



What the **PANDEMIC** has taught us about **RESTROOMS**



On August 19, 2020, a major U.S. news outlet reported that “flushing urinals can release clouds of virus-containing aerosols that you can potentially inhale, a significant concern during the COVID-19 pandemic.”

The news item was based on a study by researchers at China’s Yangzhou University, which reported that this could happen when urinals are flushed. According to the researchers, “more than 57 percent of the particles travel from the urinal. [Each] particle can reach a man’s thigh in 5.5 seconds.”

“ Because flush urinals are typically used within crowded venues, and since the [harmful] particles can travel faster and farther in a urinal, [this] poses a serious public health challenge, ”

This is far faster than when a toilet is flushed. It takes about 35 seconds for this “diffusion,” as the researchers called it, to rise that high when a toilet is flushed. “Because flush urinals are typically used within crowded venues, and since the [harmful] particles can travel faster and farther in a urinal, [this] poses a serious public health challenge,” according to the report.



The researchers added that “anti-diffusion improvements of public restroom facilities are **urgently needed**, especially during the ongoing coronavirus pandemic.”

The truth of the matter is that we have known about this problem—and the related potential health risk—associated with traditional, water-using urinals— for decades. It is referred to as “toilet and urinal plume.”



But with COVID, these problems have become elevated and much more serious as building owners, managers, and especially school and hospital administrators search for ways to stop the spread of this disease.

This is but one of many examples of how scientists and public health officials are examining restrooms to determine whether they may be spreading COVID and other diseases. Among the other issues they have uncovered are the following:



TOILET PLUME

Toilet plume is like urinal plume, just discussed. In some ways, however, toilet plume can be even more serious than urinal plume because there are so many potentially harmful pathogens in solid waste. When toilets are flushed, “aerosolization [of pathogens] can continue through multiple flushes to expose subsequent toilet users.” This means that “toilet plume could play a contributory role in the transmission of infectious diseases.” 1



ELECTRIC HAND DRYERS

For several years, scientists have conducted studies to test whether electric hand dryers could be releasing bacteria, germs, and other pathogens into the air when they are used and how serious a problem this could be. The conclusion has been reached that yes, not only do restroom electric hand dryers release bacteria from hands, which can be inhaled by the user, but the bacteria also land on touchable surfaces such as walls, partitions, countertops, faucet and dispenser handles, and other nearby surfaces. When this happens, there is the possibility that these pathogens can spread disease, possibly including COVID.



TRAFFIC FLOW

Restrooms can take up a lot of valuable real estate in commercial facilities. As a result, they are often designed to be as streamlined as possible, even if people must walk around each other to exit the restroom. Because social distancing is so important, not only with COVID but with all types of airborne diseases, such streamlining may be contributing to the spread of this and similar diseases.

CONGESTION POINTS

Related to traffic flow is the problem that most public restrooms are designed the same: toilets and urinals on one wall and counters and sinks on another.

The big concern are the counters and sinks. In a busy restroom, these become congestion points, with people crowding together as they wait to wash their hands. There typically is no possibility for social distancing in these areas, raising the likelihood of the spread of infection.

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“TOUCHLESS” AS JOURNEY

While giant strides have been made in the past 20 years to make restrooms more touchless, it appears this is a journey. Restroom patrons still touch far more surfaces, many of which may be contaminated, than we realize. For instance, floors, particularly in toilet stalls, are often used as a place to set down purses and carrying cases. This is an issue because aerosolized particulates, discussed earlier, eventually find their way onto the floors. If the particulates are infectious, and those areas of the purse or carrying case that touched the floor are contaminated, the transmission of disease is possible.

Other areas that are touched and, making matters worse, often not cleaned and disinfected as frequently as necessary, include the following:

- Partition doors and knobs
- Door handles
- Soap dispensers
- Paper towel dispensers
- Toilet seat cover dispensers
- Fixture flush handles
- Ledges and railings
- Baby changing tables



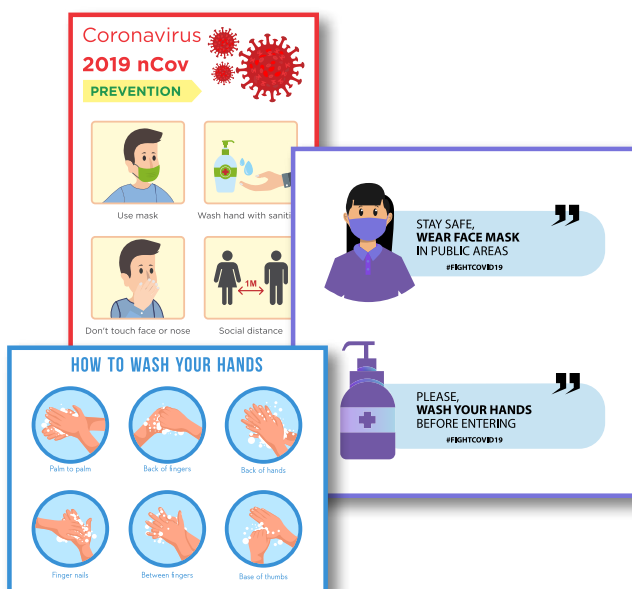
REFILLABLE HAND SOAP

Many under-the-counter soap dispensers are refilled by pouring soap into the container below the counter. A study published in the Journal of Environmental Health shows that “one in four refillable bulk soap dispensers are contaminated with unsafe levels of bacteria.” Once again, this has the potential of spreading disease in a public restroom.



MESSAGING AND POSTERS

According to an April 2020 report by the BBC, “by covertly monitoring people’s handwashing in several bathrooms, [researchers] found that people were significantly more motivated to do so [wash their hands] when posters reminded them.” Several other studies have come to the same conclusion regarding handwashing. However, at least before COVID, most public restrooms had no such posters regarding handwashing or taking any other types of preventive steps to protect health and promote hygiene.



Concerns about STAGNANT WATER

We must expand our discussion about stagnant water because it is so often overlooked. Further, stagnant water issues are even more critical now, as we take every step possible to minimize the spread of COVID-19.

Water stagnation occurs when water is not drawn through the plumbing system of a building for extended periods. A school is a perfect example. Many schools close the end of May and do not reopen until late August or September. During that time, water stagnation can occur.

When this happens, it can result in the following:

- Water stored in the “P” pipes, directly under floor drains and other drains may dry up. This causes sewer odors to be released into the restroom. But even worse, these fumes may contain pathogens that can cause disease. This could also include the pathogens that cause COVID.

· Harmful microorganisms, including Legionella, can build up in the water. Once again, this can include microorganisms that can cause COVID. If this contaminated water is consumed, it can prove extremely dangerous, especially for children and older adults.

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To address these issues, building owners and managers are advised to do the following:

To keep “P” pipes from drying out, there are products now available that can be poured directly into drains. This helps prevent the plumbing from drying out. Often referred to as “ever prime” solutions, they are very inexpensive.



FLOOR DRAINS

It appears we have not learned our lesson. During the SARS (severe acute respiratory syndrome) epidemic 10 years ago, scientists discovered that the pathogens transmitting the disease were released from floor drains. This happened when water that generally blocks sewer gases becomes stagnant in the drainpipe and eventually dries up. Stagnation supports the accelerated growth of many harmful microorganisms. While there is no evidence this is happening again with COVID, the potential is there, and it should be examined further. We know this because it has happened before.

(See Sidebar: Concerns About Stagnant Water)





are traditionally cleaned must be reexamined. For instance, as cleaning cloths and mop heads are used, they begin to spread contamination, not remove it. Many cleaning professionals are not taught how to use disinfectants properly or, if they are, fail to do so.

Further, restrooms are not scientifically tested to determine whether they are free of contamination on an ongoing basis.



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The microorganism issue is a bit more complicated because unforeseen problems can present themselves. Therefore, it is recommended that if a building has not been used for an extended period, building engineers should be called on to run sinks and flush toilets and urinals (if flush urinals are installed) throughout the facility before the facility is used.

In most cases, this will help remove any contaminated water from the pipes. However, just to be sure, and especially if this is an older building, tests should be conducted to make sure the water is safe to drink and use.

In some cases, the building's water system may need disinfection treatment.



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