



TRANSPORTATION

Trusted, Evidence-Based
Solutions for Healthier Spaces



Improving the quality of indoor **environments** is **essential** to promoting **health & well-being**

We spend over 90% of our time indoors

Our **physical & social environments** – and our **behaviors** within them – have a greater impact on our health than our **genetics** and **healthcare access** combined

At Delos, science is our DNA

Built on years of research and groundbreaking collaborations between experts, Delos helps transform indoor environments into catalysts for health, well-being, performance and resilience.

8+

years of continued R&D
to drive an innovative
research platform



TM

Founded as a
Delos and
Mayo Clinic
collaboration

25+

scientific research studies
led or supported by Delos
research teams*

1st

scientific laboratory
that studies the interaction
between the indoor environment
and human health and well-being

*Includes Well Living Lab and Delos Labs research teams
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We do the research so you don't have to

CHECKING THE FACTS ON CLAIMS

Delos' product review process is anchored by **Delos Labs**, a team of scientists and experts across building, behavioral and health sciences.

Our process evaluates independent, third-party product **testing results**, applies **evidence-based** and **data-driven research**, and consults **industry best-practices** to select products that stand up to their claims on **performance**, **safety**, **efficacy** and **user experience**.

OUR APPROACH



Research



Evaluation



Solutions &
Recommendations



Delos pioneered the world's leading certification platform for healthy buildings*

3.15+ billion
square feet

33,681+
projects

2,500+
clients

109
countries

20%

Fortune 500 as clients

As of 03/08/22

*The International WELL Building Institute, Delos' wholly-owned subsidiary, administers and continues the development and market adoption of its WELL programs, including: the WELL Building Standard™, WELL Community™, WELL Portfolio™, and WELL Health-Safety Rating™. The figures above encompass all WELL programs enrolled.



**Delos has become
a leading provider
of portable air
purification solutions**

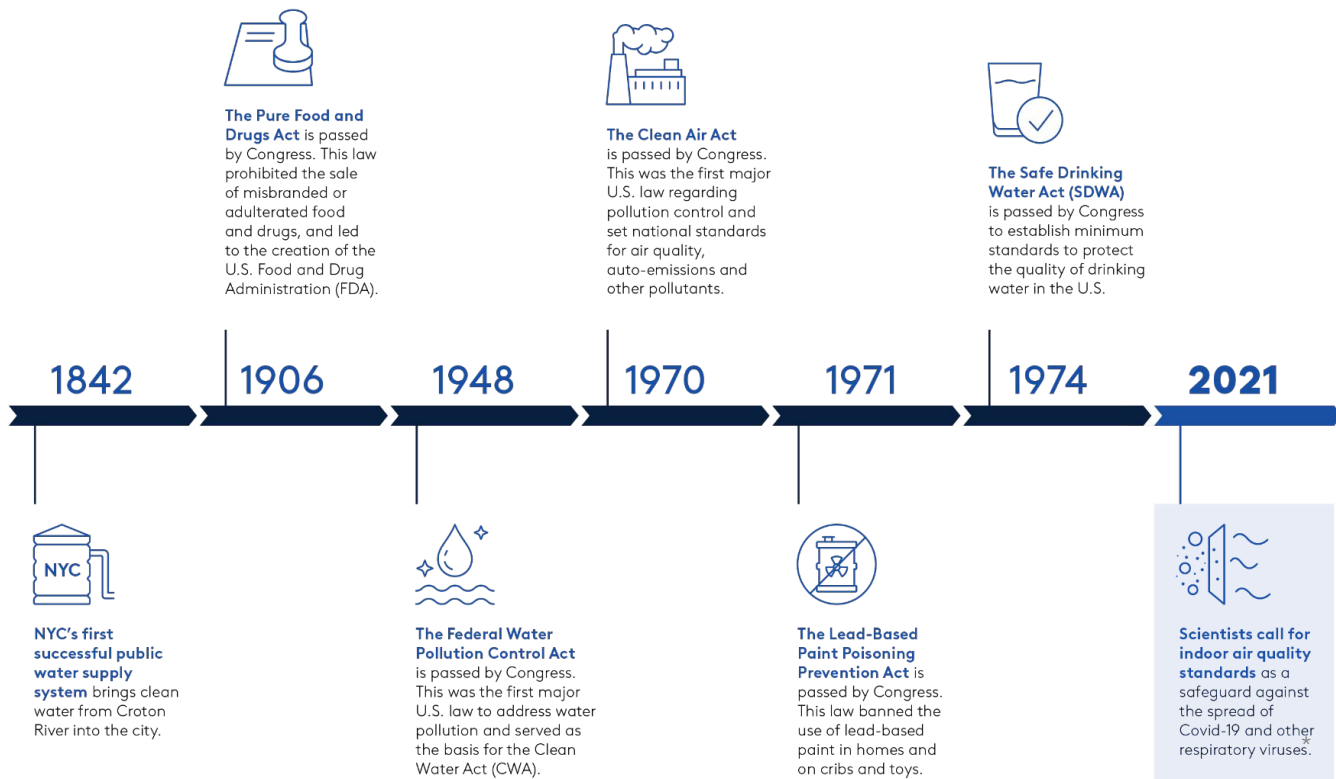


The Time is Now:

IAQ is the new public health reform

Over the decades Governments have invested heavily in food safety, sanitation and drinking water for public health. Indoor air quality (IAQ) has for the most part, been neglected.

Delos, as a global leader in health and wellness within the built environment, is committed to working with governments and organizations to implement Advanced Air Purification solutions to help establish air quality standards for the 21st-century.



Air quality in buses has never been more important

On average, travel activities account for only **6% of people's time** but are responsible for nearly **25% of their daily pollution exposure**.¹

The **concentrations of pollutants** in public transit often **exceed recommended levels**.^{2,3}

Buses rely on MERV filters to clean their recirculated air. However, the filters used on buses are **often lower-rated than MERV 13** (the minimum recommended MERV filter rating for filtering particles the size of viruses)

Some pathogens can **stay in the air for hours** when air is recirculated in a mechanically-ventilated space. **Passengers of motorized vehicles are typically exposed to higher levels of air pollution** compared to pedestrians or cyclists.⁴

1. de Nazelle A, Seto E, Donaire-Gonzalez D, Mendez M, Matamala J, Nieuwenhuijsen MJ, Jerrett M. Improving estimates of air pollution exposure through ubiquitous sensing technologies. 2013. *Environmental Pollution* 176: 92-99. doi.org/10.1016/j.envpol.2012.12.032.
2. Wu M, Hu S, Tang Y. Design of multistage air cleaning device for bus. E3S Web of Conferences. 2020;143:02055. doi:10.1051/e3sconf/202014302055
3. Chen X, Feng L. A Research Review on Ventilation and Indoor Air Quality of Vehicles. Proceedings of the 11th International Conference on Industrial Ventilation. October 2015.
4. Mitsokou C, Adamson JP, Doutsis A, Brunt H, Jones SJ, Gowers AM, Exley KS. 2021. Assessing the exposure to air pollution during transport in urban areas – Evidence review. *Journal of Transport & Health* 21:1-11. doi.org/10.1016/j.jth.2021.101064.



Delos has applied its rigorous evaluation process to air purification solutions for public transport

Consumers and businesses looking to purchase air purification solutions need **guidance they can trust** in order to make sense of all the information – and misinformation – in the marketplace.

Our rigorous product evaluation process has allowed us to translate the science and apply it to the transportation sector. In the air quality category alone, we have **reviewed more than 160 air purification and related solutions** in arriving at our evidence-based recommendations.

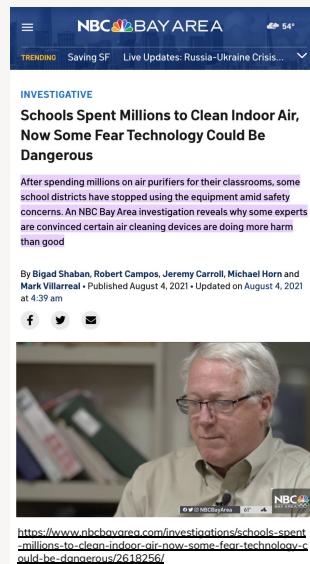
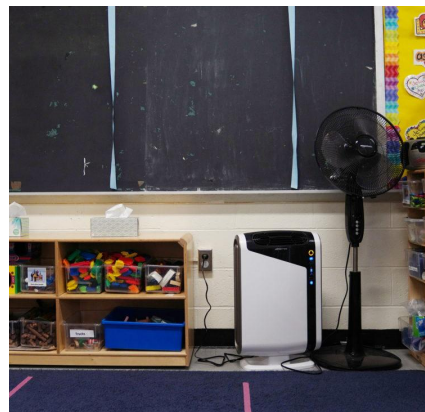


As schools spend millions on air purifiers, experts warn of overblown claims and harm to children

"In the frenzy, schools are buying technology that **academic air-quality experts warn can lull them into a false sense of security** or even potentially harm kids. And schools often overlook the fact that their trusted contractors — typically engineering, HVAC or consulting firms — stand to earn big money from the deals, KHN found."

"Schools have been "bombarded with persistent salespersons peddling the latest air and cleaning technologies, including those with minimal evidence to-date supporting safety and efficacy"

<https://www.pbs.org/newshour/health/schools-spend-millions-on-air-purifiers-experts-warn-of-overblown-claims-and-harm-to-children>



"Study uncovers safety concerns with some air purifiers"

"Research scientists have found **air cleaners are adding dangerous substances into the air**, such as ozone and formaldehyde – toxins considered especially dangerous to the developing lungs of young students."

"It is playing chemistry with the indoor air," said Offermann. "Because they are putting things in the air and reacting with chemicals in the air, they have the **potential to create bad things such as formaldehyde**, ozone, ultrafine particles."

<https://www.eurekaalert.org/news-releases/612223>

AURA AIR

Delos Labs approved transportation solution

CLEANER AIR THROUGH THREE SIMPLE STAGES*

- 1 Pre-filter**
captures large particles such as **dirt, dust** and **hair**
- 2 Ray filter™**
H13 HEPA grade mechanical filter and carbon filter help capture **fine particulate matter** and absorb **gaseous pollutants**; smart copper fabric adds **antimicrobial functionality** to the filter
- 3 UVC LEDs**
act to further inactivate **germs (mold, bacteria and viruses)** through ultraviolet germicidal irradiation (UVGI) – a mature technology with a proven efficacy to inactivate **airborne pathogens**, including SARS-CoV-2, the virus that causes Covid-19



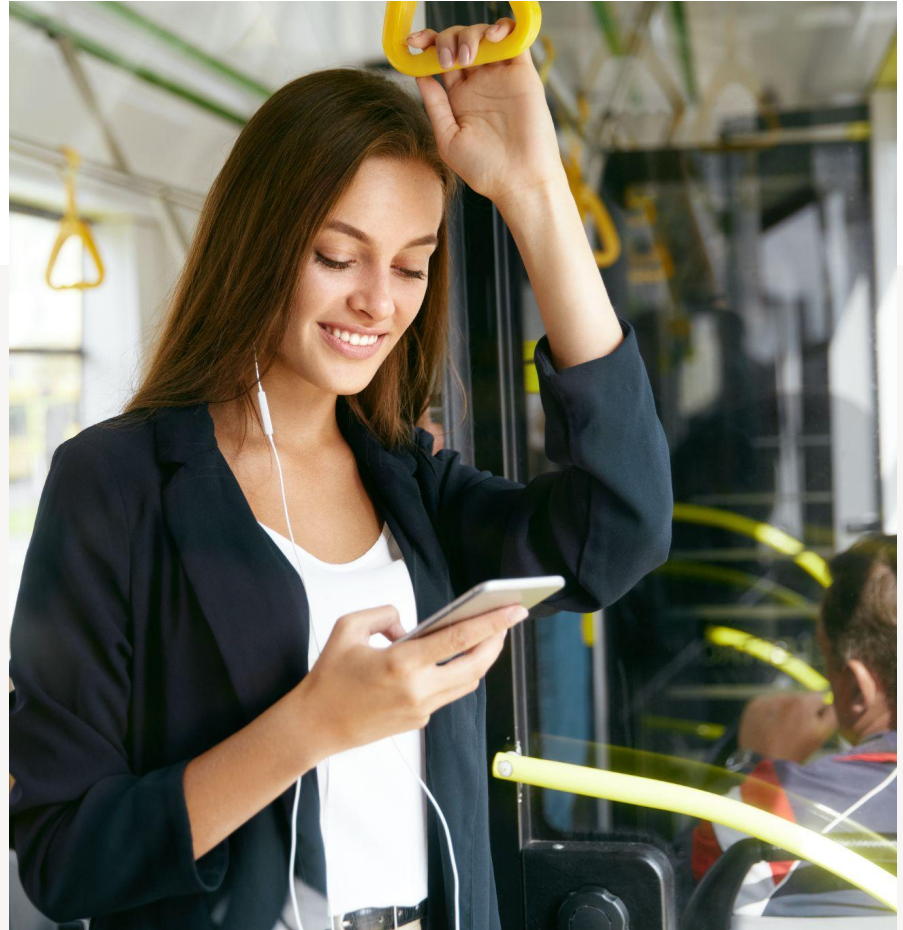
*Note that the ionization technology in Aura Air will be disabled as we continue to evaluate this emerging technology for both performance and byproduct purposes outlined by ASHRAE: <https://www.ashrae.org/file%20library/technical%20resources/covid-19/ashrae-reopening-schools-and-universities-c19-guidance.pdf>

The difference is clear

- **Demonstrate your commitment** to the health, safety and well-being of drivers and riders
- **Boost confidence** for drivers and passengers that they're breathing fresher, cleaner air
- **Immediate impact** with no lengthy and expensive retrofits
- **Capture fine particles** and gaseous pollutants through an advanced 3-stage filtration process
- **Easy maintenance** and notification via the app when the Ray Filter™ needs to be replaced*
- **Receive real-time data analytics** and control hundreds of devices at any given time with a unique AI-powered algorithm**

*Maintenance frequency is environmentally-dependent.

** WiFi required





Aura Air testing data

Delos examined the following performance data on the Aura Air purifier, based on third-party testing:

- Removal of **particulate matter**
- Removal of **gaseous pollutants**
- Inactivation of **microorganisms**
- Reduction of **microorganisms**

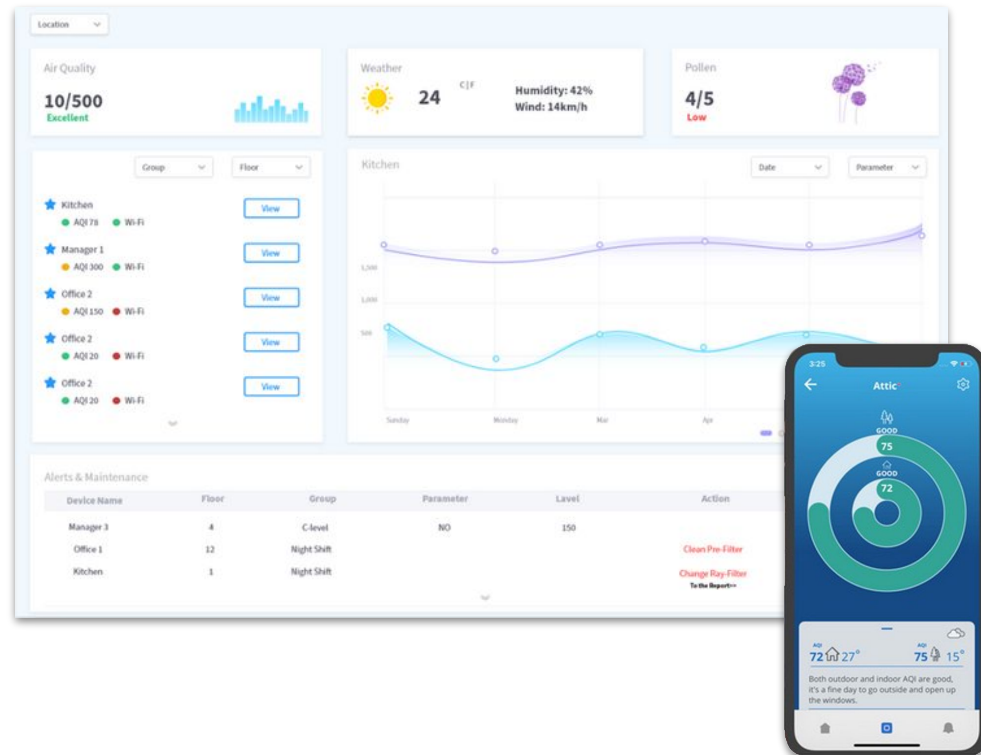
In addition to meeting Delos' performance evaluation standards, Aura Air's compact dimensions and weight make it ideal for installation in small spaces such as buses.

Peace of mind with real-time air quality monitoring, fleet-wide

With Aura Control Panel*, you can track your devices with ease. From the name and location of each unit to the cleanliness status of their individual filters, you are in full control.

Aura Control Panel keeps you up-to-date, 24/7.

*WiFi required

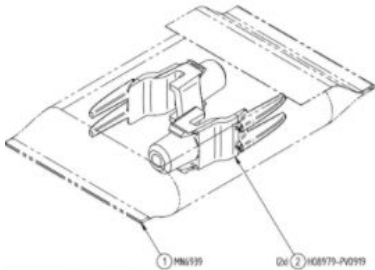


[Aura Air Live Dashboard](#)



Quick and efficient implementation process

[Volgren \(MarcoPolo\) Install Video](#)



AURA AIR CLIPS
H13309-PV0919



AURA AIR CLIPS



POWER CORD



POWER SUPPLY



Product snapshot

SPECIFICATIONS

Model Name

Aura Air

Coverage

Up to 440 square feet*

CADR

60.0 cfm (smoke), 118.1 cfm (dust), 182.2 cfm (pollen)

Dimensions

14.8" (W) x 14.8" (D) x 6" (H)

Weight

12.1 lbs

Fan Speeds

Silent, low, high, night + auto

Voltage

110-240 V

Energy Consumption

48 W (high speed)

Noise

35-64 dB

Sensors

CO, CO₂, TVOC, PM, temperature, relative humidity

Limited Warranty

1 year from date of purchase

*Coverage area calculations are based on device CADR rates, 8-foot tall ceilings and 2 air changes per hour (ACH)

Let's get started

DELOS IS COMMITTED TO THE SUCCESS OF OUR CUSTOMERS THROUGHOUT THE ENTIRE IMPLEMENTATION PROCESS

- 1 Introduction**
Introductory call about the implementation process
- 2 Pre-Install**
Installation guide provided to key personnel
- 3 Product Delivery and Training**
Product delivered on-site and digital training materials provided to maintenance and other key personnel
- 4 Cleaner Air Delivered**
Drivers and passengers experience the benefits of fresher, cleaner air





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Appendix

Research data validates the efficacy of air purification on buses

Reduction of UFP, BC and PM_{2.5} on buses with air purifiers

The use of high efficiency cabin air filtration on school buses **reduced in-cabin UFP and BC levels by 88±6% and 84±5%, respectively**, on average, across all driving conditions.¹

A **two to three-fold reduction (55±22%) in PM_{2.5} exposure levels** was also observed inside all school buses, keeping the levels of fine particulate matter exposure below the EPA annual average standard of 12 g/m³.¹

In-cabin PM_{2.5} concentration levels are shown in white when air purifiers were used, and in black when not.

1. Lee ES, Fung CC, Zhu Y. Evaluation of a high efficiency cabin air (HECA) filtration system for reducing particulate pollutants inside school buses. Environ Sci Technol. 2015;49(6):3358-3365. doi:10.1021/es505419m

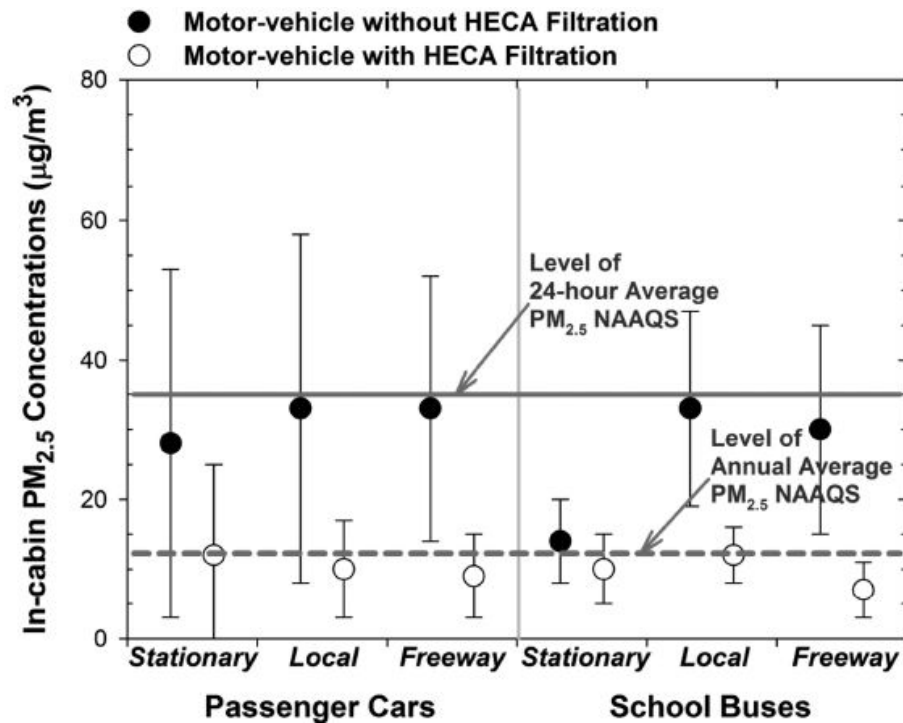


Image courtesy of Lee ES, Fung CC, Zhu Y. Evaluation of a high efficiency cabin air (HECA) filtration system for reducing particulate pollutants inside school buses. Environ Sci Technol. 2015;49(6):3358-3365. doi:10.1021/es505419m

Significant reduction in pollutants and airborne bacteria with in-cabin air purification on public buses

One study found that public buses with air purification systems had **34-60% and 25-61% lower average concentrations of PM2.5 and PM10, respectively, and 24-78% lower average airborne bacteria concentrations** compared to buses without air purification systems.¹

1. Lee JJ, Hwang H, Hong SC, Lee JY. Effect of air purification systems on particulate matter and airborne bacteria in public buses. *Atmosphere*. 2021;13(1):55. doi:10.3390/atmos13010055





Clean air protects public transit drivers & passengers

- Trains, buses and subways are drivers' workplaces, in which they often spend eight or more hours per day.
- The quality of the air drivers and passengers breathe matters. However, the **concentrations of pollutants** such as fine and ultrafine particles (PM2.5 and UFPs), volatile organic compounds (VOCs), nitrogen dioxide (NO2) and black carbon in public transit often **exceed recommended levels**.^{1,2}
- Research shows numerous benefits of cleaner air, such as **improved cognitive performance and ability to focus**,³ **decreased asthma and allergy symptoms**,^{4,5} and **lower risk of heart disease and chronic respiratory conditions**.⁶ Better air quality can also help reduce the likelihood of **respiratory infections**, including but not limited to Covid-19.⁷
- Together, these benefits could lead to **fewer sick days** and **lower insurance premiums**, resulting in **reduced healthcare-related costs** and an overall **smoother operation** of public transit companies.

1. Wu M, Hu S, Tang Y. Design of multistage air cleaning device for bus. E3S Web of Conferences. 2020;143:02055. doi:10.1051/e3sconf/202014302055
2. Chen X, Feng L. A Research Review on Ventilation and Indoor Air Quality of Vehicles. Proceedings of the 11th International Conference on Industrial Ventilation. October 2015.
3. Seppanen O, Fisk W. Some Quantitative Relations between Indoor Environmental Quality and Work Performance or Health. HVAC&R Research. 2006;12(4):957-973. doi:10.1080/10789669.2006.10391446
4. Jia-Ying L, Zhao C, Jia-Jun G, Zi-Jun G, Xiao L, Bao-Qing S. Efficacy of air purifier therapy in allergic rhinitis. Asian Pac J Allergy Immunol. 2018;36(4):217-221. doi:10.1233/APJ-010717-0109
5. Peng RD, Butz AM, Hackstadt AJ, et al. Estimating the health benefit of reducing indoor air pollution in a randomized environmental intervention. J R Stat Soc Ser A Stat Soc. 2015;178(2):425-443. doi:10.1111/rssa.12073
6. Vijayan VK, Paramesh H, Salvi SS, Dalal AA. Enhancing indoor air quality - The air filter advantage [published correction appears in Lung India. 2016 Nov-Dec;33(6):705]. Lung India. 2015;32(5):473-479. doi:10.4103/0970-2113.164174
7. Curtius J, Granzin M, Schrod J. Testing mobile air purifiers in a school classroom: Reducing the airborne transmission risk for SARS-COV-2. Aerosol Science and Technology. 2021;55(5):586-599. doi:10.1080/02786826.2021.1877257