

IAQ Practitioner's Role in a Pandemic

Donald M. Weekes, CIH, CSP, FAIHA

Outline

- Background Regarding Pandemics and IAQ
- Roles and Responsibilities
- Hazards
- Recommended Controls
- Communication and Coordination
- Resources

Background Regarding Pandemics and IAQ

- SARs – March 2003
- Amor Gardens – Hong Kong
- Spread – Mainland China, Canada, etc.
- Severe Acute Respiratory Syndrome



Background

- Metropole Hotel – super-spreader site – Feb. 2003
- Doctor – One night stay
- Infected 7 who spread SARs to other countries (Vietnam, Canada, Singapore) – 4,000 cases



Background

- Avian Flu Outbreak – 2005
- Increase in human cases and deaths
- Spread from SE Asia to Eastern Europe
- NOT Considered a Pandemic
- Still present worldwide



AIHA Pandemic Response

- Multiple Committees
 - IEQ
 - Emergency Response
 - Biosafety
 - Respiratory Protection
 - Health Care



Publication – 2006 (Soon to be Updated)

- Roles and Responsibilities
- Hazards
- Recommended Controls
- Communication and Coordination
- Resources



Roles and Responsibilities

- Provide Expert Advice
- Make Recommendations on Control Measures
- Coordinate all Actions with Infection Prevention & Control Specialist
- Communication



Roles and Responsibilities

- Physics of Aerosols
- Chemistry of Disinfectants
- Physical Means of Virus Destruction
- Verify Effectiveness of Cleaning
- PPE Selection



Hazards

- Biological Agents Risk Groups (RG1-4)
- SARS CoV-2 – Which Risk Group?
- RG3 - High individual risk but low community risk
- RG4 – High Individual and community risk



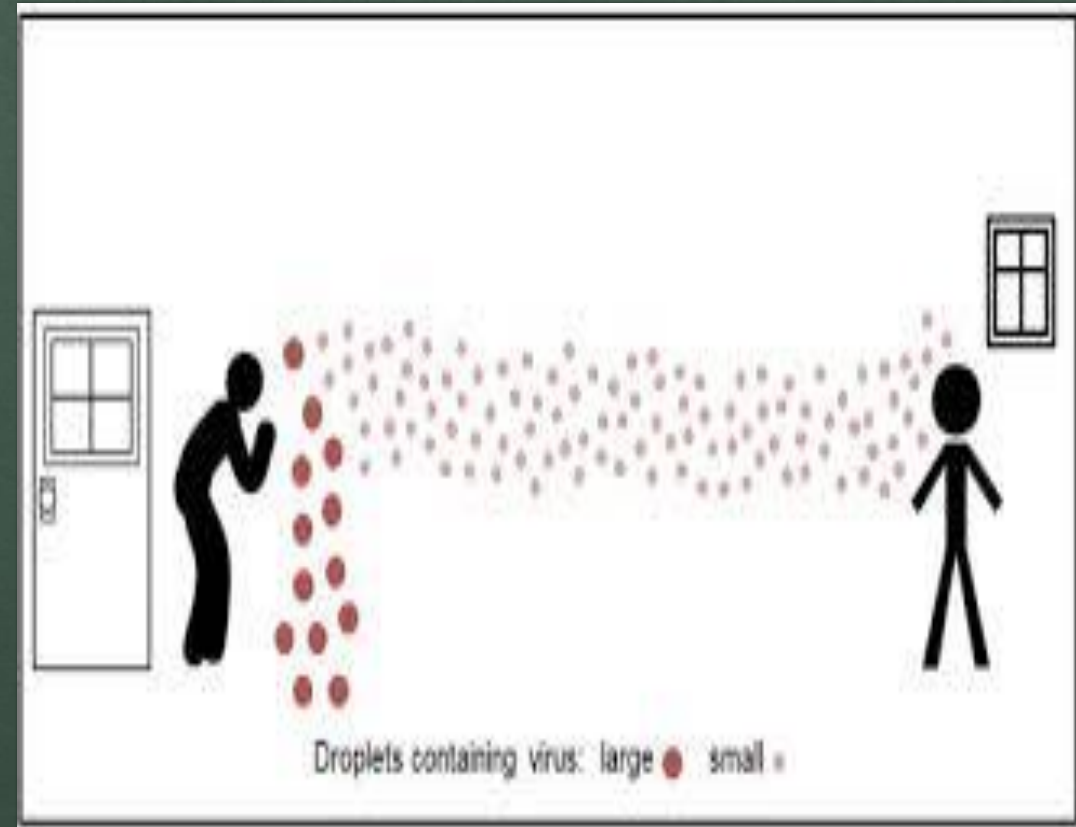
Hazards

- SARS-CoV-2: Classified as a RG3 Biological Agent
- RG3 Biological Agent “means one that can cause severe human disease and presents a serious hazard to employees and which may present a risk of spreading to the community, though there is usually effective prophylaxis or treatment available”.



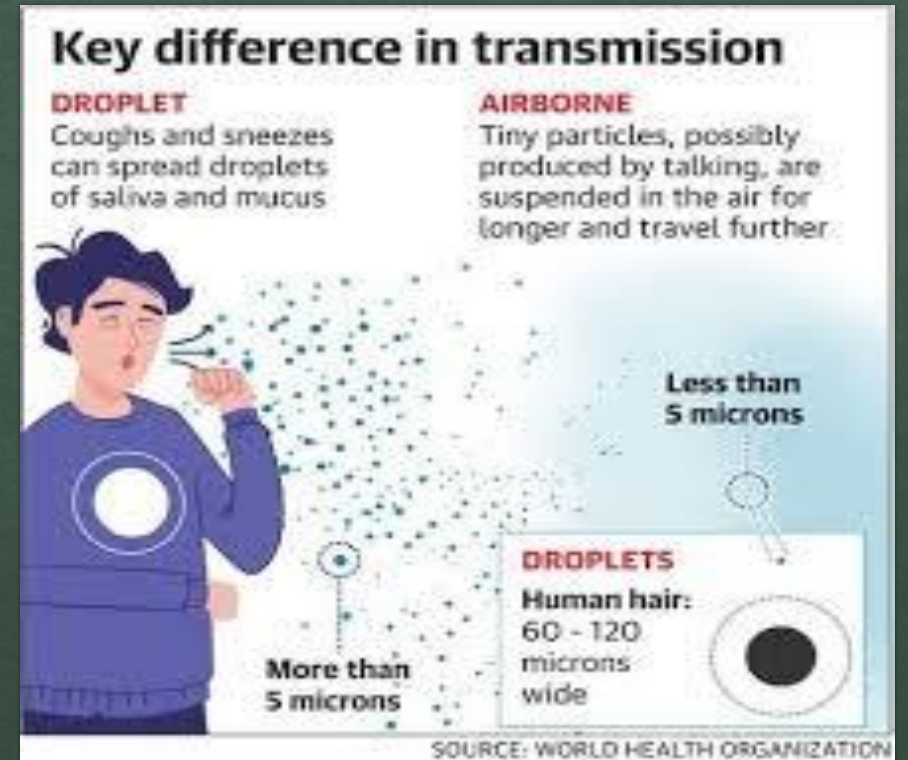
Hazards

- Infection Control Approach
 - Droplet Transmission
 - Contact Transmission
 - Airborne Transmission



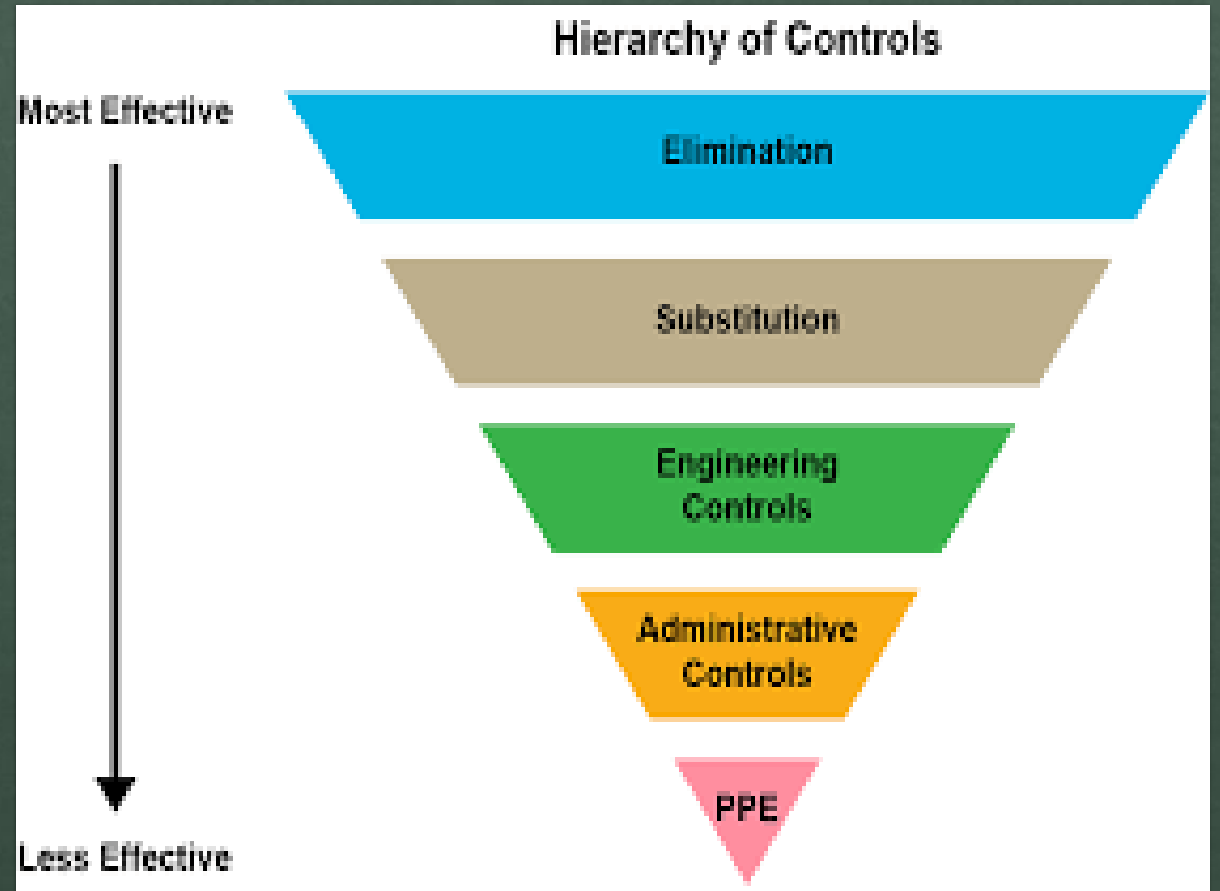
Hazards

- Airborne Transmission
 - More than 6 feet
 - Aerosolized
 - Respirable range
 - Contains virus
 - CDC, WHO Positions



Recommended Controls

- Administrative/Work Practices
- Engineering Controls
- Personal Protective Equipment (PPE)
- Control Banding



Administrative Controls

- Workplace Access/Security
- Screening Tool
- Social Distancing
 - 6 Feet?



Administrative Controls

- Cleaning, Disinfection & Sterilization
- Labor Relations
- Communication



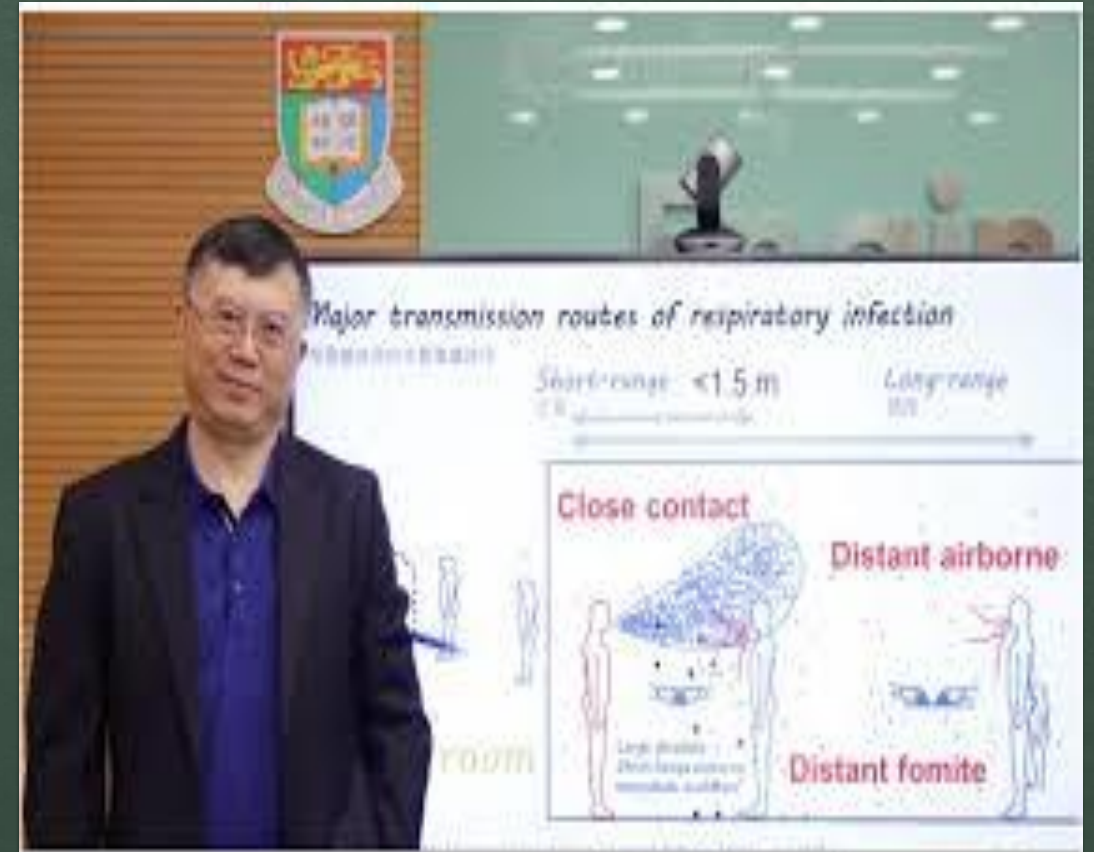
Engineering Controls

- Negative Pressure Rooms
- General Ventilation
- Specific Ventilation & Temporary Structures (including ventilators)
- O&M Procedures

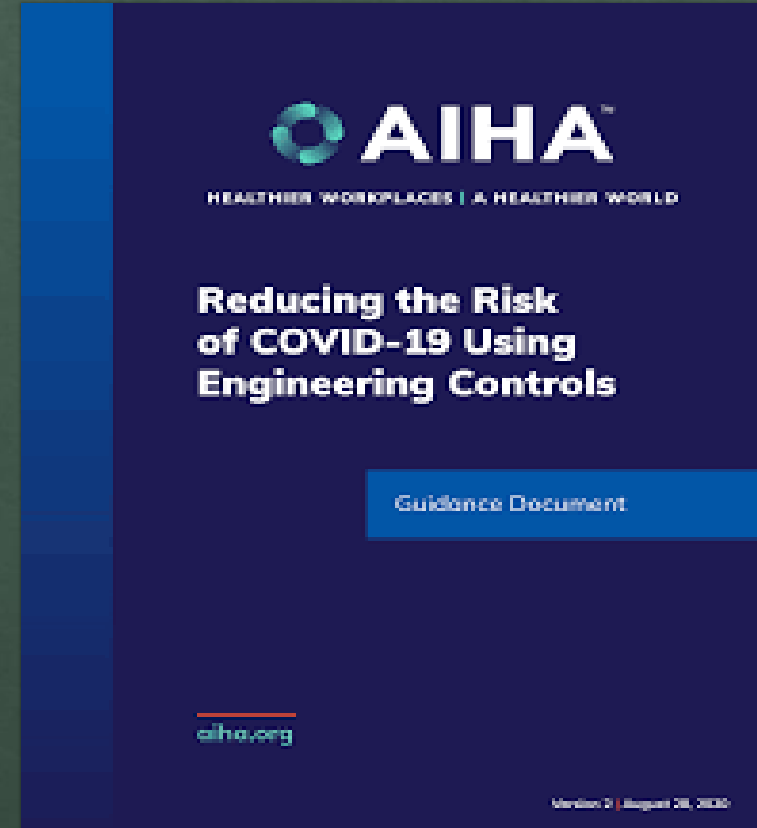
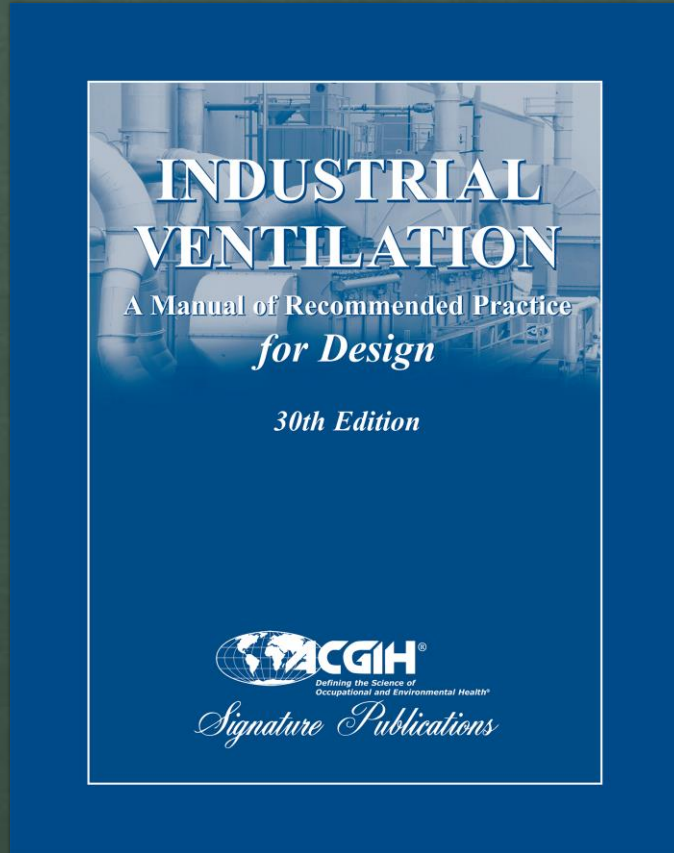


Airborne Transmission & Ventilation

- 6 foot rule – outdated
- ‘Poor’ general ventilation – increased possibility of COVID-19 infections
- Need – Increased air flow
- Problem: Not always possible in older buildings



Publications



Personal Protective Equipment (PPE)

- Two Approaches –
 - Industrial Hygiene – Protection of the Worker
 - Infection Control – Protection of the Patient
 - Complementary?



Respiratory Protection

- Three Types
 - N95
 - Surgical
 - Face (Cloth) Masks or Covers



Control Banding

- Control Banding – Definition
- Technique used to guide the assessment and management of workplace risks
- Focuses resources on exposure controls and describes how strictly a risk needs to be managed
- Control Banding (CB) is NOT a replacement for experts in occupational safety and health nor does it eliminate the need to perform exposure monitoring.
- CB recommends exposure monitoring to follow the CB intervention to ensure the installed controls are working properly

Why Control Banding for COVID-19?

- Sietsema et al. (2019) - a control banding method for aerosol-transmissible diseases, such as COVID-19, for two reasons:
- (i) to identify those jobs at highest risk; and
- (ii) to encourage the use of source and pathway controls before resorting to personal protective equipment (PPE)(receptor control), for the goal of conserving PPE for those in the highest risk categories.



Brousseau (2020) - Control Banding – COVID-19

- Identify Organism
Toxicity – COVID-19 –
Risk Group 3
- Determine Exposure
 - Likelihood of interaction with infected persons
 - Total duration of time of exposure
- Three Types of Controls
 - Source
 - Pathway
 - Receptor

Control Methods Should Follow a Hierarchy

BEST

FIRST - Source Controls

- isolation, social distancing

NEXT - Pathway Controls

- local exhaust ventilation, barriers

LAST-Receptor Controls

- personal protective equipment



WORST

IAQ & Energy

CONFERENCE

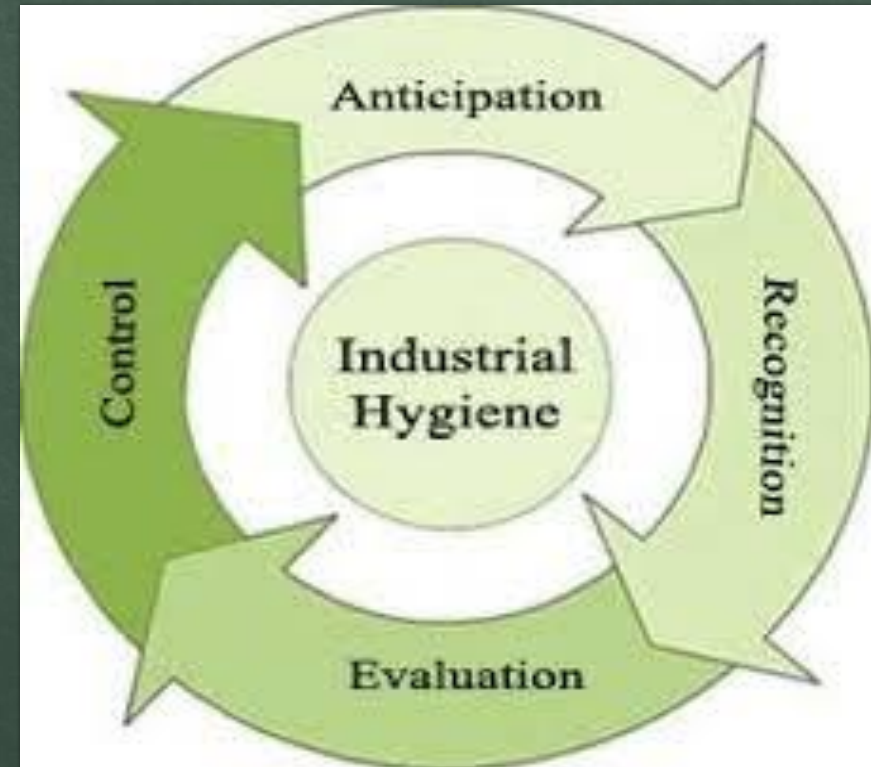
Coordination with Infection Control Specialists

- Infection Control Specialists – Doctors, microbiologists, nurses, epidemiologists
- Evaluation, identification, prevention & control of infections



Coordination with Infection Control Specialists

- IH Role – Infection Control
 - Make IH Expertise Available
 - Risk Communication – Workers, Community
 - Develop Control Strategies, including ventilation, PPE, Distancing, etc.



Resources

- ACGIH - <https://www.acgih.org/coronavirus>
- AIHA - https://www.aiha.org/public-resources/consumer-resources/coronavirus_outbreak_resources
- ASHRAE - <https://www.ashrae.org/technical-resources/resources>

Resources

- WHO - <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
- CDC - <https://www.cdc.gov/coronavirus/2019-ncov/index.html>
- FDA - <https://www.fda.gov/emergency-preparedness-and-response/counterterrorism-and-emerging-threats/coronavirus-disease-2019-covid-19>

Resources

- Twitter Accounts
 - Linsey Marr - @linseymarr
 - Rich Corsi - @RichCorsi
 - Kimberly Prather - @kprather88
 - Cath Noakes - @CathNoakes
 - Shelly Miller - @ShellyMBoulder



Presenter Contact Information

Donald M. Weekes, CIH, CSP

ACGIH

don.weekes1953@gmail.com

www.acgih.org

613-853-0244

Twitter: @donweek

Disclaimer

- This presentation is not intended to be a comprehensive program covering all aspects of this topic.
- All are participants are encouraged to read and follow applicable standards, codes and regulations related to this topic.
- The views and opinions following are the presenter's opinions and not necessarily the official position of the Maine IAQ Council, IAQnet LLC, or Healthy Indoors.