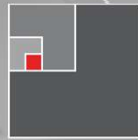


A grayscale photograph of a woman wearing a white lab coat, a face mask, and gloves, cleaning a laptop keyboard with a white cloth. The image is overlaid with a red horizontal bar at the top and text. The text is centered and reads: "Re-occupancy During COVID-19" in a large, bold, sans-serif font, followed by "A RESEARCH-BASED APPROACH TO OFFICE CLEANING & DESIGN" in a smaller, all-caps, sans-serif font. At the bottom center, there is a logo consisting of a black square with a white square inside it, and a small red square in the bottom-left corner of the white square. Below the logo, the text "PriceModern" is written in a sans-serif font, with "Price" in black and "Modern" in red.

# Re-occupancy During COVID-19

A RESEARCH-BASED APPROACH TO OFFICE  
CLEANING & DESIGN



PriceModern

# FAQs

- Will this webinar be recorded?
  - Yes!
- Can I get a copy of the slides?
  - Yes!
- How can I get more information on this topic and other back to the office planning resources?
  - Shoot us an email at [info@pricemodern.com](mailto:info@pricemodern.com) or...



# Here to help.



Let's get you back to the office.

[COVID-19 RESOURCES](#)

MENU

# Our Speakers



SHARI SOLOMON

Industrial Hygienist & President  
CleanHealth Environmental



JANE ROHDE

Principal & Founder  
JSR Associates, Inc.



# Cleaning, Disinfection, & PPE

Protecting the Office

# Protecting the Office Environment: Cleaning, Disinfection & PPE

Presented by:

Shari Solomon, Esq

301-377-9555

[solomon@cleanhealthenv.com](mailto:solomon@cleanhealthenv.com)

Clean*Health* Environmental  
Risk Management Solutions

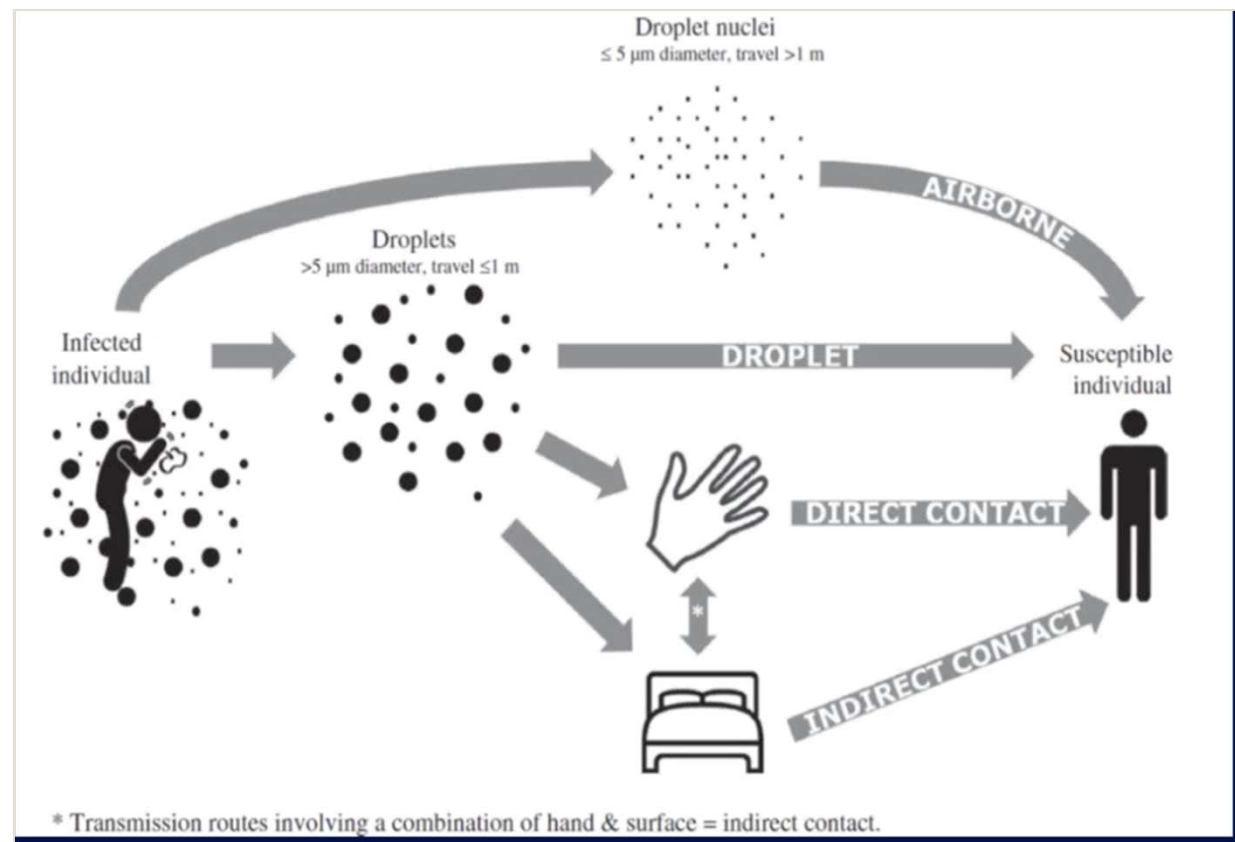
# What is a HAI/CAI?

- **Healthcare-Associated Infections (HAIs) (nosocomial infections):** Infections which are a result of treatment in a hospital or a healthcare service unit, but secondary to the patient's original condition.
- **Community-acquired infection:** An infection acquired in the community. In contrast to a nosocomial (healthcare-associated) infection.



# How does COVID-19 Spread?

- Person-to-person – respiratory droplets
- Contact with infected surfaces or objects
- Through feces





**Cough without mask**

1m



**Cough with mask**

2m

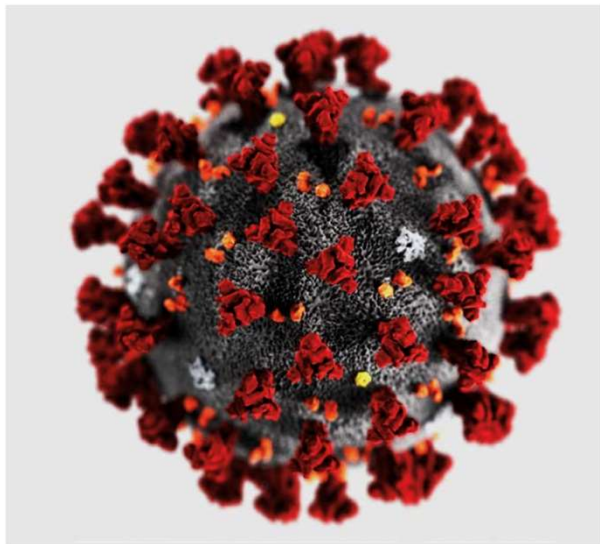
3m

Simulation by Drs Dharak and Verma  
Florida Atlantic University

Graphics by Leeham News and Analysis



# Surface Contamination



**Understanding and Preventing  
Transmission of Healthcare-  
Associated Pathogens Due to the  
Contaminated Hospital  
Environment**

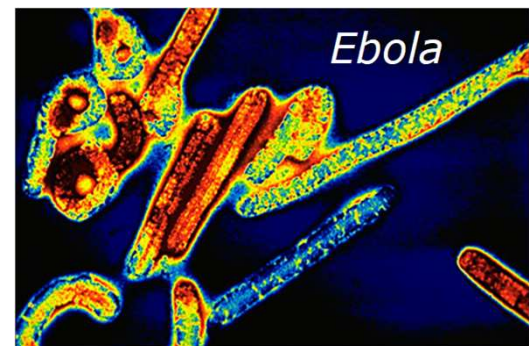
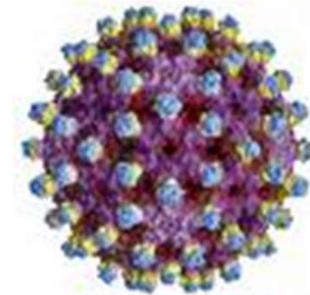
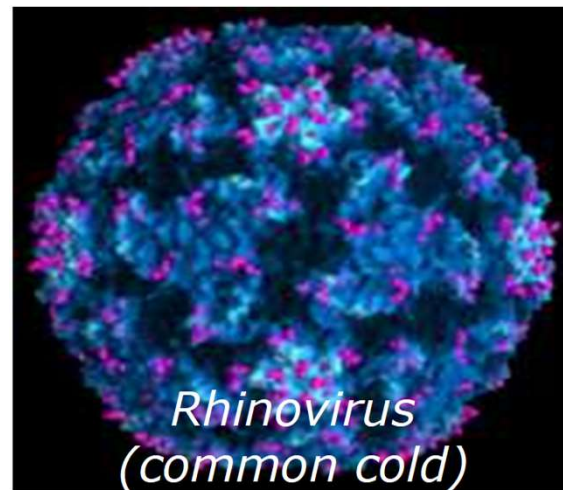
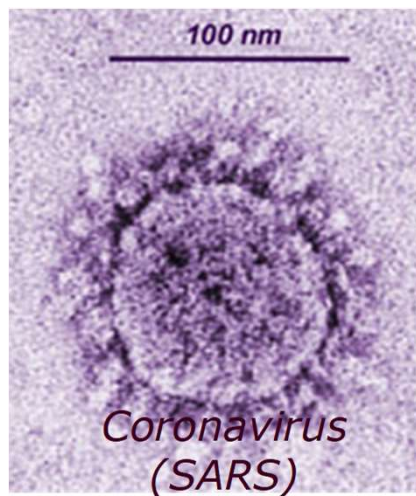
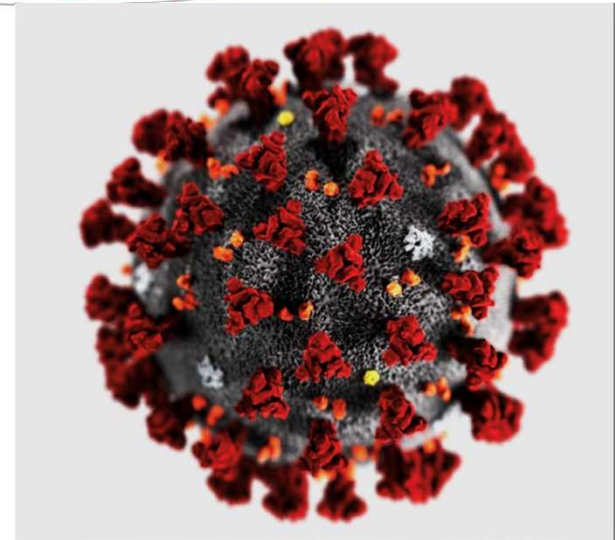
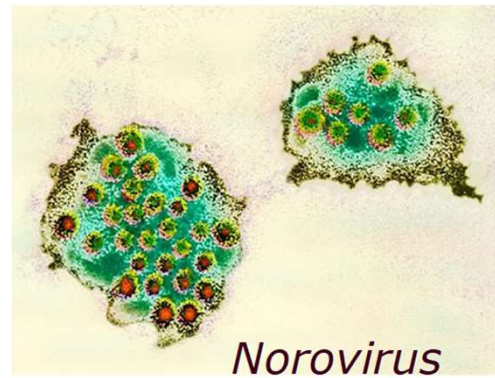
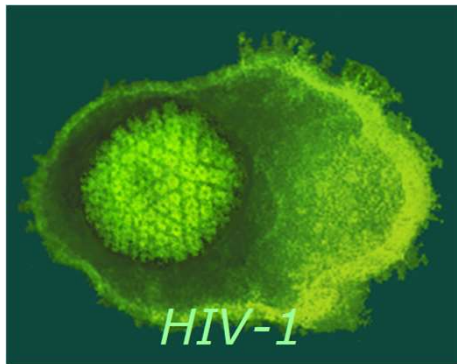
**- David J. Weber, MD, MPH (May  
2013)**

Over the past decade, substantial scientific evidence has accumulated indicating that contamination of environmental surfaces plays an important role in the transmission of several key healthcare-associated pathogens

## SARS-CoV-2 (COVID-19) compared to SARS-CoV-1

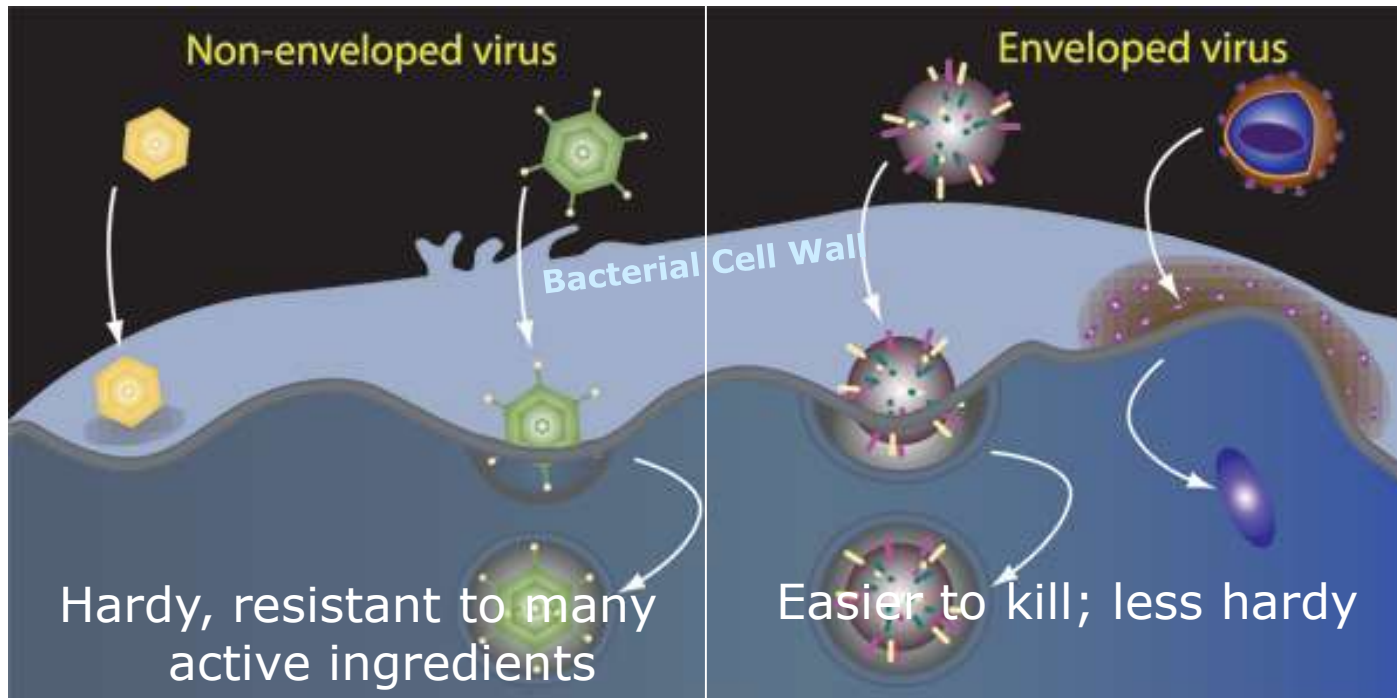
Media	SARS-CoV-1	SARS-CoV-2
Aerosols	3 hours	3 hours
Plastic	72 hours	72 hours
Stainless Steel	48 hours	48 hours
Cardboard	8 hours	24 hours
Copper	8 hours	4 hours

# Viruses





# Virus Structures



- Picornoviridae (Polio, Enterovirus, Hepatitis A , Rhino)
- Parvovirus
- Calicivirus, Norovirus
- Adenovirus
- Rotavirus

- Coronavirus
- Hepatitis C
- Paramyxoviridae (Parainfluenza, RSV, Measles, Mumps)
- Herpesviridae (Herpes, CMV)
- Vaccinia
- Hepatitis B
- Influenza
- HIV-1

# Cleaning vs. Sanitizing vs. Disinfecting

## Cleaning

- The removal of material like dust, soil, blood and body fluid
- Physically removes rather than kills microorganisms. Accomplished with water, detergents, and mechanical action
- Always essential prior to disinfection or sterilization
- A surface that has not been cleaned effectively cannot be properly disinfected or sterilized.

## Sanitizing

- Carry a general claim of germ control, but generally not organism specific
- There are two basic kinds of sanitizers, food contact and non-food contact sanitizers.
  - food contact surfaces 99.999% (a 5-log reduction)
  - nonfood contact a reduction of 99.9% (3 logs) within 30 seconds.

## Disinfecting

- The inactivation of pathogens.
- Usually involves chemicals, heat or UV.
- Sterilization destroys microbial life including bacteria, viruses, spores and fungi
- Most common disinfectants used as quaternary ammonium compound products, hydrogen-based products, and sodium hypochlorite (bleach)



Used with permission from



# Resistance of pathogens to disinfectants

Hard-to-Kill



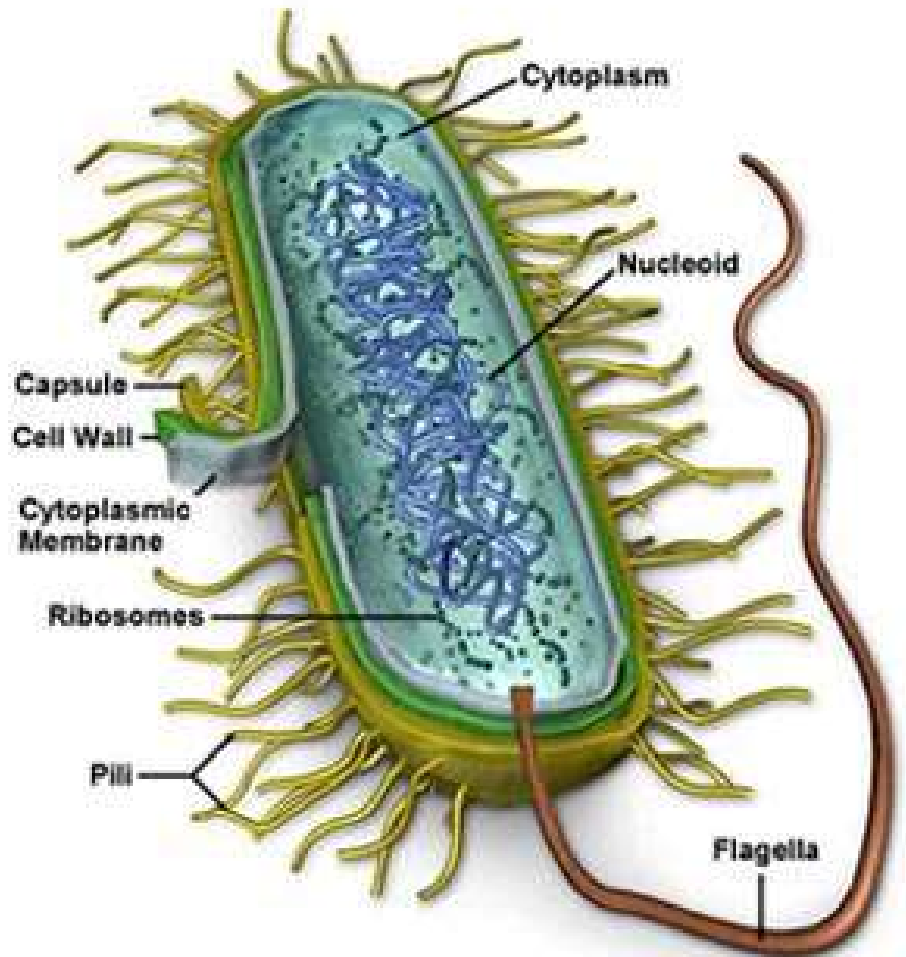
Easy-to-Kill

Pathogens	Example	Disinfectants		
		Low-level Disinfection	Intermediate-level Disinfection	High-level Disinfection
Prions	Mad Cow Disease			
Bacterial Spores	Clostridium difficile			Peracetic acid / hydrogen peroxide blends
Mycobacteria	Tuberculosis		Quat / alcohol	Bleach and Hydrogen peroxide
Nonlipid or small viruses	Norovirus		Quat / alcohol blends	
Fungi	Athletes foot	Quats		
Vegetative bacteria	MRSA, VRE			
Lipid or medium viruses	HIV			

# How Disinfectants Work

## To Work Properly, Disinfectants Need:

- Proper Concentration
- Dwell Time
- Kill Claims
- PROPER APPLICATION  
PROCESS!



# High Touch Surfaces

- Surfaces with regular hand-contact are called high touch surfaces.
- These surfaces should be cleaned and disinfected daily to reduce the spread of infection







# Cleaning & Disinfection: Policy & Procedures

- Increased frequency of cleaning and disinfection in high density and high-touch areas
- Staff training
- Staff roles and responsibilities
- Cleaning frequencies
- Cleaning and disinfection protocols
- Selection of tools, supplies, equipment and chemicals
- Validation of cleanliness





# U.S. Centers for Disease Control and Prevention

- Environmental Cleaning and Disinfection Recommendations
  - Interim Recommendations for US Community Facilities with Suspected/Confirmed Coronavirus Disease 2019

<https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/cleaning-disinfection.html>

# Definitions

- *Community facilities* such as schools, daycare centers, and businesses comprise most non-healthcare settings that are visited by the general public outside of a household.



# Cleaning and Disinfection After Persons Suspected/ Confirmed to Have COVID-19 Have Been in the Facility

## Timing and Location

facility that does not house people overnight:

- Close off areas and wait as long as practical. If possible, wait up to 24 hours before beginning cleaning and disinfection.
- Open outside doors and windows to increase air circulation.
- Clean and disinfect all areas, focusing especially on frequently touched surfaces.

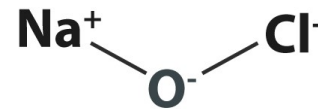


# How to Clean and Disinfect

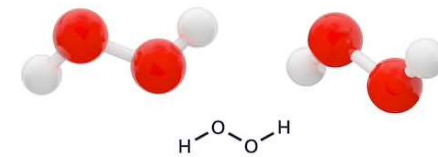
## Surfaces

- Cleaned with detergent or soap and water prior to disinfection
- For disinfection:
  - EPA-registered household disinfectants
  - Diluted household bleach solutions (sodium hypochlorite) can also be used

SODIUM HYPOCHLORITE FORMULA STRUCTURE



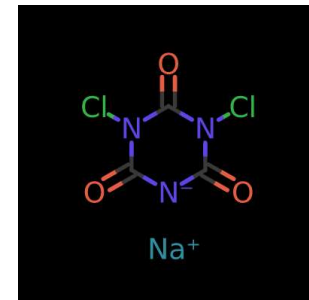
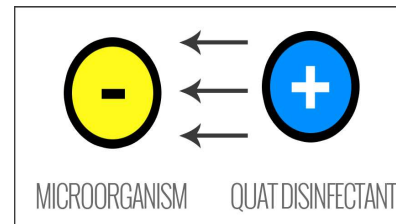
Hydrogen peroxide



$\text{H}_2\text{O}_2$



shutterstock.com • 672043801



# List N: Disinfectants for Use Against SARS-CoV-2

<https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>

- List N includes products that meet EPA's criteria for use against SARS-CoV-2, the novel coronavirus that causes the disease COVID-19.
- **Note: Inclusion on this list does not constitute an endorsement by EPA.**





# Disinfection Technologies: Surface Disinfection

## Hydrogen Peroxide Vapor

- Advantage: Simultaneous disinfection of room surfaces, furniture, and complex equipment
- Disadvantage: Potential damage of some plastic and polymer surfaces

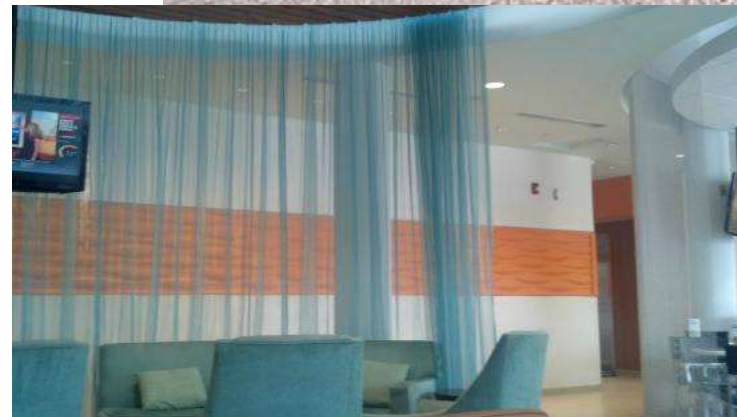


## Ultraviolet light

- Advantage: No residue after use, Simultaneous disinfection of room surfaces, furniture, and equipment
- Disadvantage: Destructive effect over time on plastics and vinyl's and fading of paints and fabrics



# Soft (Porous) Surfaces



# Hand Hygiene

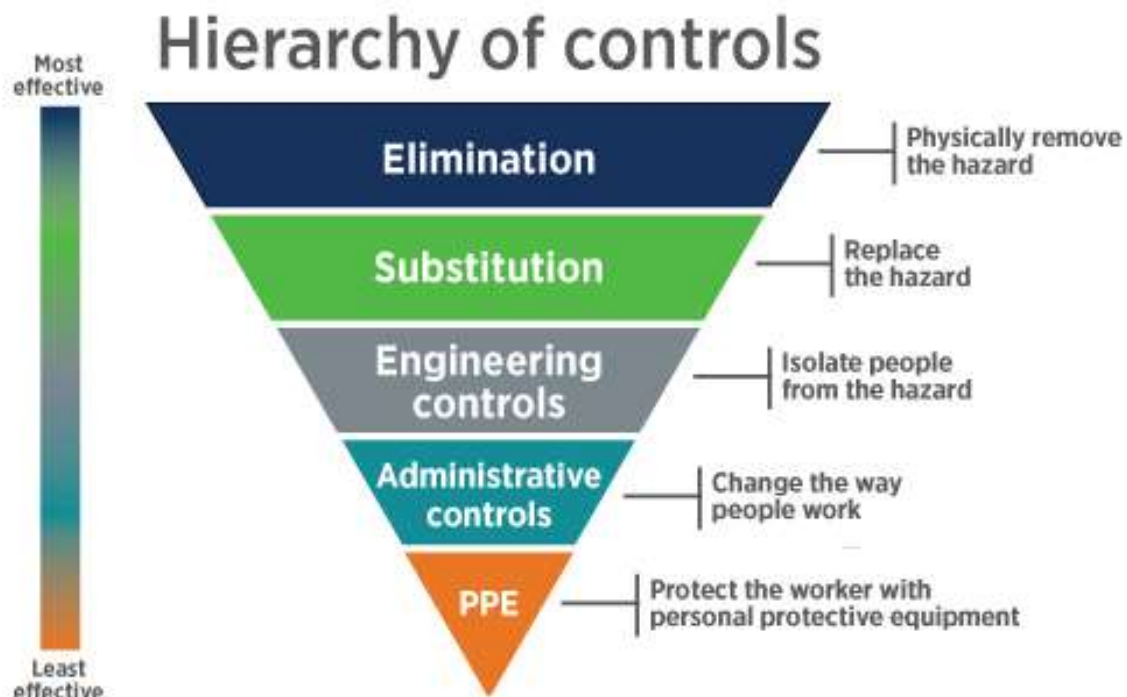


	Location on Hands	Density of Microorganisms
1.	Under the Fingernails	61,368 CFU/cm <sup>2</sup>
2.	Palm of Hand	847 CFU/cm <sup>2</sup>
3.	Back of Hand	250 CFU/cm <sup>2</sup>
4.	Between the Fingers	223 CFU/cm <sup>2</sup>
5.	Top of Fingernails	89 CFU/cm <sup>2</sup>

\*CFU = Colony-Forming Unit, is a measure of viable microorganisms (i.e. bacteria, fungi).



# Personal Protective Equipment (PPE)





# Thank You!



"The patient in the next bed is highly infectious. Thank God for these curtains."

# CleanHealth Environmental

## Risk Management Solutions

### Line of Services

#### Training Services:

- ❖ Environmental Hygiene Cleaning & Disinfection Training
- ❖ Healthcare Renovation Best Practices Training
- ❖ Infection Prevention (IP) Online Training & Webinars

#### Consulting Services:

- ❖ Environmental Hygiene Audits
- ❖ IP Cleaning & Disinfection Program Development
- ❖ Infection Control Risk Assessment (ICRA) Consulting

Shari Solomon, Esq.

301-377-9555

[solomon@cleanhealthenv.com](mailto:solomon@cleanhealthenv.com)

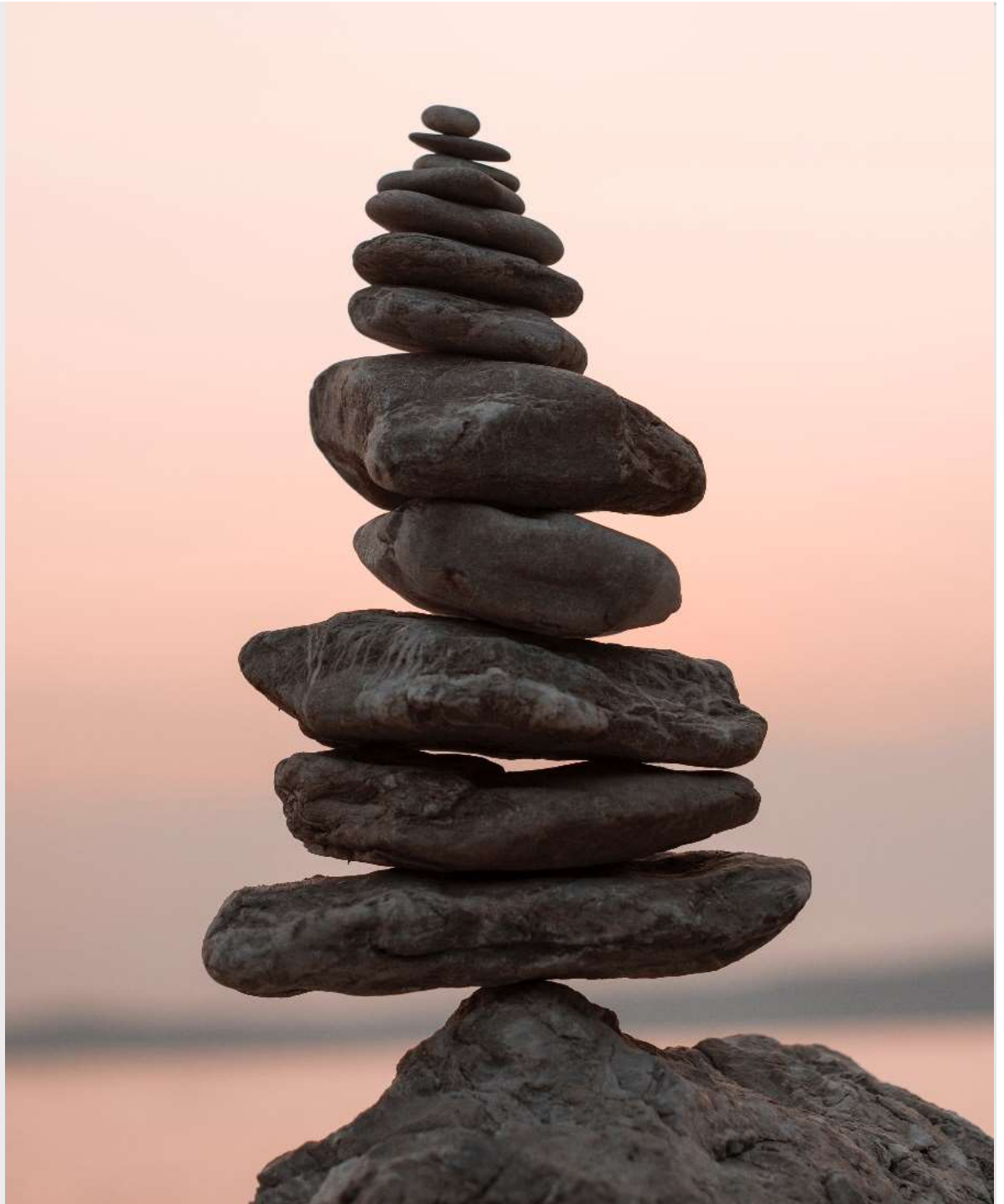
[www.cleanhealthenv.com](http://www.cleanhealthenv.com)

# Material Selection

Specification for Cleaning and Disinfection

## Balancing Criteria

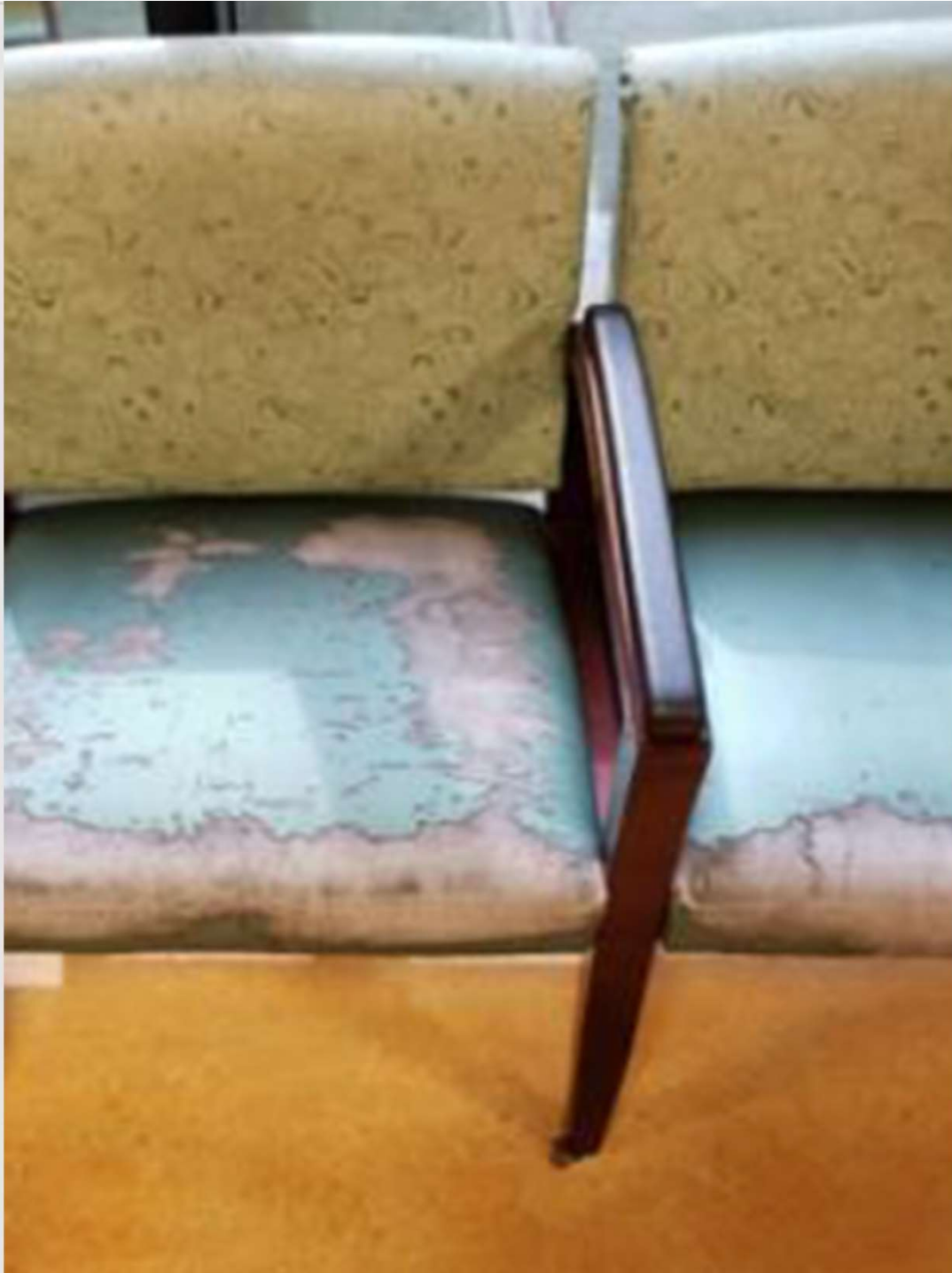
- Understand performance requirements.
- Multiple attributes – performance, sustainability, health & safety.
- Identify product service life.
- Match product application to appropriate product use.
- Understand impacts and requirements of cleaning and disinfection.



## The Notorious Chair Graveyard







## Complexity of Product Failure

- No material selection based upon single attribute.
- Perception of “sustainability” or “material health”.
- Performance requirements and minimum testing
- Real world conditions – cleaning and disinfection: kill time, staff time, FTEs, environmental services training/ education -



**Magnitude of Health and Safety Impacts**

# Durable Coated Fabrics Task Group

- American Academy of Healthcare Interior Designers (AAHID)
- Healthcare Designers (inhouse to healthcare systems)
- Healthcare Designers (firmed based)
- Environmental Services (EVS) – Cleaning / Disinfection Experts
- BIFMA (Business and Institutional Furniture Manufacturers Association)
- CFFA (Chemical Fabrics and Film Association)
- VI (The Vinyl Institute)
- Chemists / Technical Representatives
- Manufacturers / Distributors of Durable Coated Fabrics
- [www.durablecoatedfabrics.com](http://www.durablecoatedfabrics.com)



## Result of Collaboration of All Stakeholders

- Development of toolkit is underway
- Fabric selection guide
- Questions for distributors / manufacturers of product
- CFFA – Healthcare Standard – minimum performance standards
- Certification to Healthcare Standard
- Opportunity for replication of toolkit for other interior product families
- Resource development that now impacts ALL spaces – as a result of COVID-19
- [www.durablecoatedfabrics.com](http://www.durablecoatedfabrics.com)



## SARS-CoV-2 Surface Viability & Efficacy of a Disinfectant

### Material testing

#### Work surfaces

- High pressure laminate, Solid surface (acrylic, polymer with cupric oxide), Copper sheet, Quartz, Stainless steel

#### Flooring

- Vinyl (homogeneous & heterogeneous), LVT, Rubber, Carpet (residential and commercial), Wood Laminate

#### Vinyl Wall Covering

#### Non-woven textile (upholstery)

### Decon7 disinfectant efficacy against SARS-CoV-2

- 100% (full strength)
- 1:5 ratio diluted with water

### Methods

- Virus survival rates on materials
- D7 disinfection efficacy
  - Disinfection of materials at 1 (m), 3 (m), 5 (m), 10 (m) contact time

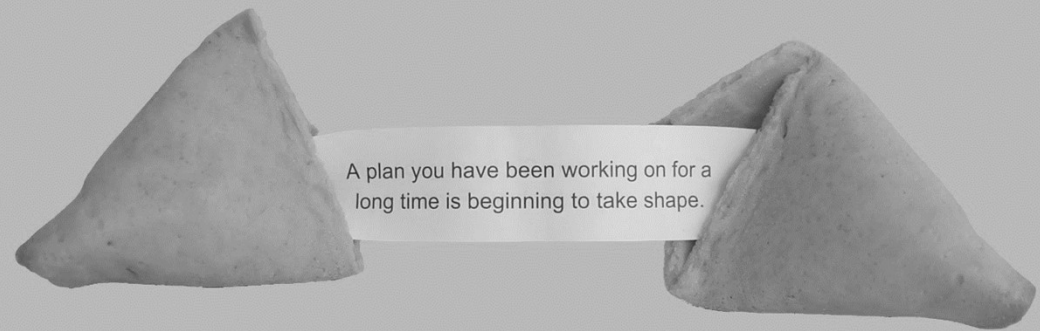
**Completion expected May 30, 2020**



# Re-opening

Process-based and Systematic

Plan  
Implement  
Maintain  
Revise



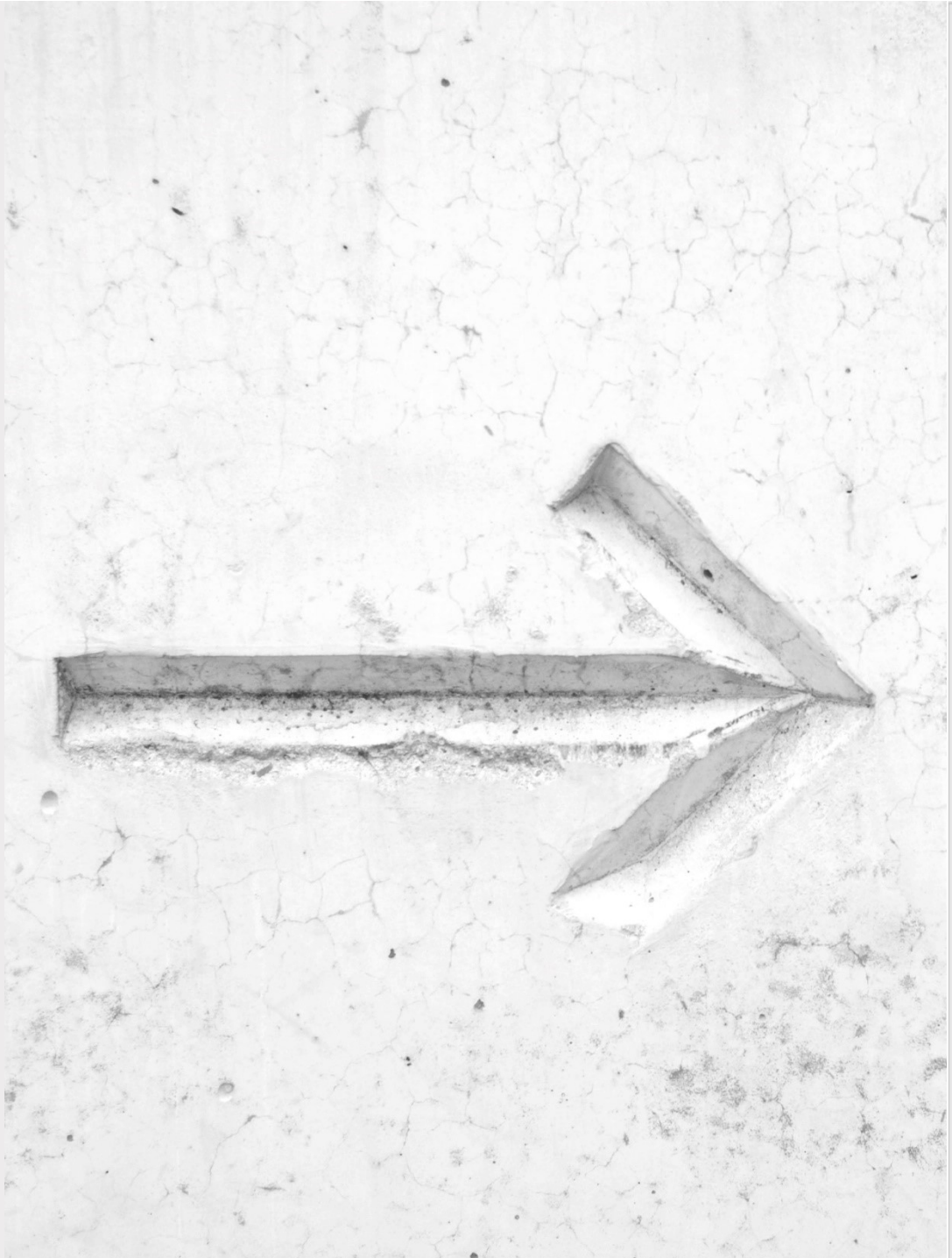
# Leadership Policy and Procedures





# Leadership Policy and Procedures

- Measures and approach to make occupants feel safe.
- Ask staff what they need.
- Establish communications plan.
- Make Evaluate requirements from point of arrival at work environment to point of exit of work environment.
- Verify with legal counsel to fully vet risk.
- Verify with insurance company to full vet risk.



# Leadership Policy and Procedures

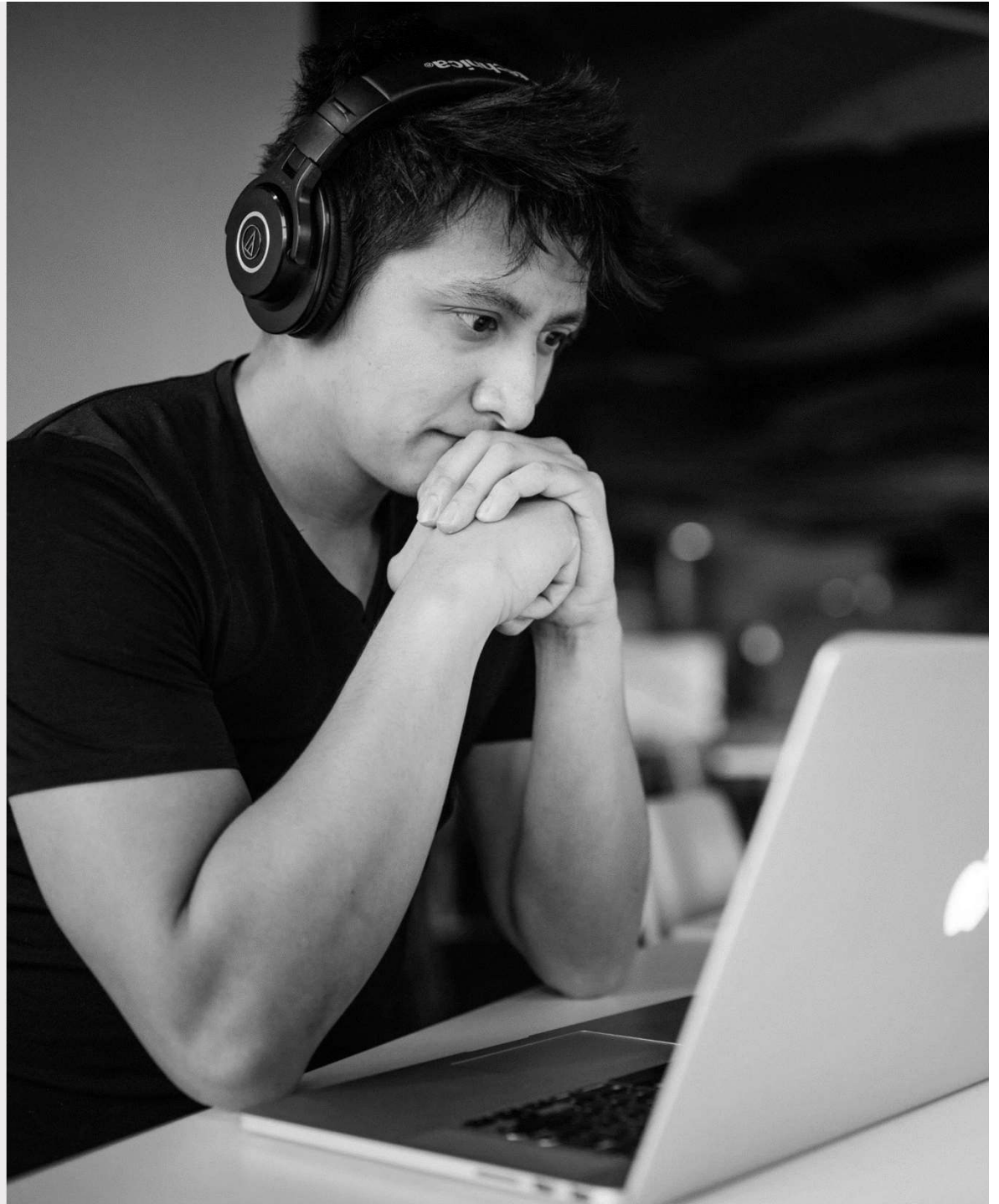
- Address the right questions to determine policy:
  - For testing option(s) for employees including frequency and reporting.
  - For wearing masks / PPE while at work and responsibility for provision and purchasing.
  - On scheduling and tele-work including reporting and accountability of staff.





# Leadership Policy and Procedures

- Address the right questions to determine policy:
  - On number of returning employees at any one time.
  - Establish and implement policy on cleaning and disinfection for EVS, staff, and visitors.
  - On education and training program for staff and timing.
  - On use of shared spaces.



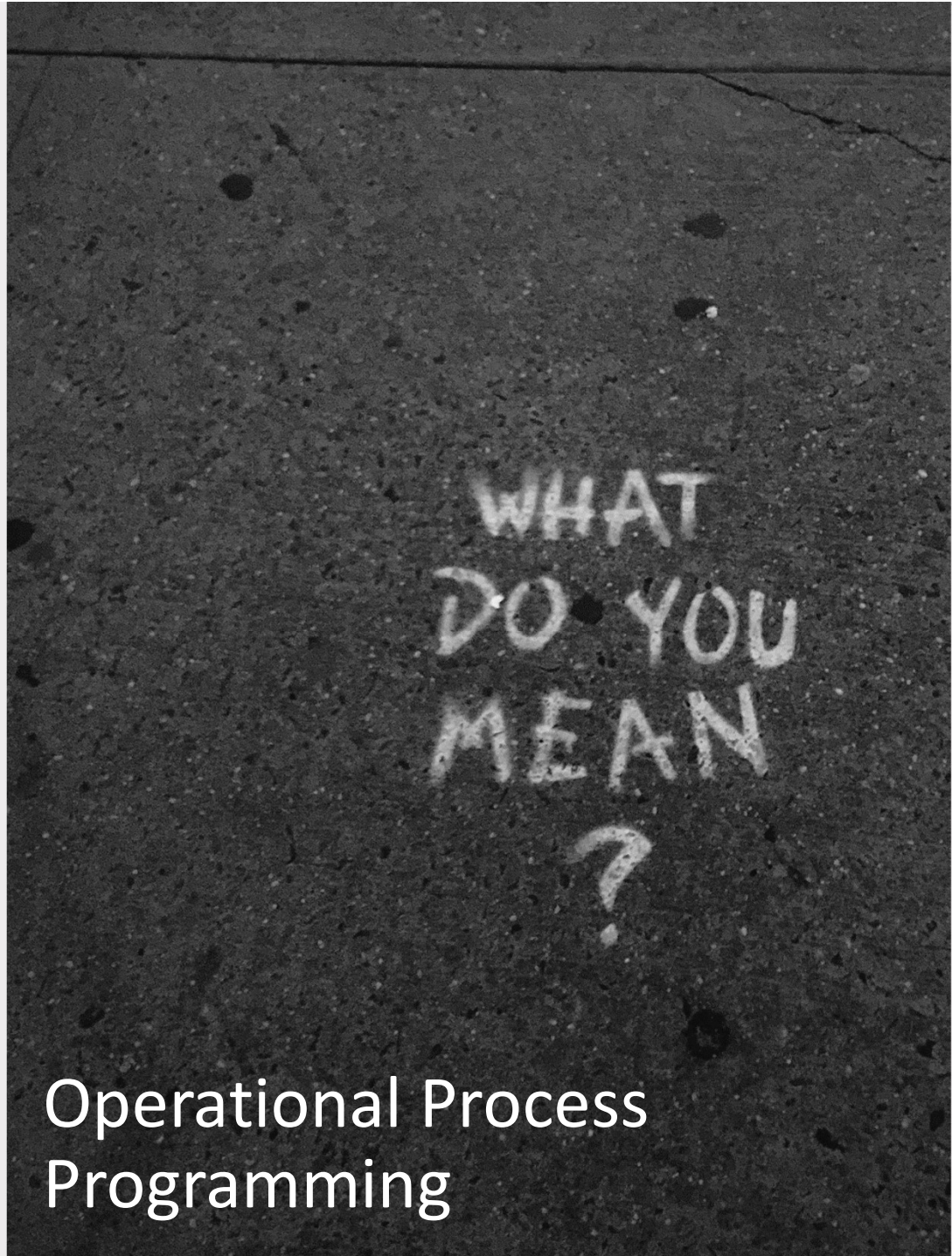
# A Day in the Life





# A Day in the Life

- Who?
- What?
- When?
- Where?
- How?
- Why?
- At each functional decision point from home to work and any stops and back home.



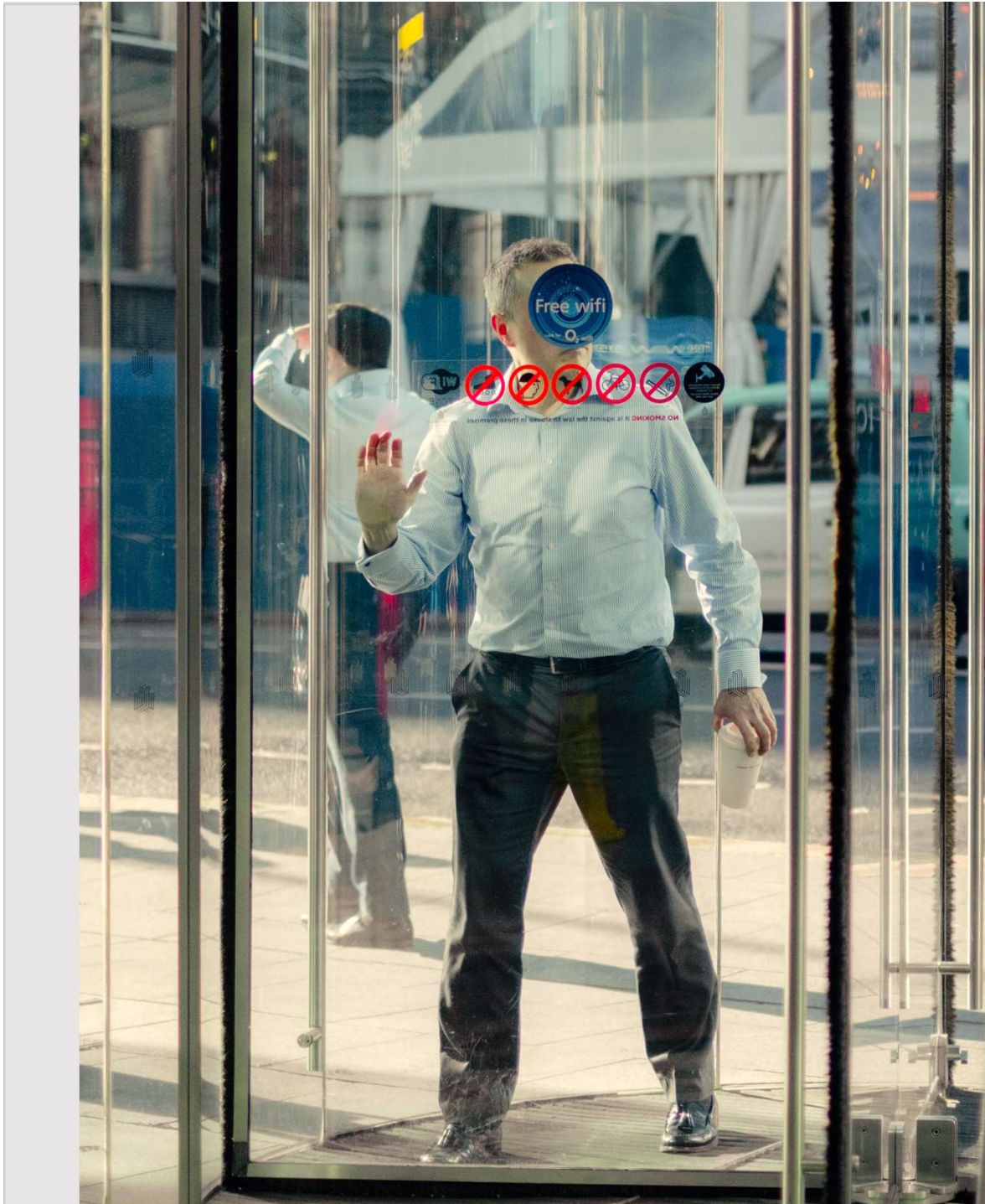
Operational Process  
Programming





How do you get to work?





## Operational Process Programming

- Entry Process – Arrival at Office:  
What do you need at that point?
  - Testing preparation?
  - Masks?
  - Gloves?
  - Sanitizer?
  - How are items available?

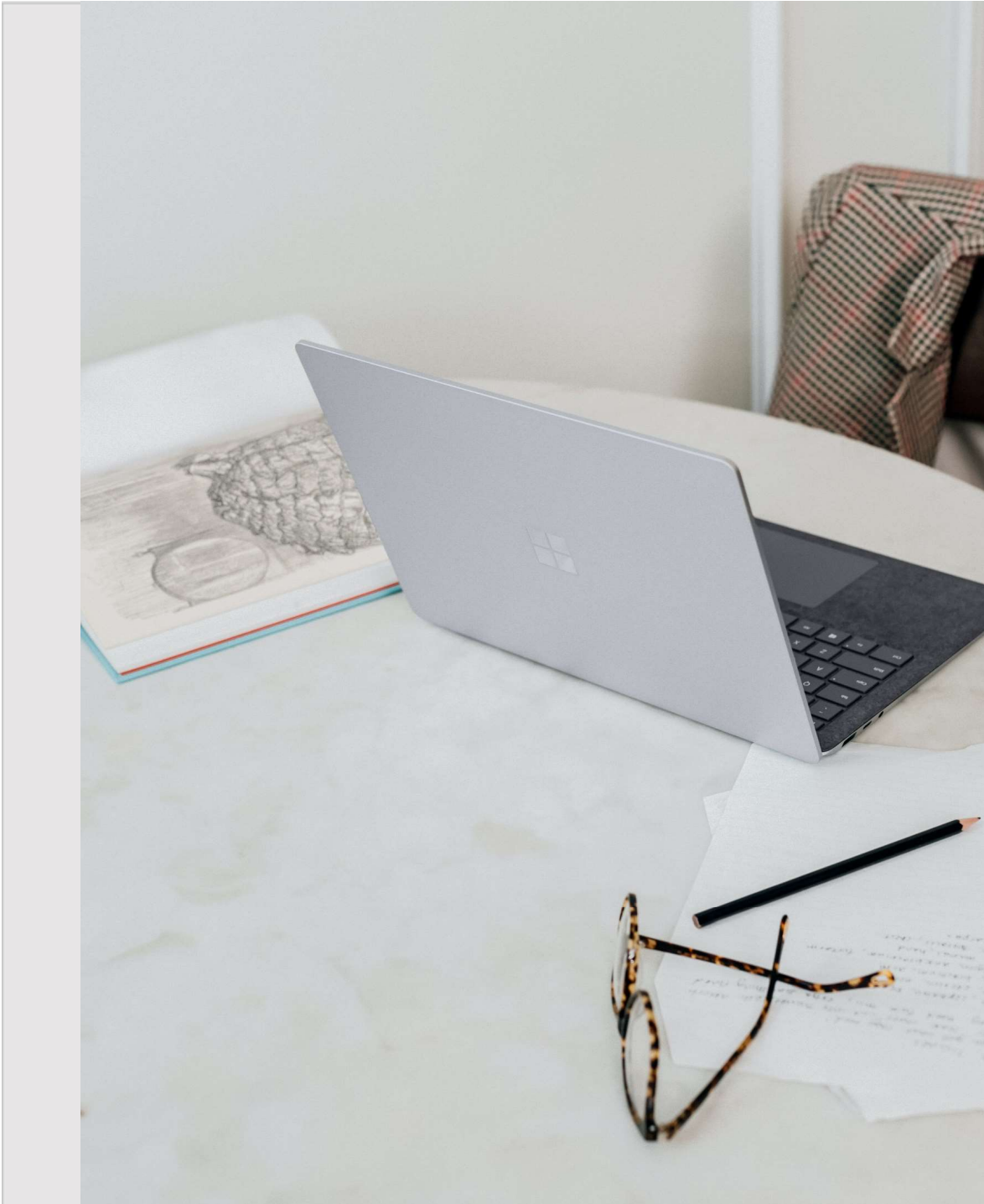


# Operational Process Programming

- Circulation pathways – what do you separate?
  - In-going
  - Out-going
  - Who has right of way?




A yellow stripe painted in the middle of a pedestrian street to help people comply with social distance guidelines in Aalborg, Denmark, May 4. Henning Bagger/Ritzau Scanpix/via REUTERS



## Operational Process Programming

- Determine dedicated workspace versus shared workspace.
  - What are the workstation needs?
  - Will staff each have a computer / laptop?
  - Will staff use own cell phones or desk phone?
  - What equipment is shared?
  - What storage space access is needed?





Personal  
Space

## Operational Process Programming

- Personal Storage – where do you put your lunch and belongings that are not for work surface?
  - Assigned open or closed cabinet?
  - Assigned refrigerator space?
  - Assigned lockable drawer?



Urinals, with some blocked off to maintain social distancing, on the M20 motorway in Maidstone, Britain, March 26. REUTERS/John Sibley

## Operational Process Programming

- Determine Service and Amenity Space Usage
  - Where are the bathrooms?
  - Who is responsible for cleaning and disinfecting the bathrooms?
  - Where are shared break and respite areas?
  - Are there outdoor areas?
  - Where are food service or food storage areas?





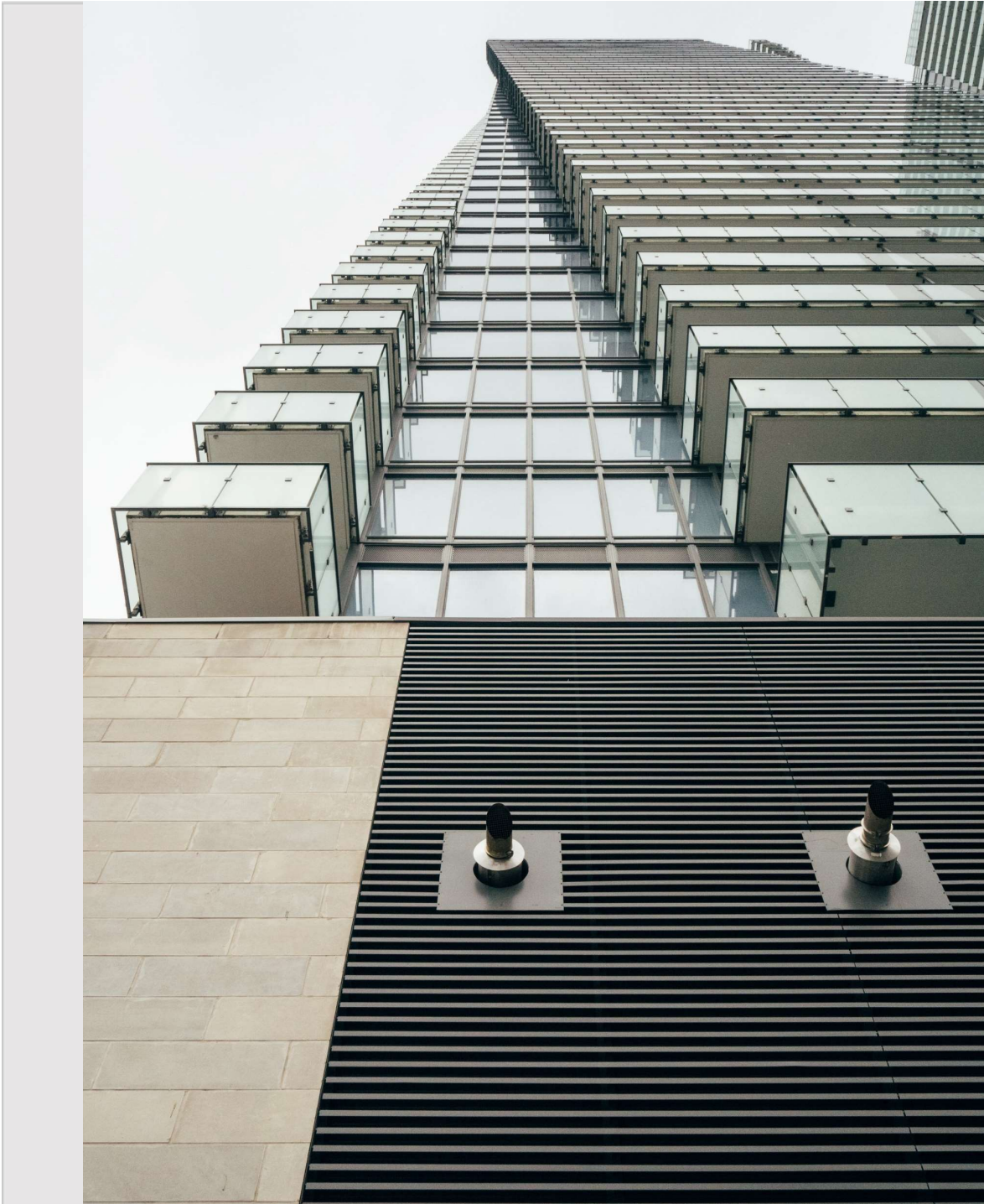
## Operational Process Programming

- End of Day Routine
  - How do you exit?
  - What do you need to exit?
  - Who is responsible for cleaning and disinfecting shared workspace?
  - What is everyone responsible for?



# Action Items





## Operational Process Evaluation

- Evaluation of mechanical systems.
- Verify supply chain for filters & delivery – MERV rating / HEPA filter if deemed recommended from Facility or Project Engineer.
- Use ASHRAE [Guidance for Restarting a Building](#) for complete listing.





A prototype office of international real estate company Cushman & Wakefield with a workplace design concept using the 'six foot rule' of social distancing in Amsterdam, May 6. Cushman & Wakefield/via REUTERS

## Operational Process Evaluation

- Redevelop layouts based upon number of employees and policies and procedures.
- Modular furnishings and evaluate materials used for panels; i.e. durable coated fabrics versus textiles.
- Materials to be selected to meet agreed upon cleaning and disinfection procedures.

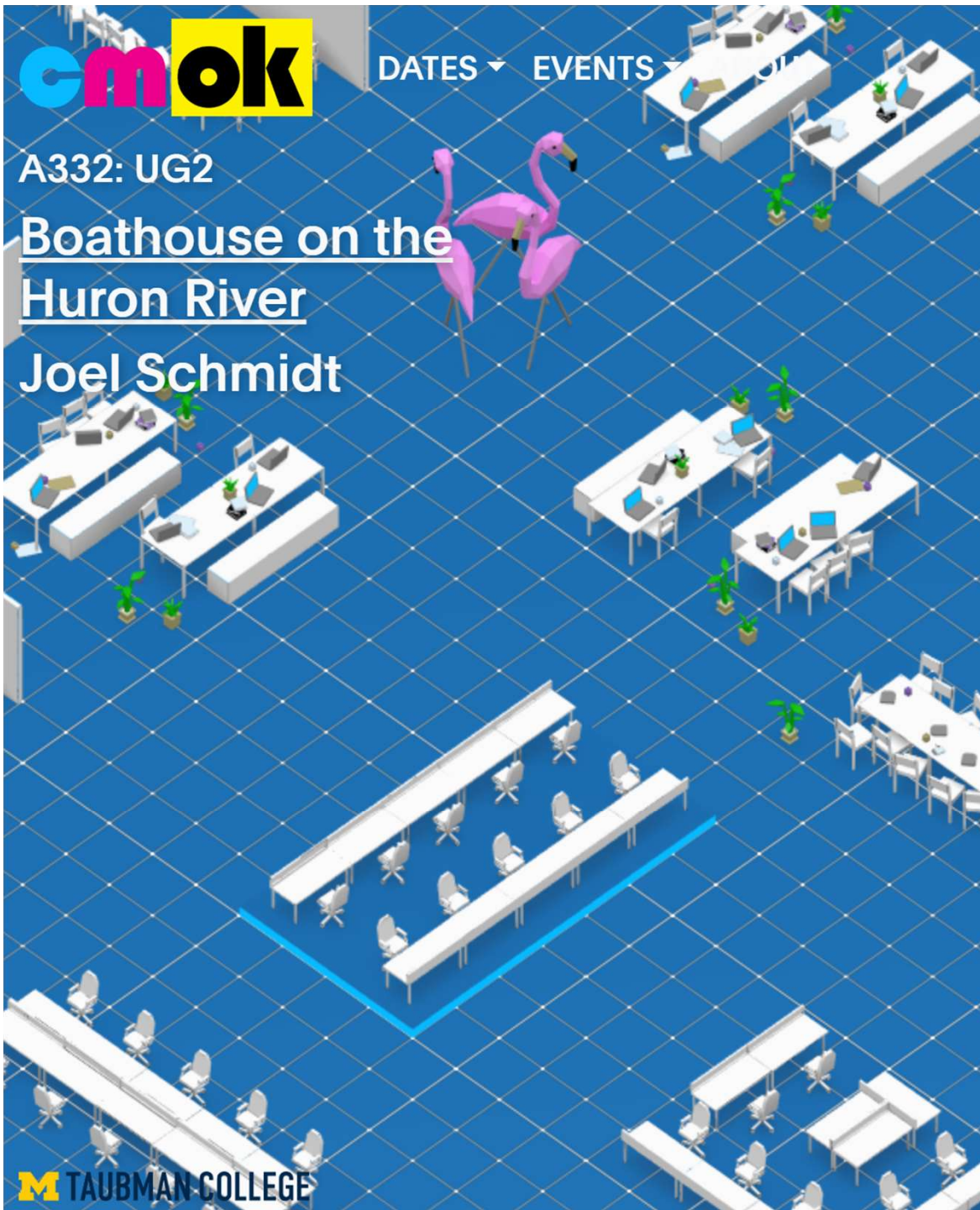


DATES ▾ EVENTS ▾

A332: UG2

## Boathouse on the Huron River

Joel Schmidt



**M** TAUBMAN COLLEGE

## Operational Process Evaluation

- Provide on-line method for scheduling and meeting staff – providing self-scheduling and impromptu meeting opportunities.
- Socialization, in addition to work and educational space.



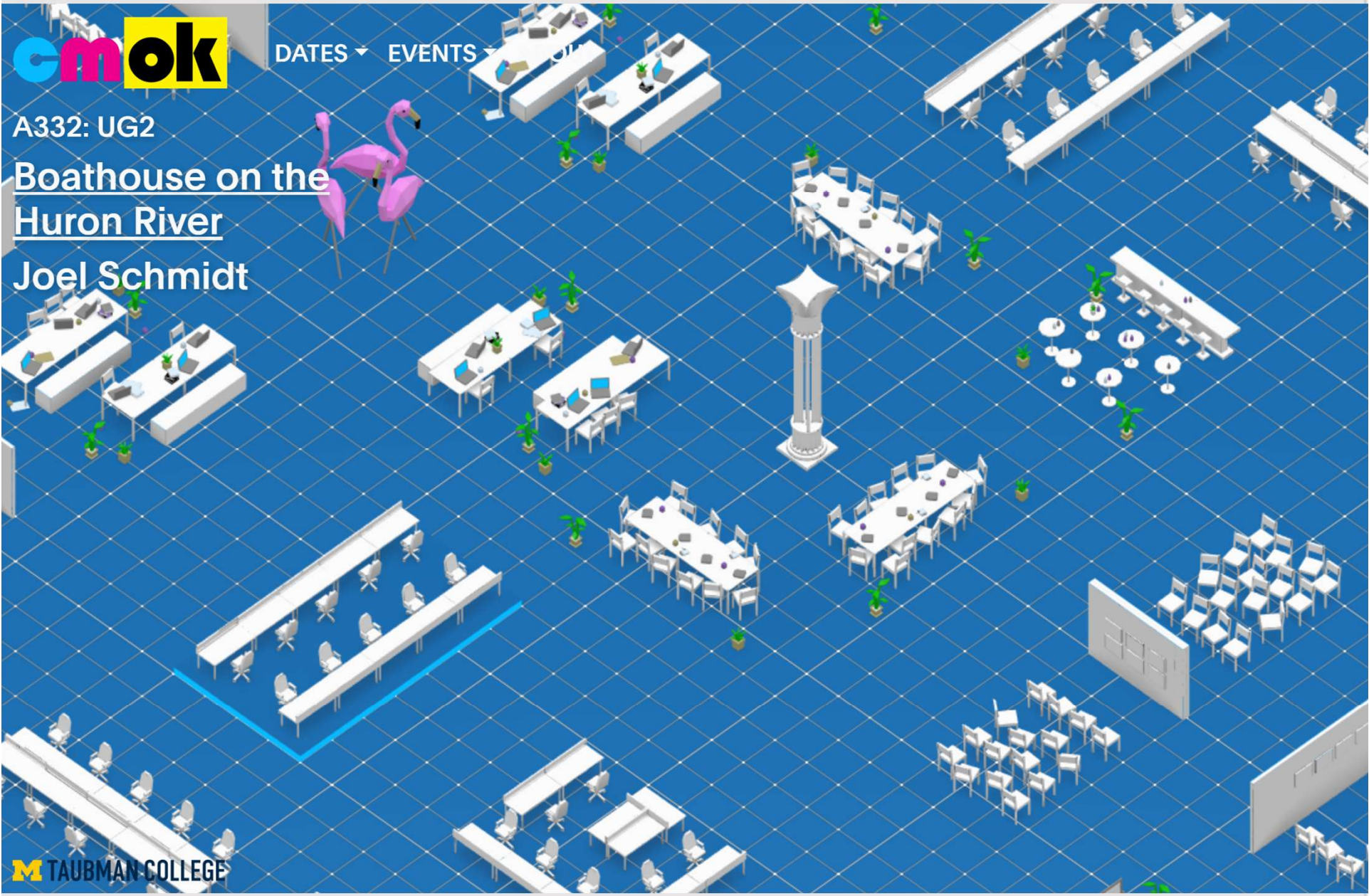


DATES ▾ EVENTS ▾

A332: UG2

# Boathouse on the Huron River

Joel Schmidt







## Operational Process Evaluation

- Create checklists:
  - Entry Checklist
  - Exist Checklist
  - Conference Space Usage
  - Shared Service Spaces
- Everyone needs to share in responsibility
- Lookout for others and be supportive with reminders – signage, etc.

## Break and Respite Space

- Provision of space or area to allow for downtime.
- Outdoor areas.
- Take a meditative moment.
- Don't freak out zone!



# Resources

Continually Updating & Evolving



# Review – Act – Repeat

- Centers for Disease Control and Prevention (CDC)
  - [Reopening Guidance for Cleaning and Disinfecting Public Spaces, Workplaces, Businesses, Schools and Homes](#)
- ASHRAE
  - [Building Readiness](#)
- American Industrial Hygiene Association (AIHA)
  - [Reopening Guidance for General Office Settings](#)
  - [Returning to Work: Rideshare, Taxi, Limo, and other Passenger Drivers-for-Hire](#)
  - [Reopening Guidance for the Restaurant Industry](#)
- BOMA
  - [Getting Back to Work: Preparing Buildings for Re-entry](#)
- AIA
  - [AIA Re-occupancy Assessment Tool V1.0](#)

## Related Webinars

- Green Building Initiative: Green Globes: [Health Care Operations: Implications & Actions from COVID-19](#)
- American Society of Interior Designers: ASID Academy: [Surfaces, Materials and Disinfection: COVID-19 and Beyond](#)
- Dupont / AECdaily Building Science Master Summit: [Sustainability in Mind: Navigating the Embodied Carbon Landscape](#)
- National Association of Manufacturers (NAM): [Public Health & Industrial Cleaning Best Practices – COVID-19](#)

# Personal Life Plan







Change the world – design has the power – go beyond –  
discover the possibilities – do great work – care for those  
around you!

Thank you!

CONTACT



## JSR ASSOCIATES, INC.

Jane M. Rohde, AIA, FIIDA, ASID, ACHA, CHID, LEED AP BD+C, GGA-EB  
Principal

### **Consulting Services**

Senior Living: Care Model, Operations, and Design

Healthcare: Care Population, Materials, and Surfaces

Sustainability: Guidelines, Standards, and Codes

Research: Products and Technology

### **Training and Education Services**

Continuing Education Development

Educational Content and Messaging

Customized Webinars and Live Presentations

---

[www.jsrassociates.net](http://www.jsrassociates.net) | [jane@jsrassociates.net](mailto:jane@jsrassociates.net) | 410-461-7763

# Q&A

THANK YOU FOR ATTENDING!