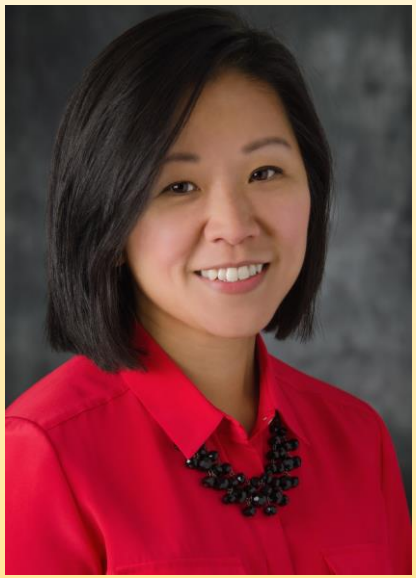
Summary of Current HVAC Recommendations for Re-Opening Buildings



Lisa Ng, PhD
Engineering Laboratory
NIST
Gaithersburg, MD USA
lisa.ng@nist.gov
Twitter: @lisacng

NTAA Informational Webinar:
IAQ Considerations to Assist Tribes in Re-Opening Tribal Buildings during COVID
9/17/2020

National Institute of Standards and Technology
U.S. Department of Commerce

engineering laboratory

Outline

- To be or not to be
- Transmission routes (as far as they know)
- List of resources
- Specific guidance made available
- Summary

To be or not to be

What this talk <u>is</u>

- Summary of available guidance provided by reputable organizations
- Focused on commercial buildings (e.g., offices but applicable to schools)
- Focused on HVAC-related O & M

What this talk <u>isn't</u>

- Guidance for disinfecting buildings, social distancing, etc
- Transmission of infectious diseases
- Comprehensive, mandatory guidance

Transmission routes of SARS-CoV-2

REHVA
Federation of European Heating, Ventilation and Air Conditioning Associations

Updated August 3, 2020

"three transmission routes are dominant:

(1) combined droplet and airborne transmission in 1-2 m close contact region arising from droplets and aerosols emitted when sneezing, coughing, singing, shouting, talking and breathing;

(2) long-range airborne (aerosol-based) transmission

(3) surface (fomite) contact through hand-hand, handsurface, etc. contacts"

Position Document on Infectious Aerosols

"*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*."

Updated April 14, 2020

Letter to WHO

It is Time to Address Airborne Transmission of COVID-19

Lidia Morawska, Donald Milton
+ 239 scientists

Studies by the signatories and other scientists have demonstrated beyond any reasonable doubt that viruses are released during exhalation, talking, and coughing in microdroplets small enough to remain aloft in air and pose a risk of exposure at distances beyond 1 to 2 m from an infected individual.

Resources

Ventilation

ASHRAE

REHVA
Federation of European Heating, Ventilation and Air Conditioning Associations

Health & Safety

AIHA
Protecting Worker Health

CDC
Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

UNITED STATES DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Broad coverage

National Institute of BUILDING SCIENCES™

APPA Leadership in Educational Facilities

U.S. DEPARTMENT OF ENERGY

BOMA International

Maintenance personnel

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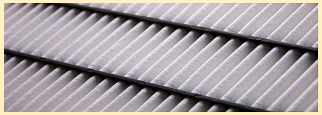
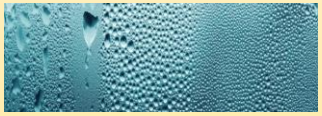
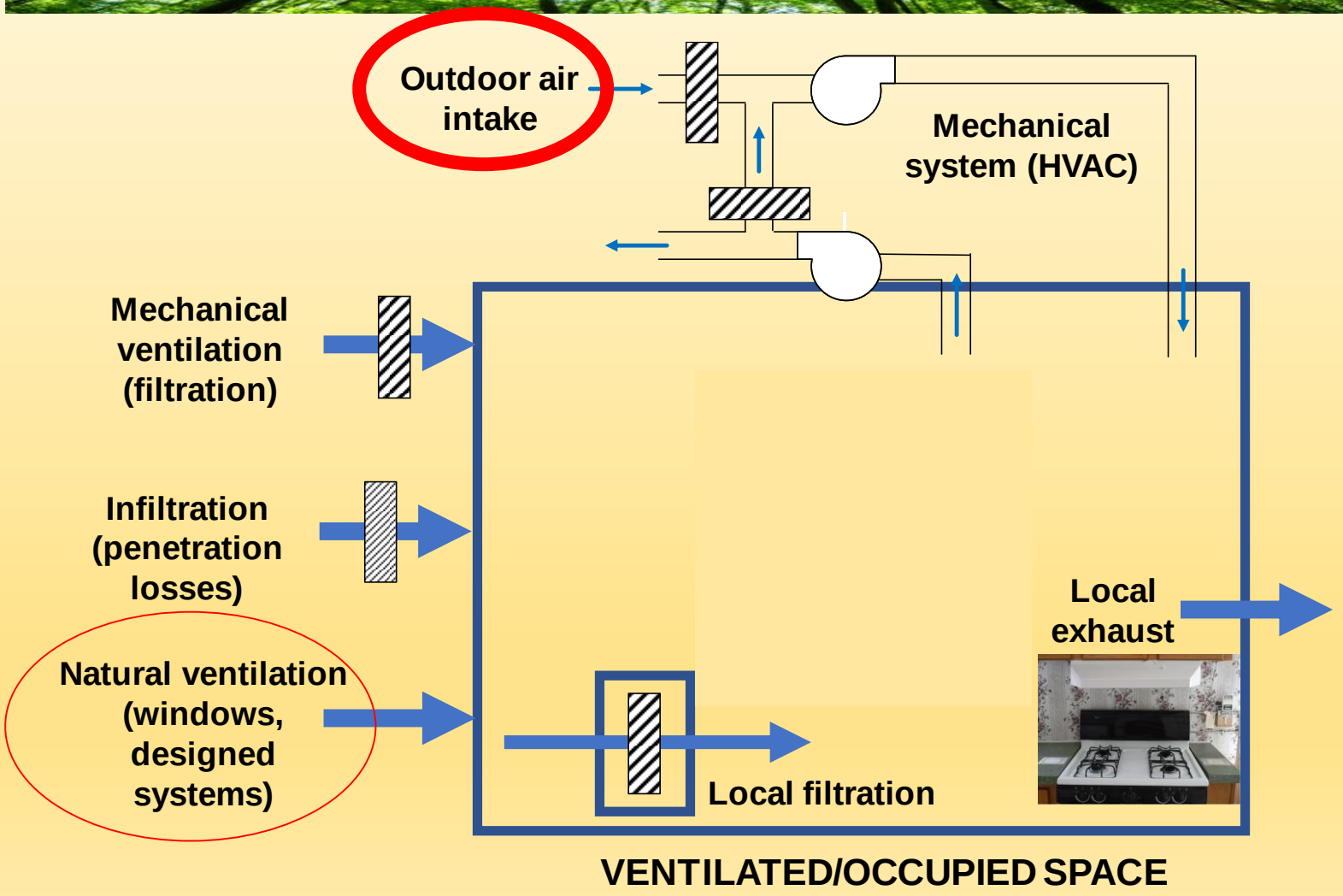
the NEWS

Available guidance


- **Outdoor ventilation**
- **Filtration**
- **Relative humidity**
- **Toilet areas**
- **UV-C and air cleaners**
- **Maintenance personnel**

Outdoor ventilation



Increase ventilation

AIHA® Protecting Worker Health

APPA Leadership in Educational Facilities

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Reduce recirculation

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U.S. DEPARTMENT OF ENERGY

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

Maintain 24/7 outdoor ventilation

- Perhaps lower rates during unoccupied hours

- Ventilation at “occupied rates” 2 h prior to and after occupied hours

Flush with 3 “clean” air changes

Disable or increase setpoints for demand controlled systems (DCV)

REHVA
Federation of European Heating, Ventilation and Air Conditioning Associations

Check heat recovery devices for leaks

- Possible re-contamination of supply air stream

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Check airflow directions and pressures

- Especially for critical spaces

AIHA®
Protecting Worker Health

Clean/disinfect intakes and returns

Ensure proper filtration

- Install high efficiency filters

AIHA Protecting Worker Health

UNITED STATES DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Continue routine maintenance

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REHVA
Federation of European Heating, Ventilation and Air Conditioning Associations

Filtration

MERV-13 minimum

- MERV-14 preferred
- HEPA better
- Must consider equipment and operating conditions

Dispose of existing filters

Relative humidity

Maintain between 40 % and 60 % RH

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Relative humidity

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Federation of European Heating, Ventilation and Air Conditioning Associations

The evidence does not support that moderate humidity (RH 40-60%) will be beneficial in reducing viability of SARS-CoV-2, thus the humidification is NOT a method to reduce the viability of SARS-CoV-2.

National Institute of BUILDING SCIENCES™

Humidity kept in the 40% to 60% range may be ideal

U.S. DEPARTMENT OF ENERGY

Several recent studies recommend 40 % – 60 % RH for disease-specific infection risk

Toilet areas

Close lid when flushing

Maintain underpressure

- **Exhaust fans 24/7**
- **Keep windows/doors closed**

UV-C Air cleaners

“Consider” as supplementary

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Maintenance personnel

No PPE recommended

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*

**Most in-home services workers are unlikely to need PPE beyond what they use to protect themselves during routine job tasks. However, employers should consider whether their hazard and risk assessments warrant the use of more protective PPE ensembles.*

"Common protective measures"

REHVA
Federation of European Heating, Ventilation and Air Conditioning Associations

Maintenance personnel

PPE recommended

- Tyvek jumpsuit
- N95
- Surgical masks
- Face coverings
- Face shields
- Goggles
- Gloves
- Booties

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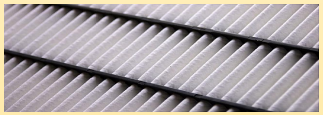
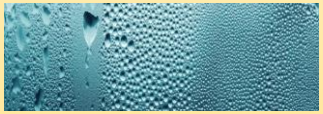
AIHA®
Protecting Worker Health

the NEWS





Increase ventilation, reduce recirculation

- Specific recommendations available

Filtration

- Higher efficiencies with practical limitations

Relative humidity

- 40 % - 60 %

Toilet areas

- Maintain underpressure, e.g., 24/7 operation

UV-C and air cleaners

- Supplementary

Maintenance personnel

- PPE level depends on circumstances

Links to school-specific guidance

AIHA - Schools (K-12) Reopening Guidelines (July 10, 2020)

APPA – Reopening Guidance for Campus Facilities by School Type

ASHRAE – ASHRAE Epidemic Task Force – Schools and Universities (July 17, 2020)

Harvard T.H. Chan School of Public Health – Risk Reduction Strategies for Reopening Schools (June 2020)

Johns Hopkins Center for Health Security – Filling in the Blanks: National Research Needs to Guide Decisions about Reopening Schools in the United States (May 15, 2020)

The National Academies of Sciences Engineering Medicine (NASEM) – Reopening K-12 Schools During the COVID-19 Pandemic: Prioritizing Health, Equity, and Communities (July 2020)

WHO Considerations for school-related public health measures in the context of COVID-19 (May 10, 2020)

Links to resources

ACHR News – Comprehensive Guide: HVAC Service Calls During COVID-19 **(March 24, 2020)**

AIHA: American Industrial Hygiene Association – Reopening: Guidance for General Office Settings **(June 22, 2020) and** Recovering from COVID-19 Building Closures

APPA – Leadership in Educational Facilities (FAQs**)**

ASHRAE: American Society of Heating, Refrigerating and Air Conditioning Engineers Epidemic Task Force **(August 2020)**

BOMA: Building Owners and Managers Association International – Getting Back to Work: Preparing Buildings for Re-Entry Amid COVID-19 **(May 1, 2020)**

CDC: Centers for Disease Control and Prevention – CDC Activities and Initiatives Supporting the COVID-19 Response and the President's Plan for Opening America Up Again **(May 2020)**

DOE: U. S. Department of Energy – Webinar: Managing HVAC Systems to Reduce Infectious Disease Transmission **(May 2, 2020)**

NIBS: National Institute of Building Sciences – COVID-19 Virtual Town Hall: Preparing for Re-entering Buildings **(May 7, 2020)**

NIBS: National Institute of Building Sciences – Whole Building Design Guide

OSHA: Occupational Safety and Health Association – Guidance on Preparing Workplaces for COVID-19 **(March 9, 2020)**

REHVA: Federation of European Heating, Ventilation, and Air Conditioning Associations – How to operate and use building services in order to prevent the spread of the coronavirus disease (COVID-19) virus (SARS-CoV-2) in workplaces **(August 3, 2020)**

TUA: The United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada – Guidelines to Protect Workers Related to Coronavirus (COVID-19) and Other Potential Infectious Materials (OPIM) in Plumbing and HVAC Systems **(March 25, 2020)**

Thanks!

lisa.ng@nist.gov

Twitter: @lisacng