HEALTHY BUILDINGS POST COVID-19
Speakers

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A Little About Lorax Partnerships...

- 17 years of green and healthy building experience
- Design, Construction Administration, Operations + Maintenance, Tax Incentives, and more!
- 9 employees
- Accreditations: LEED AP, WELL AP, Fitwel Ambassador, Green Globes Professional, NGBS Verifier, and more!
- 300+ certified projects, 100+ active projects
- ULI Gold Sponsor
Get To Know Engenium Group...

- MEP, FA/FP consulting engineers, 21 full time employees + 2 interns
- Offices in Baltimore and the District of Columbia
- Our mission is to develop and nurture long-lasting relationships
- Check us out at www.engeniumgroup.com!
Learning Objectives

- Become mindful of modern information flow
- Understand strategies that can be taken to increase building occupant health
- Realize costs of poor well-being and the benefits of health and wellness
- Understand the fundamentals of The WELL Building Standard and Fitwel
- Recognize opportunities to implement health and wellness strategies that address the spread of infectious disease in your projects
Why Address COVID-19 Transmission in Our Buildings?

#1
Re-entry Into Office Spaces

#2
Attracting Tenants

#3
Renting Apartments
Be mindful about Modern Information Flow!
With so much information available, Who do we trust?
"The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes…”
https://www.who.int/health-topics/coronavirus#tab=tab_1

"People can catch COVID-19 from others who have the virus. The disease spreads primarily from person to person through small droplets from the nose or mouth, which are expelled when a person with COVID-19 coughs, sneezes, or speaks. These droplets are relatively heavy, do not travel far and quickly sink to the ground... These droplets can land on objects and surfaces around the person such as tables, doorknobs and handrails. People can become infected by touching these objects or surfaces, then touching their eyes, nose or mouth."
Centers for Disease Control and Prevention:

“COVID-19 is thought to spread mainly through close contact from person-to-person”. Some people without symptoms may be able to spread the virus. We are still learning about how the virus spreads and the severity of illness it causes.”

“The virus that causes COVID-19 is spreading very easily and sustainably between people. Information from the ongoing COVID-19 pandemic suggest that this virus is spreading more efficiently than influenza, but not as efficiently as measles, which is highly contagious.”

“The virus may be spread in other ways. It may be possible that a person can get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or possibly their eyes. This is not thought to be the main way the virus spreads, but we are still learning more about how this virus spreads.”

"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 Position Document, April 14, 2020

"Neither WHO nor CDC rule out the possibility of aerosol transmission under some circumstances and both recommend the use of engineering controls in some cases and cannot explain all incidents of community spread of COVID-19. ASHRAE’s position that engineering controls to reduce airborne concentrations of viral particles or droplets are warranted to mitigate this risk is not in conflict with WHO and CDC's positions".

ASHRAE Clarification Memo, May 28, 2020
Take it all with a grain of salt!

- Much of the information available is derived from relevant experience
- COVID-specific research that *does* exist is young
- Scientific consensus is likely years away
Positive Steps to Increase Building Health

- Upgrade filtration
- Ultraviolet Germicidal Irradiation
- Bi-Polar Ionization Purification Technologies
- Humidification
- Increased Ventilation with Energy Recovery
Low hanging fruit: Upgrade Filtration

- Most recirculating systems use MERV-5 or MERV-8 filters
- MERV-11 filters are significantly more impactful against biologicals
- Be mindful of increased pressure drop
- Be mindful of existing system design
- Be mindful of energy intensity
- Consider Fan Filter Units in critical zones
Ultraviolet Germicidal Irradiation

- Deactivates Viruses by Mutating RNA (similar to DNA)
- Deactivated Viruses cannot reproduce
- Industry Standard Design: 85% 1-pass deactivation rate
- Diminishing returns of increased intensity
- Shortcomings of current technology
- The next chapter... UVLED!
Bi-Polar Ionization Purification Technologies

- Creates a high concentration of positively and negatively charged ions
- Clumping effect leads to bigger, heavier particles
- Chemically altering affected molecules
- Research by ALG Lab Group shows high effectiveness on SARS-CoV-2 surrogate
- Low up-front cost, low maintenance cost, low operating cost
Humidification

- Target range is 40% to 60% Relative Humidity
- Humidity helps keep mucosal barriers hydrated and intact
- High first cost, high direct/indirect energy cost
Increased Ventilation

- Increasing ventilation dilutes suspended particles and biologicals
- Controls solutions are not enough!
- Bi-Polar Ionization Purification Technologies
- Humidification
- Increased Ventilation with Energy Recovery
Integrating Your COVID-19 Response into a Holistic Approach to Health & Wellness

What determines the state of health?

The **Cost** of Poor Well-Being

- **$63.6 billion** in workers compensation in 2013.
- **$153 billion** productivity losses annually.
- **$13,375** average employer health insurance premiums for a family.
- **51%** - forecast of population that will be obese by 2030.
The **Benefits** of a Healthy Building Environment

- **41% lower health-related costs**
- **$1 spent on wellness programs there is a $3.27 medical cost reduction**
- **28% reduction in sick time**
- **55% overall improvement of well-being**
Environment
LEED v4/ Pilot Credit
Living Building Challenge
Green Globes
IgCC

Human Health
The WELL Building Standard
Fitwel
- The world’s first building standard focused exclusively on human health and wellness
- Administered by International WELL Building Institute (IWBI)
- Certifications by Green Business Certification Inc. (GBCI)
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The CDC and GSA led the development and pilot phase.

Administered and certifications by the Center for Active Design.
### 12 Sections
1. Location
2. Building Access
3. Outdoor Spaces
4. Entrances + Ground Floor
5. Stairwells
6. Indoor Environments
7. Workspaces
8. Shared Spaces
9. Water Supply
10. Cafeterias + Prepared Food Retail
11. Vending Machines + Snack Bars
12. Emergency Procedures

### 7 Health Impact Categories
- **Impacts Community Health**
- **Reduces Morbidity + Absenteeism**
- **Supports Social Equity for Vulnerable Populations**
- **Instills Feelings Of Wellbeing**
- **Provides Healthy Food Options**
- **Promotes Occupant Safety**
- **Increases Physical Activity**
WELL/Fitwel Strategies Addressing COVID-19

- Air Filtration
- Optimal Humidity
- Increase Ventilation
WELL/Fitwel Strategies Addressing COVID-19

IAQ Testing & Indoor Air Quality Plan

Entryway Systems
WELL/Fitwel Strategies Addressing COVID-19

Moisture & Humidity Management

Microbe & Mold Control
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Water Quality Testing  Antimicrobial Activity for Surfaces
WELL/Fitwel Strategies Addressing COVID-19

- Tobacco & Smoke-Free Policies
- Common Area Cleaning Protocols
  - Cleanable Environment
  - Cleaning Equipment
WELL/Fitwel Strategies Addressing COVID-19

Hand-Washing Signage

Stakeholder Collaboration Process
WELL/Fitwel Strategies Addressing COVID-19

Quiet Room

Health Programming
Health & Addiction Treatment
WELL/Fitwel Strategies Addressing COVID-19

Emergency Preparedness Plan

Education & Communication
Recap and Conclusions

- Follow guidelines provided by reputable institutions like the WHO and CDC
- Behavioral measures are more effective than mechanical measures
- There is psychological value in the story; people are most productive when at ease
- Modifications to HVAC Systems are typically accompanied by energy penalties
- We must collectively value the health, safety and productivity of building occupants
- WELL and Fitwel Certifications can add validity to the health and wellness strategies you are already implementing.
THANK YOU FOR JOINING

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