



# WE ARE IBEC

We understand people, buildings and pathogens.

# WE UNDERSTAND BUILDINGS, PEOPLE, AND PATHOGENS

## IBEC: Integrated Bioscience and Built Environment Consortium

We weave together disparate technical disciplines and knowledge spheres to provide real-world solutions for transmission reduction.



# The Problem

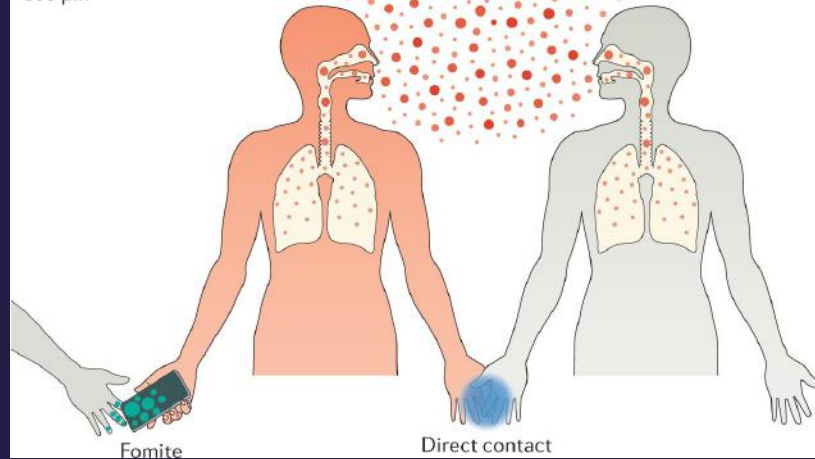
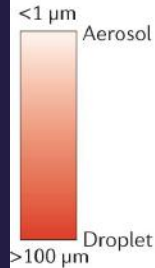
People need to feel safe gathering in indoor spaces.

- Information is coming from all sides.
- Science is dynamic and complex.
- Too much guidance at too high of a level.
- Lack of confidence that environmental transmission is real and controllable.



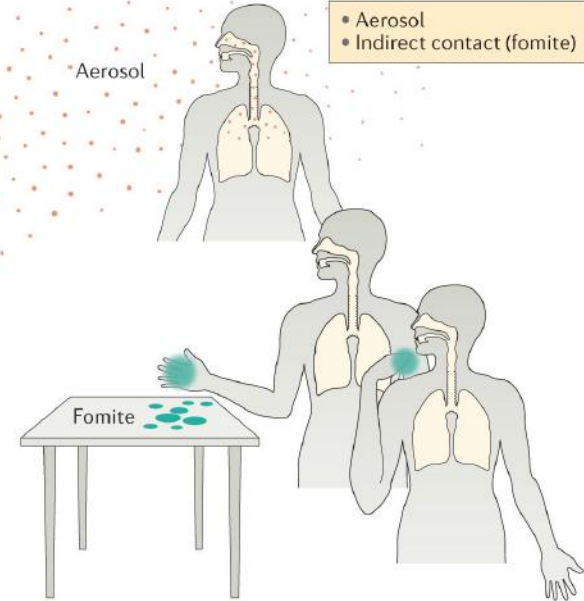
## Short-range transmission

- Droplet
- Aerosol
- Direct (physical) contact
- Indirect contact (fomite)



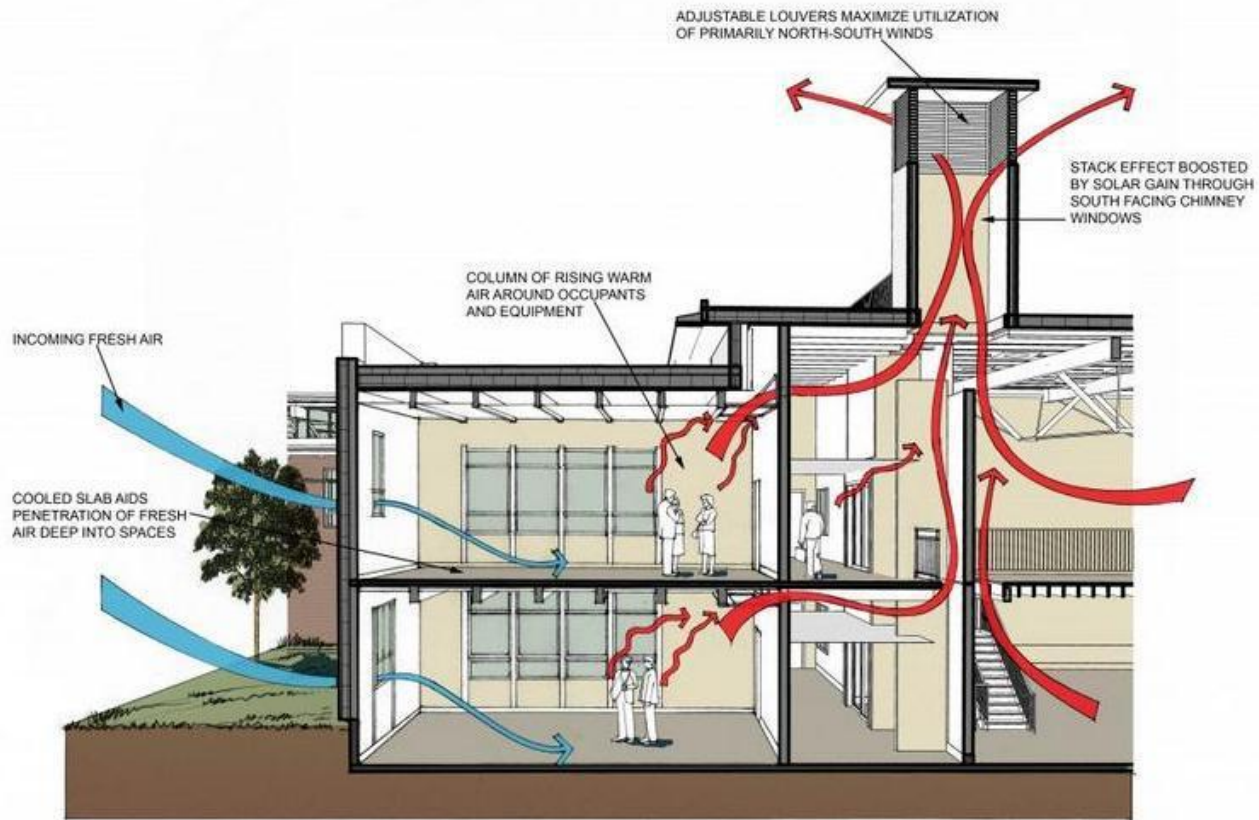
## Long-range transmission

- Aerosol
- Indirect contact (fomite)



Leung, N.H.L. Transmissibility and transmission of respiratory viruses. *Nat Rev Microbiol* (2021). <https://doi.org/10.1038/s41579-021-00535-6>

# Building Science



# LESSONS-LEARNED FROM EBOLA IN 2014 THAT PRESENTED IN 2020



## SUPPLY CHAIN WOULD BE AN ISSUE

Diagnostic technologies were reliant on the same DNA extraction kits. Worked to track down agency dependencies and validate backup kits.



## PPE NEEDED AN OVERHAUL

Cross contamination during donning and doffing was a critical gap. WH worked to design novel PPE and standards for PPE removal.



## ROLE FOR NOVEL TOOLS

Needed standoff measures of vitals andearable technology to track exposed individuals over days/weeks in isolation. WH worked to incentivize wearables, novel technology for temperature checks.

# IN THE NEWS...

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## RNA Extraction Kits for COVID-19 Tests Are in Short Supply in US

Manufacturing sites are ramping up production of reagents needed to isolate SARS-CoV-2's genetic material—a key step in testing for the virus.

**CNN** health [Food](#) [Fitness](#) [Wellness](#) [Parenting](#) [Vital Signs](#)

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## Duke researchers are decontaminating N95 masks so doctors can reuse them to treat coronavirus patients

By [Scottie Andrew](#), CNN

Updated 6:59 PM ET, Fri March 27, 2020

## Global partnership to make available 120 million affordable, quality COVID-19 rapid tests for low- and middle-income countries

## 500,000 Counterfeit N95 Masks Seized by Chicago CBP

Release Date: September 14, 2020

# IN THE NEWS...

## 500,000 Counterfeit N95 Masks Seized by Chicago CBP

**Release Date:** September 14, 2020

**CHICAGO**—U.S. Customs and Border Protection Officers attached to the Anti Terrorism Contraband Enforcement Team (A-TCET) in Chicago were contacted by Homeland Security Investigation to seize a shipment arriving from Shenzhen China. On September 10, 2020, the shipment was seized.

The shipment listed 500,000 N-95 respirator masks, which





# CLEAN 2020 SUMMIT STAGES

1

August 5, 2020

Issues and challenges to re-opening with confidence

2

August 13, 2020

Science and technology solutions, gaps and research needs

3

August 25, 2020

Lessons learned in managing risk and tools for confident operations

4

October 28, 2020

Workforce and workspace issues

5

December 8, 2020

Confidence in PPE

# 1250 attendees

USA, Canada, Ireland, England, Germany, France, Netherlands, Hungary, Nigeria, Japan, Australia, Turkey, Indonesia, India, Thailand and the Philippines

20+

hours of programming

50+

expert panelists & moderators

# The Solution

**Bridge the gap between proven scientific process & real-world application for healthy gathering.**



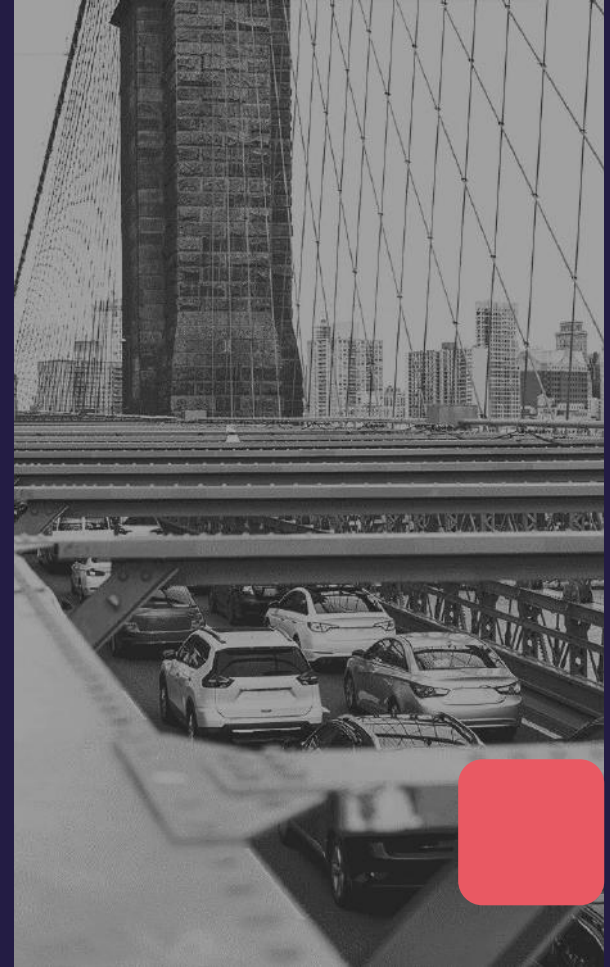
Digested information, current science translated, easily accessible



Defining practical quality control processes for healthy spaces



Developing real-time measures of environmental transmission potential

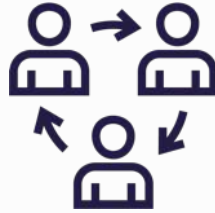


# LEADERSHIP IS NEEDED FOR US TO ACCEPT THE NEW NORMAL



## Community

We believe the solutions to our greatest challenges are envisioned in diverse, inclusive, transparent and equitable teams.



## Collaboration

We believe business and science must work together to take research to practice and practice to research.



## Consensus

We believe the world needs a single recognized expert resource from those that understand buildings, people and pathogens best.



# LET'S WORK TOGETHER

- **Coordinate knowledge and information sharing** including standards, policies and procedures applied to impact the modes of transmission in built spaces.
- **Transition research into practice** to recover from biological incidents and safely return to routine activities.
- **Promote confidence**, data-driven solutions, and innovative technologies in the implementation of control and management practices to reduce viral transmission.

# WHAT DO WE OFFER?

- Access to the IBEC Knowledge Center
  - Resource Database
  - Prior Pro/Con sessions, Summits
  - Research digests
  - Prior “Ask the Expert” sessions
  - Education materials and Fact Sheets
- Training Program
  - Implementation of training for Executive Leadership
  - Education materials and Fact Sheets
- Consortium
  - CLEAN Summit stages
  - Ask the Expert Panels on emerging technical topics
  - Coordinated research pilots

**Knowledge  
Center**

**Training**

**Consortium**

We are establishing strategic partners to provide test bed capacity in emerging surveillance systems.

**DeCoDiS**  
Water System and Facility Testing

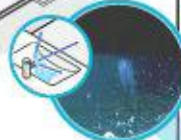
**INL Water Security Test Bed**



Pathogen transmission and disinfection



Potable water distribution system



Airborne pathogens from fittings and fixtures (sinks, showers, toilets)



**Capabilities Key:**

■ **Idaho National Laboratory:**  
Ability to safely test new materials, detect on methods, and disinfect on strategies at large scale. Operates Water Security Test Bed and BOTE Facilities for EPA, DHS, DTRA, CDC, FBI, and DOE testing and evaluation.

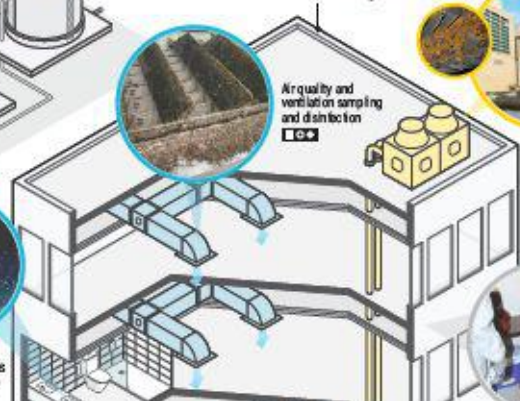
● **Argonne National Laboratory:**  
Experience conducting large scale sampling programs for microbial communities and pathogens in water infrastructure systems.

○ **Northwestern University:**  
Extensive experience characterizing microbial communities, including viruses, in building and municipal wastewater systems. Ability to determine SARS-CoV-2 viability using cutting-edge molecular methods.

◆ **Montana State University:**  
Extensive experience conducting experiments and generating validated models from microscale pathogen interactions with in biolimes to large scale industrial and municipal systems.



**INL Bio-response Operational Testing and Evaluation (BOTE) Facility**



Air quality and ventilation sampling and disinfection



Cooling towers and other heat exchangers



Building surface sampling and disinfection



Sampling pathogens from pipe biofilm



Facility wastewater reuse



Wastewater reuse

To grey water for flush and

Wastewater surveillance



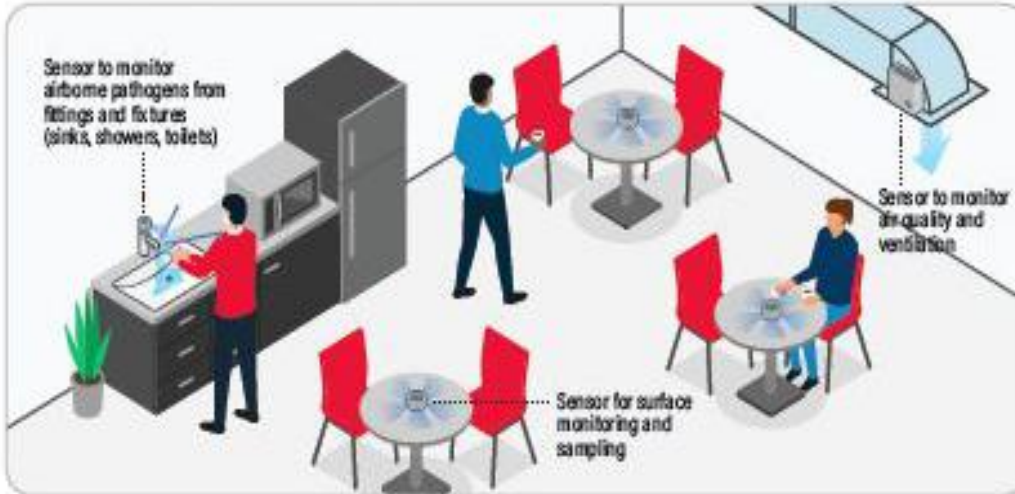
Local grey water reuse



# IMPROVING THE SAFETY AND MONITORING OF OUR SPACES

## SENSOR-BASED INFRASTRUCTURE

Facilities outfit with sensor monitors will be able to detect pathogens in water, air, and surfaces.



In the event that someone who has recently been in the facility tests positive for COVID-19, the facility can run sensor tests and see if any spaces are compromised.





# STAGE 6: BIOSURVEILLANCE

## PRIORITIZING SAFETY

Compromised spaces will be detected by sensor monitors, allowing prioritization for proper cleaning protocols and capability to reopen facilities faster and safer.

Space sensors for water, air, and surfaces will inform which spaces are compromised

This information will prioritize decontamination protocols

Once cleaning protocols are met the sensors will be able to inform if the space is once again safe for use

In the future, as sensor monitoring tools improve, there will be increased capability to proactively display information that a space is newly compromised.



# LET'S WORK TOGETHER

- Become a **Founding Partner**
- Become a **Sponsor** (Associate Membership + Serve on the Board of Directors)
- Become a **Member**
  - Join us to create and coordinate best practices
  - Access to the IBEC Knowledge Center
  - Co-create knowledge products
  - Co-host a Summit

# Value of IBEC Membership

## For the Member

- Education and technology customized for their industry *near-term*
- A risk mitigation strategy that tracks outcomes and makes improvements over time *long-term*

## For the Member's Customers

- Brand awareness tied to evidence-based, third party verified programs for trust and safety. *Safety is a marketable investment.*
- Transparency about risk factors and how they are being addressed. *Consumers see the industry is proactive.*



# Join Us

Jayne Morrow, PhD

[jaynem@ibecforum.org](mailto:jaynem@ibecforum.org)

Ken Martinez, CIH

[kenm@ibecforum.org](mailto:kenm@ibecforum.org)

# IBEC Ambassador Program Goals

- Identify, engage, communicate, and grow partnerships with the **Strategic Key Industry Partners (SKIPs)** within their specialty.
- Communicate the value of the Associate Membership Program as it applies specifically to their industry and each targeted industry segment.
- Work with IBEC to continually evolve and implement member services that are targeted to specific needs of their industry.

**Understanding + Engagement + Applications = Growth of**  **IBEC**

# Recruiting for Membership



## Healthcare



## Education



## Hospitality



## Food & Beverage



## Retail / Commercial



## Real Estate



## Sports & Entertainment



# We Are Seeking

**Board of Directors Members**

**Science Advisory Body Members**

**Associate Members for Each Industry**

**Industry Sector Ambassadors**

**Understanding + Engagement + Applications = Growth of**



# We Are Seeking

## Ambassadors for Each Industry

### Qualifications:

- Seasoned business professional advisor (not a “salesperson”) - a well known leader from the industry with a proven reputation and long-term credibility.
- Dynamic industry knowledge and key contacts.
- In-depth understanding of the primary financial, operational, and at risk components.
- Ability to connect IBEC with their industry’s Strategic Key Industry Partners



# We Are Seeking

## Associate Members for Each Industry

**Current:** Welcome to companies needing 3<sup>rd</sup> party validation of best practices to make a difference in their industry and that align with IBEC initiatives.

**Future:** Prominent and Growing division of IBEC

- ✓ Revenue generation
- ✓ Robust utilization of Knowledge Center and other services
- ✓ Advocate for SKIPs

**Understanding + Engagement + Applications = Growth of**  **IBEC**