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Safely going back to work and school during a pandemic

This week we welcomed two leaders of the ACGIH to discuss their new website for COVID resources. We looked at the available resources and discussed going back to work and school with the Chair of ACGIH's Pandemic Response Task Force Lisa Brosseau, ScD, CIH and the board liaison to the task force Tom Peters, PhD, CIH.

Dr. Peters is a Professor at University of Iowa Department of Occupational and Environmental Health and a member of the ACGIH Board of Directors. He is an engineer trained in aerosol physics who applies his efforts to the study of human health as it relates to particulate exposures. Dr. Peters develops novel strategies to quantify the morphology, concentration, and size of airborne particles. He uses these strategies to understand and control contaminants in diverse occupational and environmental settings.

Dr. Brosseau, now retired, was a professor at the University of Illinois at Chicago (UIC) School of Public Health from 2015 to 2018, where she was director of the Illinois Education and Research Center, which supported graduate and continuing education for occupational health and safety professionals and community outreach activities. She was also director of the UIC Center for Healthy Work. Dr. Brosseau has authored more than 100 peer-reviewed publications and book chapters, delivered numerous platform research presentations, and has been an invited speaker at numerous local, national and international conferences and workshops. She has written several articles for the University of Minnesota Center for Infectious Disease Research and Policy (CIDRAP) focused on aerosol transmission and respiratory protection for healthcare and other workers during outbreaks and pandemics.

Nuggets mined from today's episode:

Dr. Peters, please tell us a little about your position at U of Iowa?

He is committed to mitigate adverse health outcomes arising from community or workplace exposures to airborne particles. Service is a component of his position including serving of the board of ACGIH and maintaining certification of the university's industrial hygiene program.

Are classes all back to in person now?

Learning varies from 100% classroom – 100% online.

Are students required to be vaccinated if not will they be at some point?

Vaccination is not mandated.

Review of the new ACGIH website with Dr. Brosseau:

Dr. Brosseau- Most groups now seem to be on board with how the disease is transmitted. Following is what seems to be agreed upon:

“The principal mode by which people are infected with SARS-CoV-2 (the virus that causes COVID-19) is through exposure to respiratory fluids carrying infectious virus. Exposure occurs in three principal ways: (1) inhalation of very fine respiratory droplets and aerosol particles, (2) deposition of respiratory droplets and particles on exposed mucous membranes in the mouth, nose, or eye by direct splashes and sprays, and (3) touching mucous membranes with hands that have been soiled either directly by virus-containing respiratory fluids or indirectly by touching surfaces with virus on them.”

The CDC recently recognized that fomite transmission is very infrequent. Dr. Brosseau advised that aerosol guidance from the CDC and the WHO was slow in coming. These delays put workers at significant risk.

Website - <https://www.acgih.org/covid19/>

How to Use These Resources: We recommend reviewing these fact sheets in the order they are presented.

1. The fact sheet on **SARS-CoV-2 Aerosol Inhalation** illustrates how people generate infectious particles, what happens to these particles over time and how people within a space can be exposed by inhalation. It should be useful in explaining how this mode of transmission differs from droplet deposition or touch.

Dr. Brosseau added these comments:

- Documents have QR codes.
- The combination of EXPOSURE and TIME= HIGHER RISK
- Contagious virus kinetics: most infectious when symptoms start and for 8-10 days afterwards. Asymptomatic shed virus 2-5 days after infection and for 15 days. Everyone can be infectious!

2. The fact sheet about **Control Banding** explains a qualitative approach to risk and exposure assessment that can be used to determine the degree of risk (control band) associated with a particular job, workplace or activity. The band describes a control hierarchy that prioritizes source and pathway over receiver controls.

Dr. Brosseau added these comments:

- On the control banding chart SARS-CoV-2 is a Risk Group 3 organism, which means it has serious health outcomes and a lack of good interventions.
- Hierarchy of controls, example bus driver. Limit number of passengers, temperature screening (done in China), redesign bus, back to front airflow endangers the driver. Driver has separate airflow or wears a fit tested N95 respirator.

3. The fact sheet on **Ventilation for Aerosol Transmissible Pathogens** illustrates why it's important to consider airflow patterns inside occupied spaces in addition to the performance of the building ventilation system.

Comments from Dr. Brosseau and Dr Peters:

- Airflow patterns matter both above and under the ceiling.
- Most HVAC systems are designed for comfort and general IAQ. Controlling particulate matter and viruses isn't a consideration.

- Below ceiling airflow is important. Air enters and air exits within a short zone.
 - Fine particle concentrations can increase over time.
 - Avoid: short circuiting air and dead air zones.
 - At U of Iowa facilities managers, maintenance and IHS assessed classrooms according to ASHRAE guidelines. Measured ACHs. ACHs aren't the only important consideration. Most changes were made above the ceilings. Used a smoke generator to visualize air patterns and see where air was short circuiting. Get airflow moving in the right direction. Potential for big payoffs!
 - One short term solution could be to add portable HEPA air cleaners inside spaces, to clean the air and improve airflow patterns.
 - One longer term solution could involve relocating inlets and outlets to improve air mixing and air removal.
 - Much remains to be learned.
4. The fact sheet on **Respirators, Surgical Masks and Face Coverings** illustrates their differences as source control and personal protection. We hope it will be useful in demonstrating the differences in these three options and the importance of providing respirators for workers who have many hours of exposure to potentially infected co-workers, patients or members of the public.

Comments by Dr. Brosseau:

- Masks are not magical.
- Workers need respirators not masks.
- Masks have inward and outward leakage. Surgical masks may prevent outward leakage of large droplets. They are less effective at preventing the release of small particles.
- Exposure time is critical to infectious dose.
- Only fitted respirators provide good inward and outward leak protection.
- Advises the public not to rely just on cloth masks for protection.
- Many workers are not vaccinated. Unvaccinated workers should wear fit tested respirators if source and pathway controls do not offer enough protection.

- The public can wear face coverings, but they shouldn't rely on them in enclosed spaces for long periods of time.
 - The CDC didn't talk to scientists before changing its recent guidelines about face coverings for vaccinated people.
 - Face coverings may be useful in reminding people we still are in the midst of a pandemic.
 - The 15 minute exposure time that appears in various guidance documents is simply a rule, not backed by research.
5. The **Health and Safety Programs for Pandemic Organisms** fact sheet describes the most important elements and features of a written health and safety program for aerosol transmissible organisms like SARS-CoV-2.
- Dr. Brosseau's comments:
 - Health and Safety programs protect workers.
 - Communication and Training are important for all elements of a program: Engage, Access, Control & Review
 - Hoping for OSHA Temporary Standard for Workers to be released.

Other comments from Dr. Peters:

- Opined that acceptance of aerosol transmission of Covid-19 is a game changer.
- When asked to opine on if it was a good idea to have outdoor dining in plastic igloos during the winter? Close proximity, no ventilation, not a good idea!

Round-Up

Knowing what we know now, would you have advocated for opening up schools sooner?

Dr. Brosseau- Schools are workplaces. Some of the student population is at high risk. It is possible to make schools safe. People think I'm an "anti-masker". As an IH I'm trained to protect vulnerable populations. Now the government is opining that the vaccinated don't need to wear masks. People are confused, they were never provided with adequate information about how face coverings work. It is possible to open schools safely, but only with appropriate controls, such as better ventilation under the ceiling.

Dr. Peters- My wife is a kindergarten teacher. Everything was left to the schools to figure out for themselves. We know more about how the infection spreads now. We have identified good controls. It would have been better to have opened the schools sooner.

Global Restoration Watchdog, Pete Consigli

- Appreciated practical and common-sense approach taken by the ACGIH Pandemic Response Task Force.
- Was happy to hear Dr. Brosseau opine on masks, her comments were like those made in a [previous show with Marilyn Singleton, MD, JD](#)
- Suggested that those unfamiliar with industrial hygiene visit the websites for AIHA and ACGIH at:
- <https://www.aiha.org/>
- <https://www.acgih.org/>
- Further suggested for IAQ practitioners, property restoration professionals and anyone involved in working a multi-disciplinary project involving a 3rd party IEP with a CIH credential, learn to better understand how they make their decisions based on their training and adherence to their ethical cannons and professional principles of the profession of industrial hygiene.
- For better insights, review the joint code of ethics updated in 2017 by AIHA and ACGIH:

<https://aiha-assets.sfo2.digitaloceanspaces.com/AIHA/resources/About-AIHA/Membership-Ethical-Principles.pdf>

RadioJoe and the Z-Man congratulate the ACGIH on their useful new Covid 19 guidance documents.

<https://www.acgih.org/covid19/>

Z-Man signing off

Trivia Question:

What is thought to be the first incidence of corona virus in the US?

Answered by: Frank Mortl