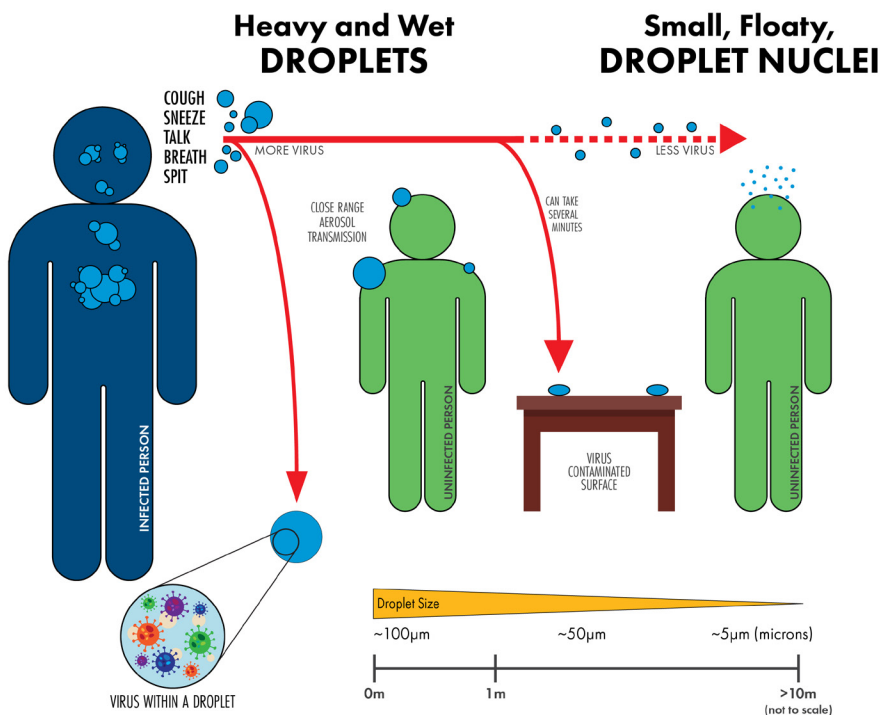


Entertainment venues present unique challenges for designers, cast members, operators and maintenance when considering the control of Air Quality, including risk reduction addressing COVID-19 concerns while maintaining the guest experience. TLC Engineering Solutions can assist you in managing risk for the re-opening and operating of your theme park, attraction, venue, restaurant, zoo, or retail space.



The primary vectors for transmitting COVID-19 are touching surfaces with the virus, mitigated by hand washing; and contact with droplets containing the virus, mitigated by social distancing. The least prevalent transmission vector is an aspirated virus. HVAC systems can reduce the risk of infection from an aspirated virus.



## How HVAC Systems Can Reduce the Risk of Transmission

- Retro-Commission building systems; assure all systems functioning to original design intent
- Use ventilation and exhaust systems to improve IAQ
- Circulation systems that minimize cross-contamination
- Enhanced filtration levels improve IAQ
- Modify control sequences/ setpoints (temperature and humidity control) minimize virus propagation
- Specialized equipment to target concerns

**Want help identifying next steps for your building?**

Contact your local TLC office or Justin Mulhollan, PE, LEED AP BD+C, CEM, GGP, WELL AP, at 321.877.4261 or [justin.mulhollan@tlc-eng.com](mailto:justin.mulhollan@tlc-eng.com)

# Affect of Atmospheric Conditions of Virus Life

CONDITION	Temperature	Humidity	Solar	HALF LIFE
Surface	70-75°F	20%	None	18 hours
Surface	70-75°F	80%	None	6 hours
Surface	95°F	80%	None	1 hour
Surface	70-75°F	80%	Summer	2 minutes
Aerosol	70-75°F	20%	None	~60 minutes
Aerosol	70-75°F	20%	Summer	~ 15 minutes

Increased temperature, humidity, and sunlight are detrimental to SARS2-CoV-2 in saliva droplets on surfaces and in the air.



## How to Remain Competitive in the 'New Normal'

Communication is key with guests and cast members. As you address operational and janitorial concerns, TLC can support you in communicating building energy system strategies that help protect your assets and may include:

- Building systems conditions assessments to inform cost effective measures for IAQ
- Low cost / no cost HVAC system upgrades that enhance efficiency:
  - Temperature set points
  - Damper positions
  - Fan speed settings
  - Filter upgrades / changes
  - Operational / Equipment settings
- Planning / budgeting for capital upgrades:
  - Fan replacements
  - Ventilation system upgrades
  - Lighting modifications
  - Air handler replacements
  - Indoor air quality metering
- Review back-of-house building assets against healthy building standards for suggested improvements for cast member safety

## References



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ASHRAE Position Document on Infectious Aerosols 4/14/2020. -ASHRAE Position Document on Infectious Aerosols

ASHRAE Handbook – HVAC Applications - CHAPTER 62. ULTRAVIOLET AIR AND SURFACE TREATMENT.

ASM - 2019 Novel Coronavirus (COVID-19) Pandemic: Built Environment Considerations To Reduce Transmission.<http://msystems.asm.org>

IES Germicidal Ultraviolet (GUV) – Frequently Asked Questions <https://media.ies.org/docs/standards/IES-CR-2-20-V1-6d.pdf>

The RESE® Air Standard - [https://www.reset.build/standard#std\\_\\_download](https://www.reset.build/standard#std__download)

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