HALO Air Filtration

Setting the Standard for Indoor Air Quality

erlab
You can breathe.

The health of young children is at risk with every breath taken in childhood centers around the country.

Early childhood should be a carefree time of healthy growth in mind and body but these crucial development years are being sabotaged by poor indoor air quality from a variety of sources.

The good news is that healthy clean air is a solution Erlab has been providing for over 50 years.

Establishing the importance of effective air filtration in early childhood facilities

Young children, and the adults who teach and care for them on a daily basis, are being subjected to unseen, harmful effects of contaminated indoor air. There are far to many factors influencing the health of this population to be ignored.

Young children are the most susceptible and in need of protection from air pollutants like allergens, bacteria, viruses and mold.

- They breathe more rapidly than adults
- They absorb more pollutants, both from the air and from contaminated surfaces
- They are breathing closer to the ground where pollutants reach peak concentrations
- If a child has pre-existing conditions such as asthma or other respiratory issues their risk of illness due to airborne particles and contaminants increases substantially.
- They are more at risk as they breathe indoor air pollution for more than 8 hours each day at their care facility and may well be exposed to high pollution areas outdoors in metropolitan areas that come indoors through entries and HVAC circulation.

Teachers and Staff employed in EL facilities breathing contaminated air is likewise unhealthy and could lead to chronic health issues and absenteeism.

- Worsening of pre-existing conditions of Asthma, COPD, Lung Cancer, Allergens, viral infection spread, headaches and migraines.
- Fear of taking contagions home and infecting family
- When adults breathe noticeably clean air in their work environment they are less prone to stress and better able to focus on the children in their care

Disinfecting surfaces and objects used and handled day to day by children does not address the circulation of bad air that continuously re-infects surfaces and pollutes the indoor air.

What to look for - Air filtration that has been proven to effectively mitigate unhealthy air contaminants

Sifting through the myriad of options for air filtration systems available on the market today is a daunting task. It is difficult to know the difference between what is a 'new to market' ineffective product introduced to take advantage of the pandemic issues and what is a proven, real time tested solution. Experience and evidence is the differentiator. Putting your trust in a company that has set the standard for air filtration and indoor air quality for over 50 years is the logical choice.

Erlab doesn't add gimmicks to handle IAQ, rather we utilize what we have specialized in for over 50 years and that is tried and true filtration. The addition of the HALO air filtration system runs cost effectively 24/7 to mitigate pathogens, VOCs (Volatile Organic Compounds), dust, pollen, and mold spores with proven effectiveness in controlled and real world settings. Be cautious of any test data offered as many companies promote their success or effectiveness from 'Laboratory Tests' only within controlled environments therefore dramatically inflating the true

effectiveness of the said product. Real-world testing is the only valid measure of effectiveness. Why? simply put, the product needs to be tested in the settings in which it will be applied. Real-world testing challenges the product in many different ways such as; active, moving occupants, unpredictable air flow movements, temperature, and humidity fluctuations and several other disruptions that could impact the products performance.

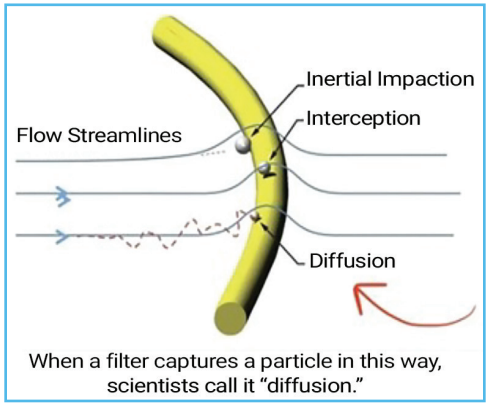
Another red flag is products promoting UV-C as a solution. UV-C relies on room air being mixed. When warm air enters a room via a duct close to the ceiling (which occurs more in cold or winter months), the warm air simply rests on the much-cooler air below. It's efficacy is dramatically reduced as microbes will not 'move up' for exposure to UV-C. We also caution the use of any electronic air cleaner as there are many false claims on how these systems work. Most seem to good to be true from a cost perspective and the reason is revealed when you peel back the onion a bit. That said, there are instances when one technology can compliment the other which again goes back to applying technology where it was designed to be applied.

How HALO is setting the standard in a sea of confusion

There is no question you have your choice when it comes to air purifiers and we know it has become an overwhelming task to know what to buy and what works. After all, every one of the units on the market claims 99.99% effectiveness. So what sets one apart from the others? Honesty, integrity, and ethical business sense, which is followed by performance and results that can be quantified.

The benefits that set HALO apart from the unqualified, newcomer noise include:

- Erlab never provides false HALO claims of efficiency, instead providing results driven data from real-time analysis of air quality before and after installation
- Testing performed in real-world unpredictable settings
- A company that has been delivering solutions to improve the air we breathe in the most challenging settings of laboratories across the globe for over 50 years
- Tailored to your needs based on site assessments, not just total square footage
- Filtration meets EN 1822 standards and AFNOR standards
- UL 507 & CSA C22 certified
- Ceiling mounted to ensure pollutants are drawn away from breathing zones working with our naturally generated thermal plumes
- Does not have additives of any kind and zero by-products generated
- Products are not developed based on trends, but rather scientific validity



When a filter captures a particle in this way, scientists call it "diffusion."

Setting the record straight about HEPA filtration

Having the right HEPA filter is critical in being able to capture pollutants such as viruses, bacteria, and PM 2.5. The unfortunate reality is anyone that provides a unit with a truly rated HEPA filter can claim 99.99% efficiency, but that does not take into account the size, and airflow going through the HEPA filter and should also include capacity and what is known as diffusion.

Diffusion is a phenomenon in which smaller particles <0.3 micron in size zig-zag when they hit gas particles allowing them to get trapped in the non-woven fibers that create a HEPA filter. If the air travels too quickly through the filter, proper diffusion will not occur and therefore reduces the HEPA filter efficiency. Also, to clarify-There is no such thing as Hyper HEPA, Super HEPA, or True HEPA. A HEPA filter is rated based on efficiency value otherwise known as MERV and should always meet the EN 1822 standard.

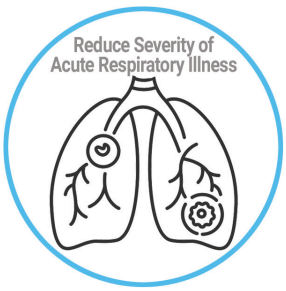
HEPA filters rated H14 and higher are the most efficient at capturing particles as small as 0.1 micron in size of up-to 99.997%

MERV Rating	Air Filter will trap Air Particles size .3 to 1.0 microns	Air Filter will trap Air Particles size 1.0 to 3.0 microns	Air Filter will trap Air Particles size 3 to 10 microns	Filter Type ~ Removes These Particles
MERV 1	<20%	<20%	<20%	Fiberglass & Aluminum Mesh ~ Pollen, Dust Mites, Spray Paint, Carpet Fibres
MERV 2	<20%	<20%	<20%	
MERV 3	<20%	<20%	<20%	
MERV 4	<20%	<20%	<20%	
MERV 5	<20%	<20%	20% - 34%	Cheap Disposable Filters ~ Mold Spores, Cooking Dusts, Hair Spray, Furniture Polish
MERV 6	<20%	<20%	35% -49%	
MERV 7	<20%	<20%	50% - 69%	
MERV 8	<20%	<20%	70 - 85%	
MERV 9	<20%	Less Than 50%	85% or Better	Better Home Box Filters ~ Lead Dust, Flour, Auto Fumes,Welding Fumes
MERV 10	<20%	50% - 64%	85% or Better	
MERV 11	<20%	65% -79%	85% or Better	
MERV 12	<20%	80% - 90%	90% or Better	
MERV 13	Less Than 75%	90% or Better	90% or Better	Superior Commercial Filters ~ Bacteria, Smoke, Sneezes
MERV 14	75% - 84%	90% or Better	90% or Better	
MERV 15	85% - 94%	95% or Better	90% or Better	
MERV 16	95% or Better	95% or Better	90% or Better	
MERV 17 = HEPA 13	99.97%	99% or Better	99% or Better	HEPA & ULPA ~ Viruses, Carbon Dust, <.30 pm
MERV 18= HEPA 14	99.997%	99% or Better	99% or Better	
MERV 19 = UL5	99.9997%	99% or Better	99% or Better	
MERV20= U16	99.99997%	99% or Better	99% or Better	

So, while HALO by Erlab uses only HEPA filters that are in conformance with EN 1822, we do not claim 99.99% efficiency as there is no possible way for anyone to capture 99.99% of pollutants present in a room. While the filter may provide 99.995% efficiency one has to look at the whole picture. To truly quantify a product's effectiveness you have to consider particulate load reductions of present particles in a room before and after installation of the filtration units in order to understand the actual % reduction. Based on the data we have collected from installations, we have achieved an average particulate reduction of greater than 80%.

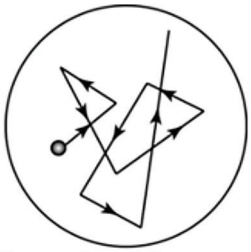
We have no need of providing false data, claims, or clever marketing gimmicks. We would rather show you through real-world data and testimonials in very unstructured settings.

The benefits of reducing particle loads and creating cleaner, healthier air include:



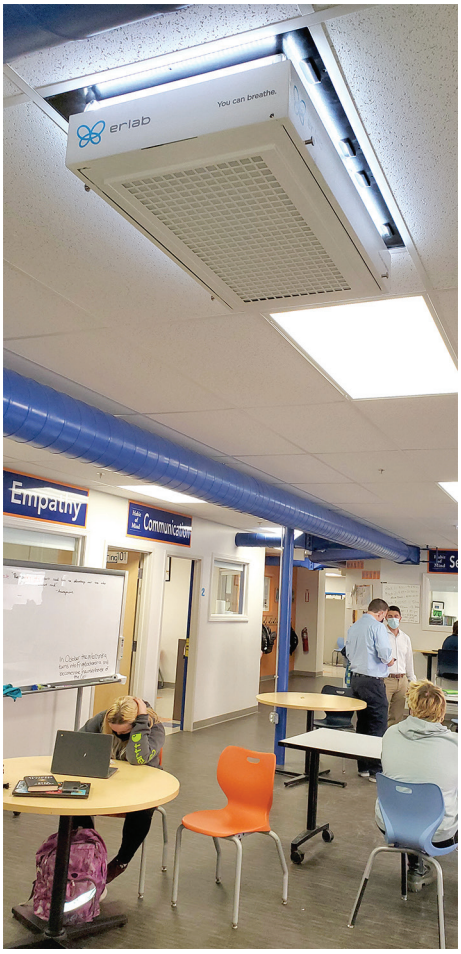
Dispersion and the danger of nanoparticles contributing to contaminated air

Nanoparticle exposure from outdoor traffic, polluted air, and many indoor environments containing a complex mixture of viable (live) and nonviable (dead) microorganisms can include mold, bacteria, virus, toxins, and allergens which can lead to short and long-term health problems. These small particles (undetectable by the human eye and ranging from 1 to 100 nanometers in size - 1nm-=10-9 meter) are very sensitive to turbulent diffusion (main transfer process in free atmosphere) and Brownian motion. This makes the particle's concentration dependent on length and time scales.



Brownian Movement
Nanoparticles are so small that they **can** fit through the fibers in filters, but they get stuck anyway. Flying in zigzag patterns mean they end up hitting the fibers and getting stuck.

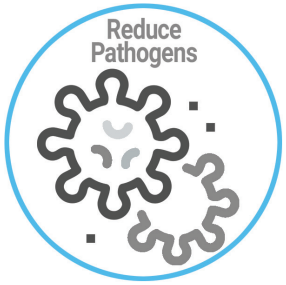
One cannot determine the efficacy of filtration capturing nanoparticles without taking into consideration the effect of flux in the air flow where product success is being determined. Air flow is usually not taken into consideration by many products promoting air filtration. Additionally, many people are led to believe that a HEPA filter is not capable of capturing a virus. HEPA filters will capture nanoparticles of all sizes due to the principle of diffusion. Explained in the Brownian motion diagram, tiny particles become caught against filter fibers due to their random motion and allows filters to capture particles smaller than the holes in their filtermedia.

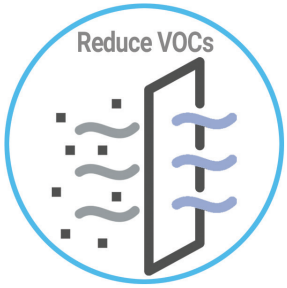


In a recent NASA report it was determined that ultrafine particle capture was enhanced when a HEPA filter was combined with a filter employing activated carbon. Their results showed that using both HEPA and carbon filtration would provide the best chance of capturing virus-sized particles.

The scientists at Erlab have been utilizing this process for over 50 years in their laboratory filtration systems sold globally. Now available for commercial use, their Halo P HEPA air purification stations capture viruses, bacteria, allergens, and other generalized pollution (PM 2.5). Utilizing the power of an added layer of a proprietary blended carbon bed, used in labs across the globe, Erlab's air filtration system improves room mixing while maintaining the delicate balance of proper airflow. The efficiency of improving ventilation effectiveness with the power of Erlab filtration, delivered by HALO, are results exclusive to Erlab. As HALO has proven to be a crucial element for any facility looking to mitigate the effects of contaminated or polluted air their market audience continues to grow.

The benefits of reducing particle loads and creating cleaner, healthier air include:





The collected data example seen in the chart below, represents the cumulative particles present in the Londonderry, NH location of the Ark Early Childhood Education Center where 38 HALOs were installed. Particle counts ranging from 10 microns down to 0.3 microns, which pose the biggest risk to our overall health due to their size, are not adequately filtered by our bodies and by-pass our protective mucus membranes.

Approximately one week after the installation of the HALOs we duplicated the air samples taken pre-installation in order to obtain comparable data with the goal being a dramatic reduction of present particles. The results show a very successful installation with an average reduction exceedingly well over 80%.

All testing pre and post installation, was performed during occupied hours as to avoid false readings in a static condition.

Pre & Post installation Particle count data at the ARK Learning Centers

Location	Room	Pre-installation particle counts	Post installation particle counts	Total % reduction
Londonderry	GRM	61,358,668	10,153,262	83%
Londonderry	Toddler	34,017,752	4,974,043	85%
Londonderry	Infant 1	68,024,600	2,860,904	96%
Londonderry	Infant 2	121,654,728	1,997,672	98%
Londonderry	Kinder	56,728,508	2,358,347	96%
Londonderry	Pre K 1	51,897,160	3,095,825	94%
Londonderry	Pre K 2	49,188,032	2,460,350	95%
Londonderry	Pre-School 1	36,509,512	1,481,785	96%
Londonderry	Pre-School 2	32,251,136	3,622,768	89%
Londonderry	TSU	38,777,976	3,540,701	91%

SAMPLE OF CUSTOMER TESTIMONIALS ON THE EFFECTIVENESS OF HALO

"Being a mom I understood that putting my child in childcare was going to expose them to a lot of illnesses, I was not prepared for a global pandemic, especially one that is transmitted in the air. When the school installed the HALOs I was skeptical. However once they were up and running there was a noticeable difference in the air quality in the center. I have allergies and I can breathe better when I walk into the school and if it works on me in the few minutes I spend in the building, it definitely makes me happy to have my child in that environment daily. ***I breathe better knowing that my child's health is protected from not just surface based exposure but air based exposure to illnesses like Covid 19."*** *-Heather V., Parent/Ark ECLC*

"Erlab educated me on the size of the filter and that placement of the purifier matters immensely to make sure the entire area you are trying to protect gets covered. And they actually do a particle test before and after. No other company offered to do this. ...I saw their facility, the team is knowledgeable and accessible, and I have no issue telling our customers and staff that the Halo P in fact does what Erlab says It does - Removes particles, and they prove it with air test and particle counter, before and after install."

M. Rusconi, Moe's Southwest Grill

"We hope to see a reduction in the transmission of viruses, as measured by a decrease in the number of individuals contracting COVID-19, Influenza, and the common cold."

J. Crawford, Director, Next Charter School

"Everyone was very easy to work with, had excellent follow through, and always met scheduled time lines, with timely communication and great results...We would love to purchase additional units."

Dir., Avamere Transitional Care and Rehabilatation

"On day 2, after the system was installed, a group of us walked into the area and someone remarked: 'The air seems so fresh!'... It is clear that the HALO system created a better, healthier, safer environment."

Pastor G. DeFranca, Community Chapel Church of the Nazarene

"We are a restaurant so eliminating fumes and contaminates is extremely important for employee and patron safety and health. It was a pleasure working with Erlab and the units they installed have already made an impact as far as making our customers feel safer. They exceeded all expectations." *G. Wicks, Off the Vine Tuscan Restaurant*

Your next step to ensuring clean indoor air for health and peace of mind in your facility

Working with a "Science Based" Company for Guaranteed Results

As stated previously, Erlab is an international company who has invested over 50 years in the research and development of air filtration products. We set the standards for IAQ (indoor air quality) and continue to be recognized as a leader in air quality innovation. Our longevity in the field of providing clean air in high level laboratory and commercial settings, positions us as a trusted resource in the mitigation of airborne pathogens and pollutants.

As the accepted thought leaders in the field of air filtration our reputation is based on the very air our clients breathe. Air that has been cleared of pollutants, bacteria, and microscopic particles and allowed them peace of mind every day as they step into their schools and working spaces.

The Foundation of HALO's Success

Our air filtration safety experts will assist you in fitting HALO to your needs. As there are many factors that influence the effectiveness of air filtration it is never a 'one size fits all' proposition. Having experienced, knowledgeable technicians on your team streamlines the process for successful results.

Erlab's proprietary HEPA and ULPA filters provided for the HALO air filtration system ensures ultra-low particle penetration and can achieve a pollution-free air filtration efficiency of between 99.995% (HEPA H14 filter) and 99.999995% (ULPA U17 filter), which is between 10 and 1,000 times more powerful than other air purifiers currently on the market.

HALO is ceiling mounted to provide maximum protection. Unlike floor air filtration models that draw air horizontally across the breathing zone of children and staff, HALO draws contaminated air up and away from those in the room. It's ceiling position also protects it from curious little hands or accidental shut-off. In addition HALO does not require integration with existing HVAC as it is a self contained system.

"We hoped that the HALO air filtration systems would help minimize the amount of illness in our buildings, reduce air pollution/contamination, and provide a cleaner environment. The HALO systems have completely blown us away in their effectiveness. The delivery and installation was flawless and parents and teachers could tell an immediate difference in air quality." Owner, The Ark Early Childhood Center

IAQA™ Corporate Member

erlab You can breathe.

Individually Tested & Certified Guaranteed Performance EN 1822

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Speak to an Erlab air filtration safety expert today.

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