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The facts about building re-entry after COVID-19 as it relates to the health and safety of workers.

Q&A

Dr. David Krause, founder of Healthcare Consulting and Contracting (HC3), is a Certified Industrial Hygienist and Toxicologist, and Chairman of the AIHA Indoor Environmental Quality Committee with 25 years of experience in public health, occupational hazard assessments, and indoor air quality. He answers questions related to re-entry into workplace buildings.

Questions:

Q: What are the top industries that closed and will need to plan for re-entry that have been the most affected by COVID-19?

A: **Hotels, resorts, cruise ships, call centers, manufacturing facilities, office buildings, strip malls, fitness centers and gyms, salons, out-patient surgery and other elective-medical office buildings, dental offices, entertainment (movies, game rooms, water parks), and beach-front shops.**

Q: Do you have any comments about the closing of meat packing facilities, the industry and how they should re-open?

A: **Several concerns with multiple regulators and inherent risks already present. However, I pose the question of whether public health agencies have examined the possibility of animals (Swine, Cows, Chickens) as possible sources of the virus. This is a zoonotic pathogen and the unusual number of infected workers should beg the question.**

Q: What are your biggest concerns about building re-entry and worker health and safety after COVID and buildings being empty for months?

A: **Waterborne pathogens such as Legionella and Pseudomonas have likely colonized many building water systems that have sat stagnant for weeks to months in the warm conditions. Inhaling the aerosols from sinks, showers, and hose-bibs, as well as cooling tower mist could cause numerous outbreaks of respiratory disease that will initially mimic COVID-19.**

Q: What are examples of the risks to workers if a building does not prepare a facility that has been empty for months?

A: 1) If HVAC systems were not operated in a way to control relative humidity, some buildings may be growing mold. 2) Cooling Towers not properly operated, disinfected, and cleaned could pose a risk of Legionella growth. 3) Water heaters and potable water systems in buildings, after sitting stagnant and un-flushed, lose their residual chlorine. This condition allows Legionella bacteria in the water to grow unchecked and can lead to an outbreak of Legionnaires' disease. Because pneumonia caused by Legionella presents with most of the same symptoms as COVID-19 emergency rooms may assume it is a resurgence of the pandemic and not offer the correct treatment.

Q: Should workers be asking their employer if the building has been properly prepared for re-entry? If so, what are the most important questions?

A: Yes. Ask if the building water system has been flushed and disinfected after sitting stagnant. Ask if the building has been conditions during the shut-down and if inspections for mold have been performed.

Q: What steps do companies need to take to reopen a building, school, other facility after being empty for months during COVID-19?

A: Schools are uniquely familiar with this process, so probably have standard operating procedures in place. Full function of all building safety (fire, smoke, security, and alarm systems), Inspection and function test of air conditioning and ventilation systems, and look for infestations of rodents, bats, pigeons, and other pests. Flush and possibly disinfect all cold and hot water systems and water heaters to remove waterborne bacteria that will likely be present.

Q: Can someone die from re-entering and working in a sick building?

A: Unlikely, but these are uncharted waters. Carbon monoxide from malfunctioning combustion appliances (water heaters or boilers) is the most acute hazard that can be deadly, so check all CO sensors and alarms. If the building water system is colonized and an outbreak occurs, the fatality rate of those who contract the disease is typically 10% in non-healthcare settings.

Q: Are there any federal or state-wide regulations/safeguards currently in place that buildings must follow?

A: None that I am aware of. NIOSH is seeking input though.

Q: Are there any signs or symptoms someone would start showing, if their building has not been properly re-opened (i.e., how would you know?)

A: Allergies, eye and respiratory irritation, or even infections from mold growth. Outbreaks of Legionnaires' disease cause pneumonia, shortness of breath, fever and confusion. Outbreaks of

Pontiac Fever, also caused by Legionella bacteria in water cause “flu-like” illness in a large part of the workforce, but do not cause severe illness.

Legionnaires disease and risk of exposure to mold are mentioned, but to complete that story for the media, we should explain what this means for the health of those re-entering these buildings. As stated, “Coincidentally, symptoms of Legionnaires’ disease are similar to those of COVID-19, both typified by fever, cough, and shortness of breath.” Legionnaires’ disease is a form of atypical pneumonia, and the same people who are high-risk for COVID-19 are also at greatest risk of Legionnaires’. I would imagine this would include former COVID-19 patients, who seem to have longer lasting residual complications. So even if you have survived COVID-19, you might be at risk of another upper respiratory infection by going back to work, if your building isn’t sanitized and disinfected properly. Damage to the respiratory system from COVID-19 would likely make a person more susceptible to Legionella infection. When building water systems allow an outbreak to occur, people who inhale water droplets (aerosols) can contract Legionnaires’ disease from 2-14 days after exposure.

Q: In your opinion, what are the most important messages you would like to share with the media about re-entry and preparing facilities for workers health and safety after COVID-19?

A: Do not assume that you can just walk back into a building that has sat un-used, or with low occupancy for weeks to months. It is difficult to piece together cause and effect, especially when we are still on high alert for COVID-19. Conditions in buildings that have allowed Legionella to grow may not become apparent for weeks to months AFTER re-occupancy. Legionnaires’ disease has been on the rise for 16 years, increasing 650%. In 2018 almost 10,000 cases were reported nationwide, with some estimating the actual number of cases range from 50,000 to 70,000 cases annually. The unfortunate convergence of COVID-19 and Legionnaires’ disease is likely to be hard to distinguish and more likely to be a deadly combination for many.