

Suggested Guidance for Management of Ventilation Systems for City of Cambridge Small Businesses

February 26, 2021

March 3 & 12, 2021



ENVIRONMENTAL HEALTH
& ENGINEERING, INC.



Limitations

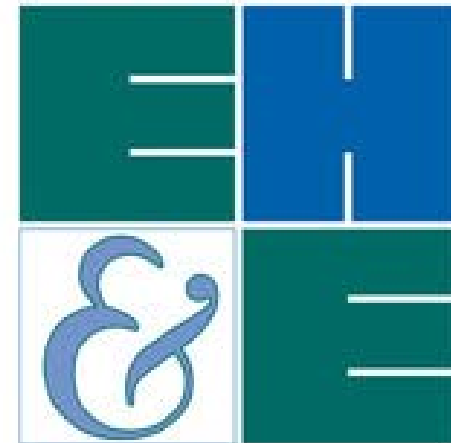
The materials and information provided were not created by the City of Cambridge and the City of Cambridge does not adopt any positions contained therein. Any questions should be directed to EH&E and not the City of Cambridge.

Q&A is available at the end of this call and during 6 small group sessions.

Presenters

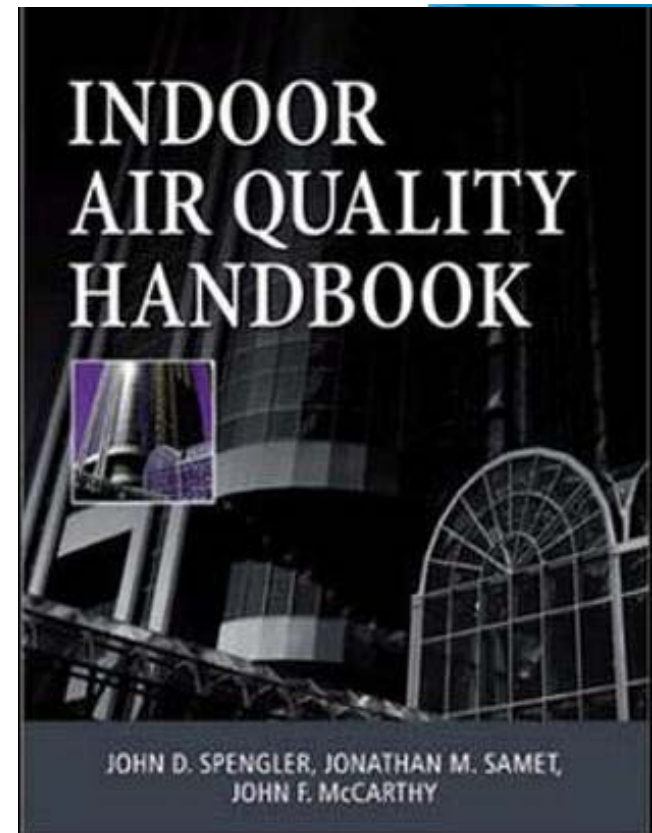
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ENVIRONMENTAL
HEALTH & ENGINEERING



EH&E Background

- EH&E has been protecting people, businesses and the environment for over 30 years
- COVID-19
 - Many of EH&E's client relationships are confidential and include:
 - Schools, Colleges, Universities
 - Professional Athletics
 - Travel and Transportation
 - Commercial and non-profit offices
 - Movie & TV production studios



Field Guide for Camps

7.0 GUIDANCE ON ACTIVITIES

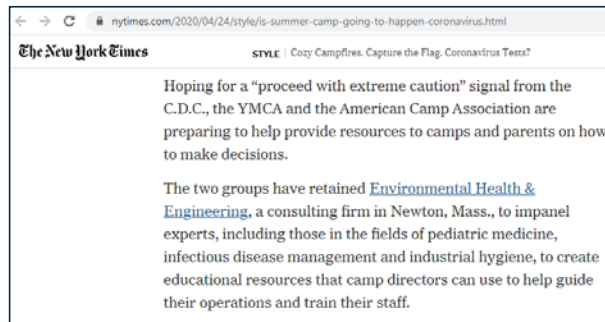
The following provides guidance and procedures to reduce COVID-19 exposure risk to campers and staff while participating in typical camp activities. The activities covered here are not an exhaustive list. To reduce COVID-19 risk to campers and staff during camp activities not covered here, it may be possible to apply minimal changes to existing guidance. Camp activities, whether indoor or outdoor, should be limited to those in which physical distancing of groups and activity cohorts and proper hygiene can be practiced. Refer to the table at the end of this document for a [summary of recommended practices by activity](#).

ADMINISTRATIVE

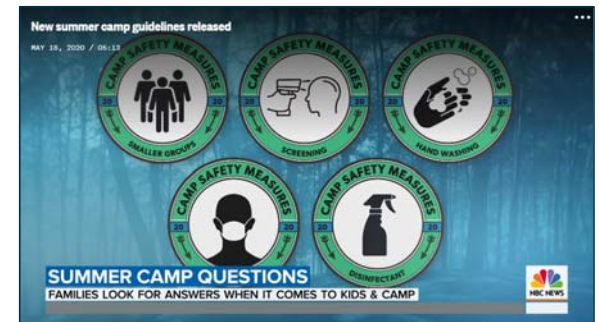
General Guidance

- Campers and staff should [wear masks](#) during all indoor activities especially when maintaining physical distancing is not feasible due to area limitations.
- Holding activities outdoors as much as possible is recommended.
- When selecting sports and physical activities, camper groups and activity cohorts should be determined as described in the [Using Cohorts at Camp](#) section. Cohort groups should maintain physical distancing at activities.
 - Best practice: For all activities, groups should remain small and maintain safe ratios outlined in the [Safety](#) section of this guide.
- Ensure campers and staff practice proper hand hygiene:
 - Instruct campers to wash hands with soap and water for 20 seconds before and after activities, or
 - Provide alcohol-based hand sanitizer containing at least 60% alcohol before and after activities.
- All shared items and equipment (e.g., bows and arrows, tennis rackets, oars, art supplies) should be properly cleaned and disinfected between use. Refer to the [Cleaning and Disinfection](#) section of this guide for instructions on cleaning and disinfecting porous and non-porous objects.
 - Good practice: If feasible, shared equipment should be limited to items that can be effectively cleaned (e.g., sports equipment with hard, non-porous handles are preferred to those with soft, porous handles).
 - Better practice: Limit the amount of shared supplies and equipment for activity by providing each participant their own (e.g., life jackets, art supplies) for the duration of camp, if feasible.
- Consider scheduling and planning activities to allow for maintenance of staff and camper groupings whenever possible. Refer to guidance in the [Using Cohorts at Camp](#) section of the *Field Guide*.

- Developed in May 2020 for ACA and YMCAs
 - US CDC and WHO had not yet provided guidance for camps and recreational settings
- The Field Guide compiles current guidance on managing camp operations during the COVID-19 pandemic
- In the news:



<https://www.nytimes.com/2020/04/24/style/is-summer-camp-going-to-happen-coronavirus.html>



<https://www.nbcnews.com/news/us-news/camps-won-t-look-typical-summer-directors-say-they-release-n1209211>

Aerobiological Pathway for Transmission of COVID-19

Source

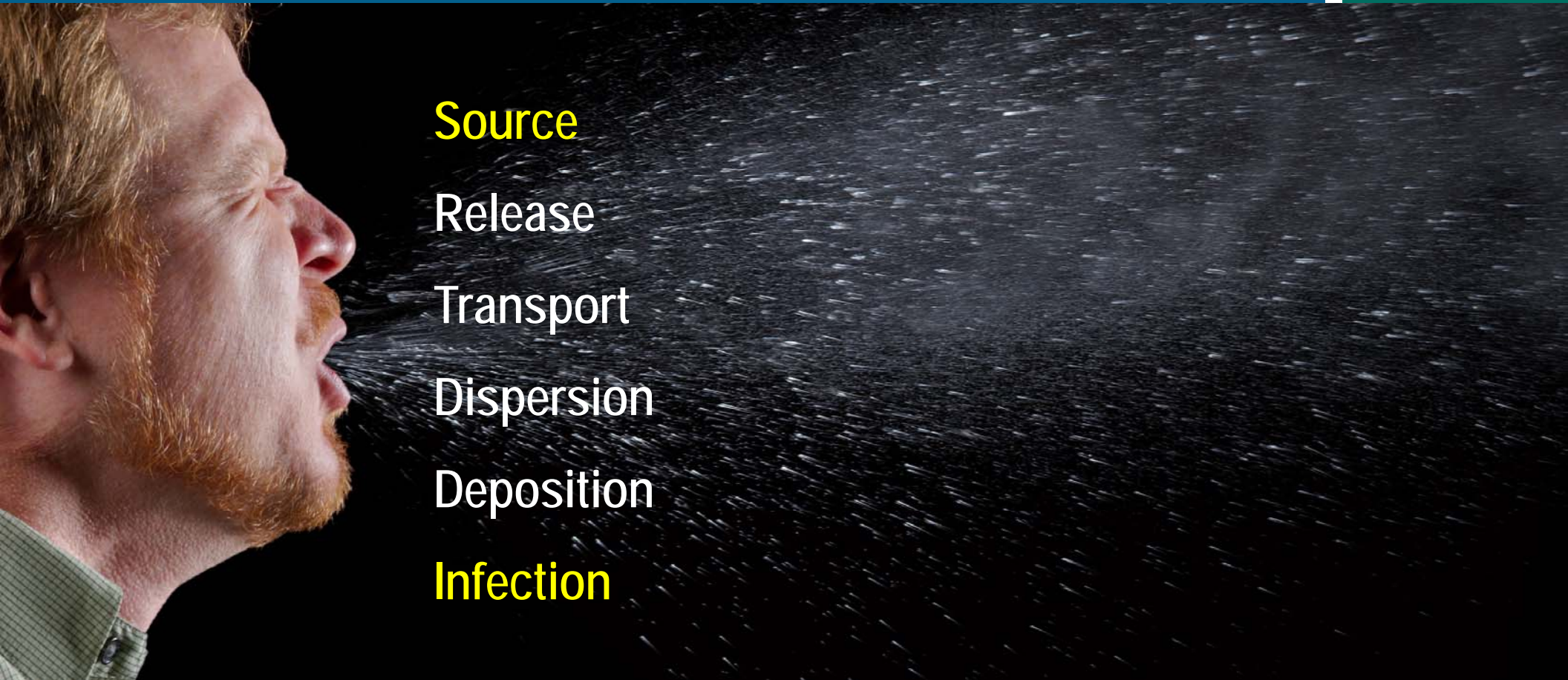
Release

Transport

Dispersion

Deposition

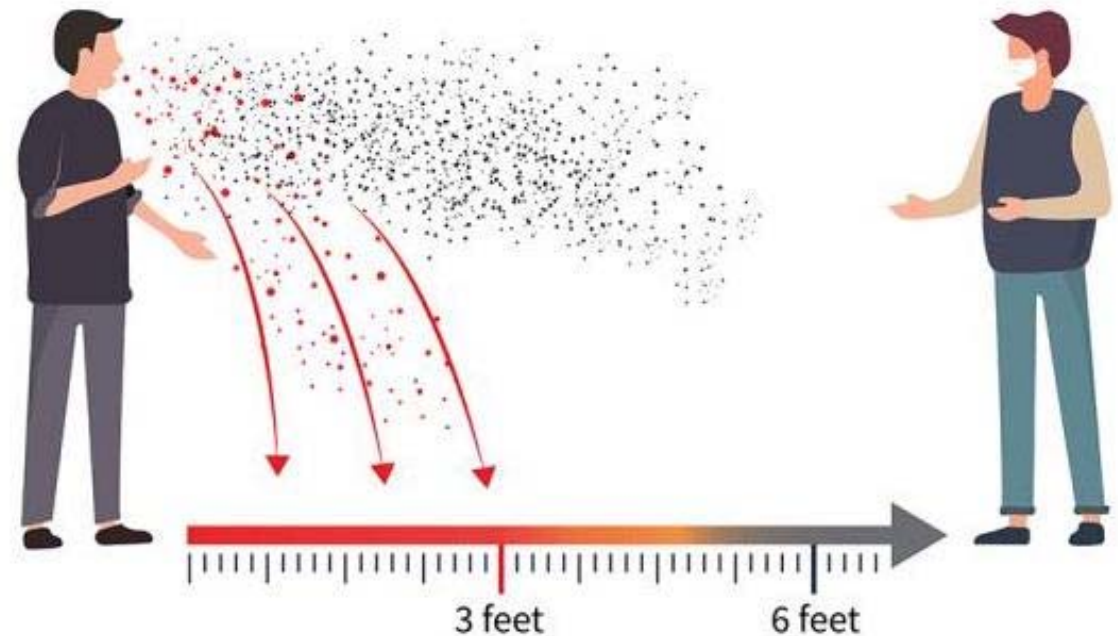
Infection



Disease Transmission

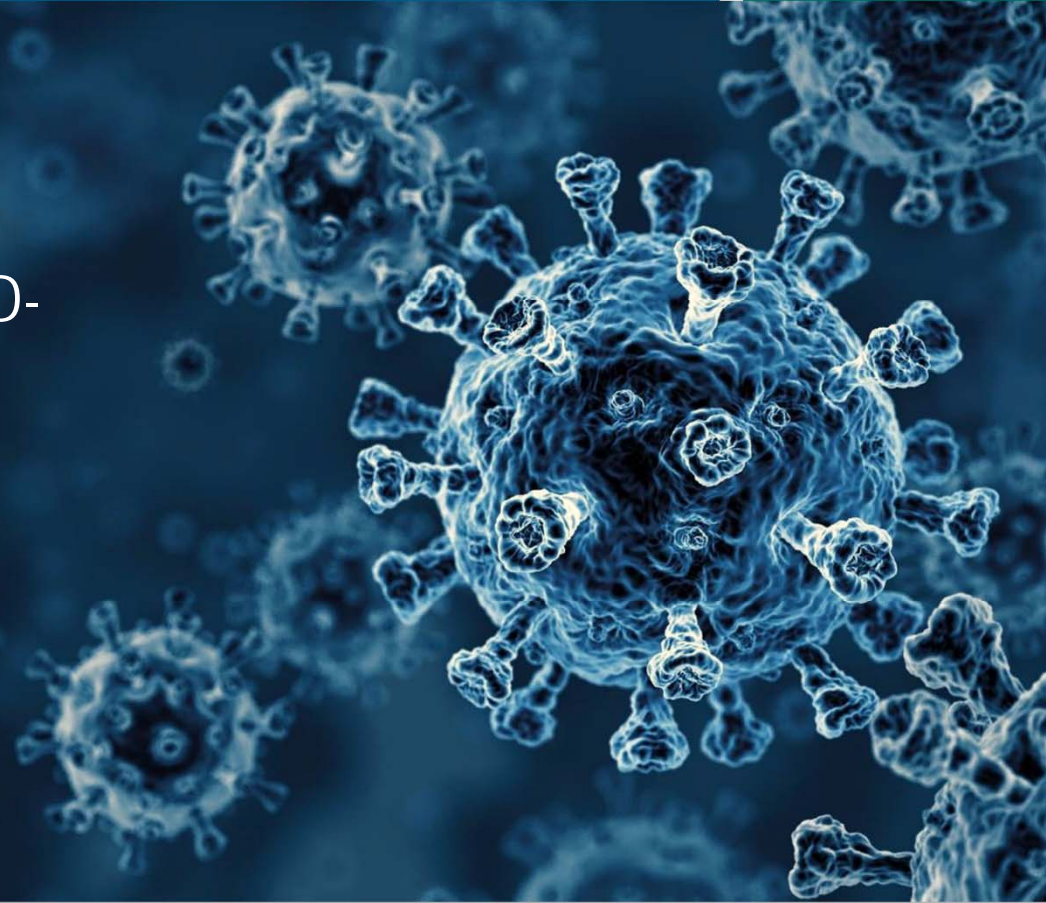
SARS CoV-2 is the coronavirus that causes COVID-19 disease

- Transmission is by respiratory droplets when an infected person coughs, sneezes or talks
- Primary mode is through close person to person contact
- Touching a contaminated surface or object then touching your mouth, nose, or eyes

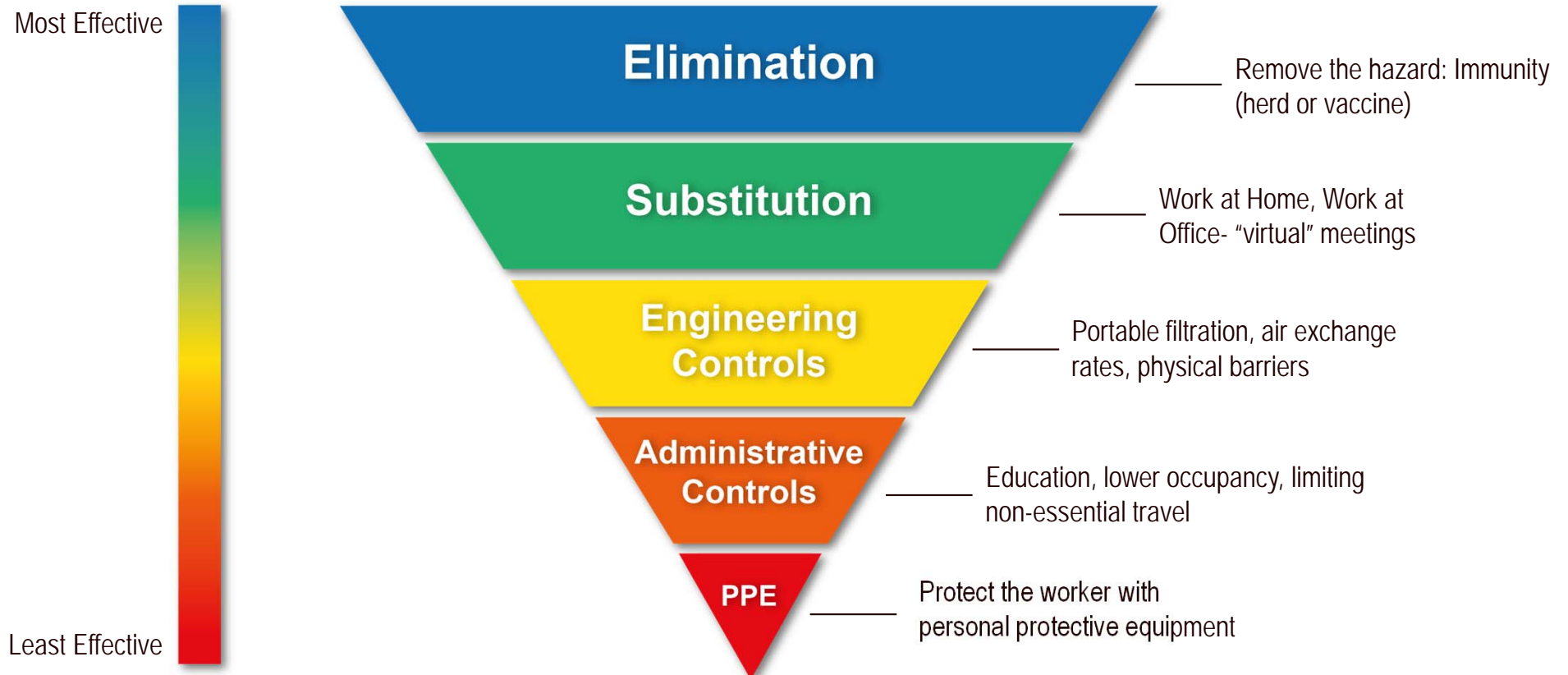


Elimination of COVID-19

- Immunity is the **KEY**
- Approximately 70% of the population needs to develop immunity for COVID-19 to be considered under control
 - Vaccine
 - Exposure
- *In the meantime?*



Hierarchy of Hazard Control



Masks

- Two or more layers of washable, breathable fabric
- Completely covers both nose and mouth
- Fit snugly and does not have gaps
- Has a nose wire to prevent air from leaking out of the top of the mask



Engineering Controls

Installing portable high-efficiency air filters



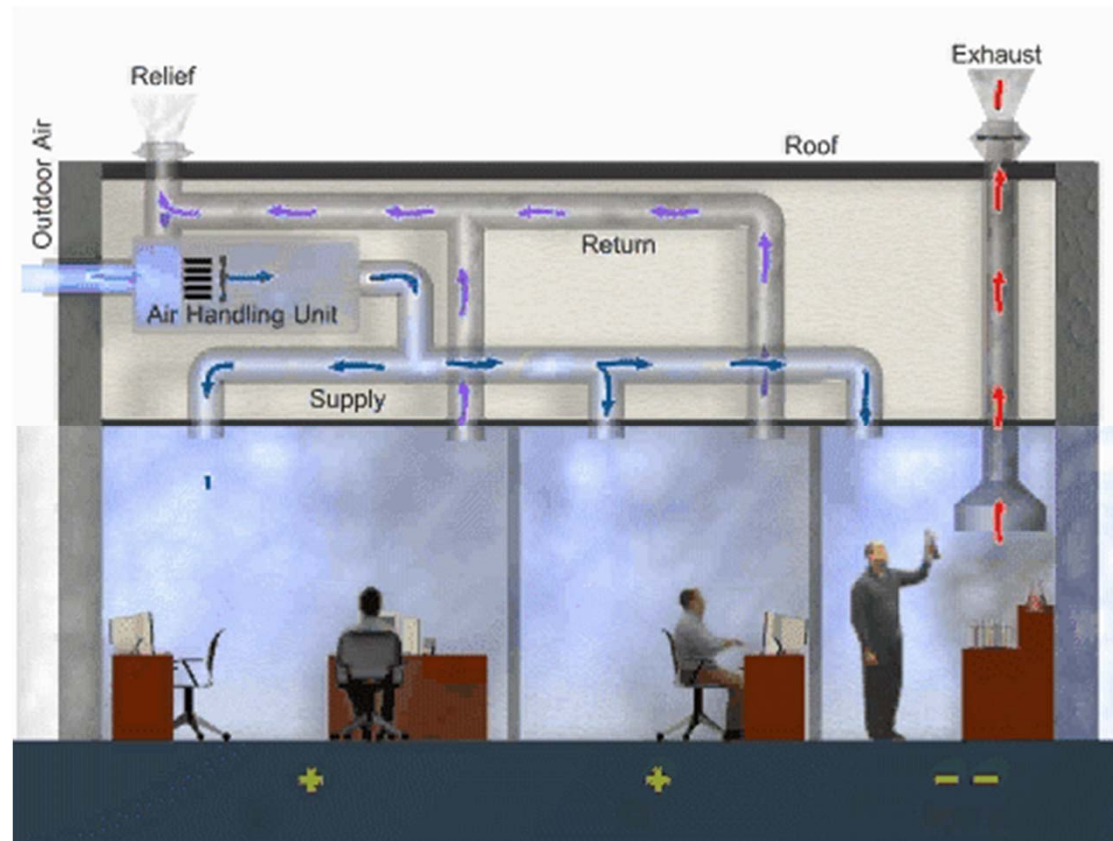
Increasing ventilation rates in occupied areas



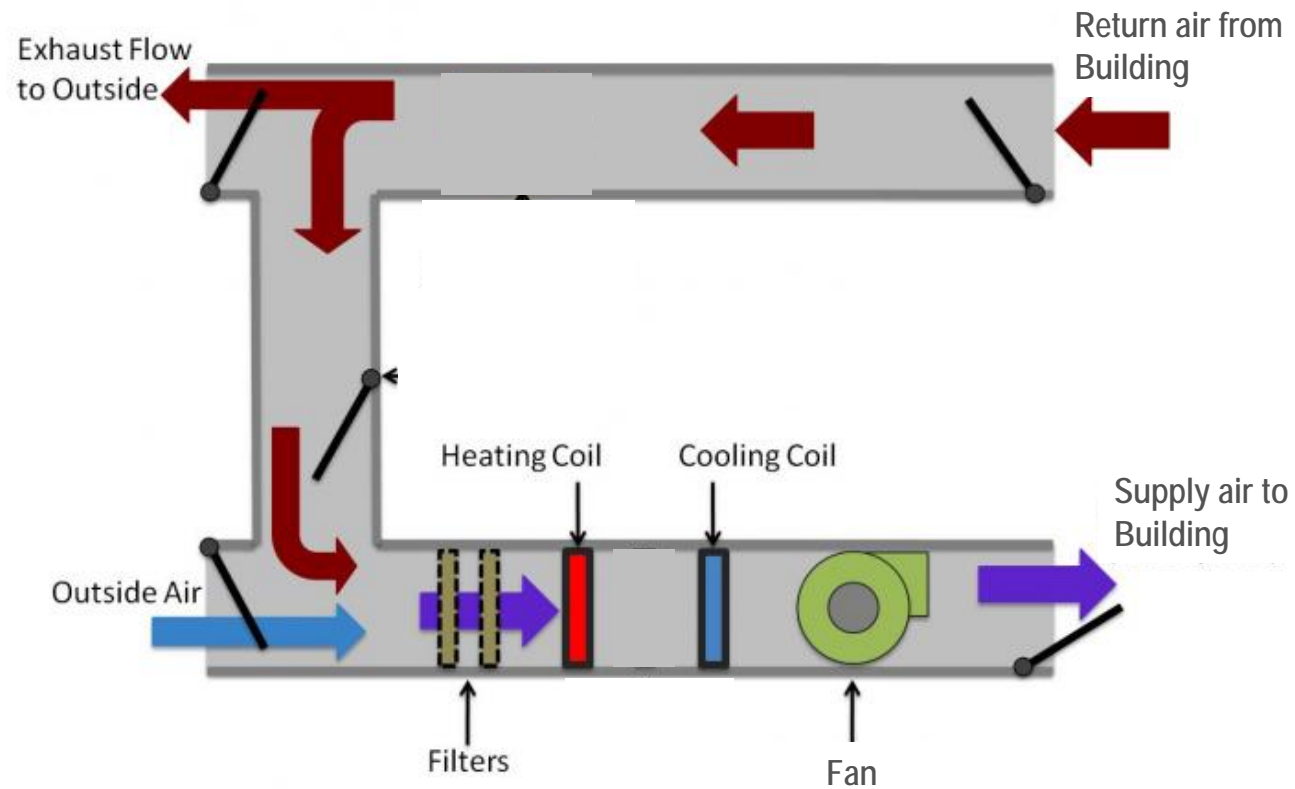
Installing physical barriers, such as clear plastic sneeze guards



Typical Air Distribution



Typical Air Handling Unit



HVAC Operations

- Small Business Team
 - Tenants and Managers
 - Testing and Balancing Contractor
 - Building Controls Contractor
 - Mechanical Contractor
 - Building Owner and/or Operator



System Condition and Operation

- Conduct a walkthrough
- Inspect HVAC system components to verify proper function
- Review building automation system (BAS) or thermostat programming
- Modify thermostat or BAS occupancy schedules



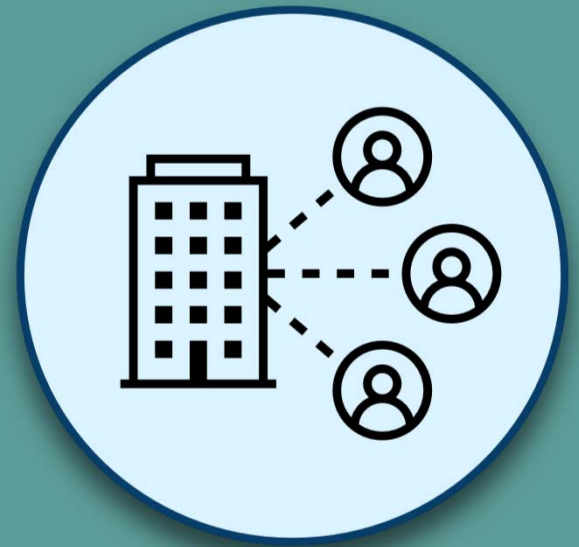
Air Exchange Rates



Ventilation



Filtration



Effective Air
Exchange Rate

Ventilation

- Opening windows during periods of building occupancy (when the weather is good)
- Operating HVAC systems at increased outdoor air rates
- Exhaust air systems should also be operated



Filtration

- Increasing the level of filtration in the air handling systems to a MERV-13 or greater if existing fan systems permit
- Portable high efficiency particle air (HEPA)-filtered units can be used in occupied spaces to provide continuous local filtration
- 4 to 6 ACH for many types of small businesses
- Key metrics – CO₂, airborne particles, filtration, air exchange rates

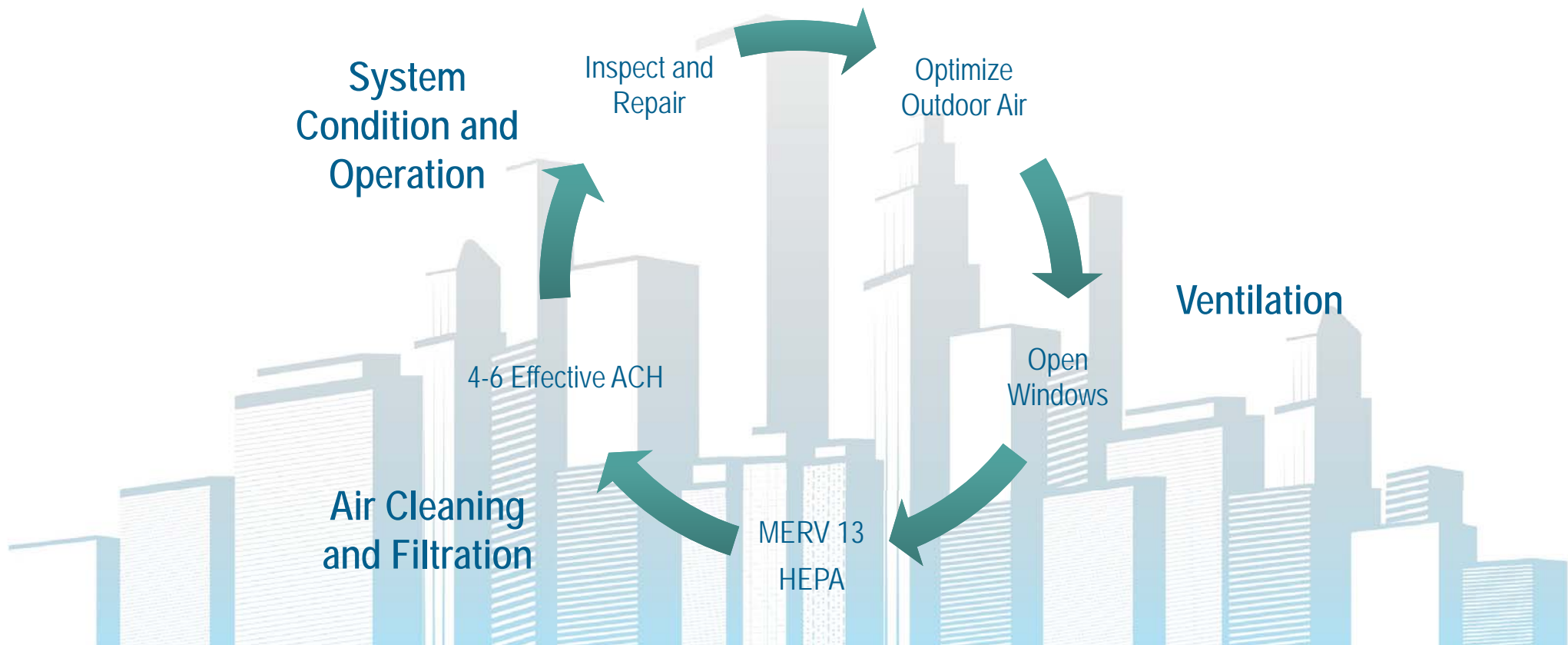


Small Businesses with No Mechanical Ventilation

- Ensure all windows are operable
- Keep windows open as much as possible to promote increased ventilation
- Operate all building exhaust fans continuously
- Consider using portable HEPA-filtered air cleaners to increase air cleaning



Summary



For more information:
www.eheinc.com
800-825-5343



Limitations

EH&E's advice, recommendations, guidance and work product are intended to augment and supplement all existing local, state and federal, laws, by-laws, regulations, and ordinances that may apply to the Client's work, workforce and places of work, such as, without limitation, all employment laws, and all U.S. Occupational Safety and Health Administration (OSHA), U.S. Environmental Protection Agency (EPA), and Americans with Disabilities Act (ADA) laws and regulations; therefore where EH&E's advice, recommendations, guidance and work product may overlap or touch upon existing laws and regulations, such advice and recommendations should be construed and interpreted in a manner that further defines existing duties and obligations, and assists in the implementation of policies and procedures to discharge those duties and obligations, and should not be construed or interpreted in a manner that lessens or diminishes existing duties and obligations.