible Light
    Far Ultraviolet

✓ Transportation
  - Marine
  - Air
  - Mass Transit, Rail, Bus
  - Transportation Facilities

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Other Available Resources

- Webinars
  - Managing Your HVAC Systems to Help Mitigate the Spread of SARS-CoV-2
  - Re-Opening Our Schools: Activities and Recommendations
  - Reducing Infectious Disease Transmission with UVGI
- Online Instruction
  - Hospital HVAC: Infection Mitigation, Comfort, Performance
- Standards and Guidelines
- Conference and Journal Papers
- Position Documents and Briefs
  - Infectious Aerosols
  - COVID-19 and Airborne Transmission
  - ASHRAE’s Guidance vs. WHO and CDC

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Policy Implications

• Infection control needs to be taken into consideration in non-healthcare building design
• Increased attention on indoor environmental quality and health, educational, and productivity benefits
• Coordination between energy and indoor environmental quality standards
• Research, Training/Education, Building Upgrades
• Use of Technical Guidance in Investments
Questions?

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