

# INDOOR AIR QUALITY AND PURIFICATION RESOURCE GUIDE





## INTRODUCTION

Indoor air quality is an important determinant of employee health and well-being. Indoor air may be contaminated with large particulate matter, such as dust, pollen, and mold, as well as bacteria and viruses that are easily transmitted among building occupants. It may also contain very small particulate matter that can worsen chronic health conditions, as well as gases and vapors produced by laboratory chemicals. Air filtration systems overcome the limitations of existing heating, ventilation, and air conditioning (HVAC) systems, and are an effective solution for improving air quality throughout the entire organization.





PM2.5

# SMART FILTRATION ELIMINATES CHEMICALS, VIRUSES, AND BACTERIAL POLLUTANTS FROM INDOOR AIR

**When implemented correctly, an air filtration system helps everyone breathe easier**

Indoor air can be hazardous to human health and well-being. It may be contaminated with larger particulate matter, such as dust, pollen, and mold, as well as bacteria and viruses (including SARS-CoV-2) that are easily transmitted between building occupants. Indoor air may also be contaminated with very small particulate matter less than 2.5 microns in diameter (PM2.5), including combustion compounds, organic compounds, and metals, among others. PM2.5 is especially hazardous as these particles easily penetrate the lungs, and can worsen asthma, heart disease, and other chronic conditions. In addition to the health risks, contaminated air in the laboratory environ-

ment may contribute to inaccurate and inconsistent experimental outcomes. Standard heating, ventilation, and air conditioning (HVAC) systems are often insufficient to filter these contaminants, and upgrades and modifications are costly and cumbersome. Alternatively, air filtration systems are a cost-effective solution to improve air quality. Selecting a high-quality system and taking into consideration the specific requirements of the space will ensure success.

## INDOOR AIR QUALITY MATTERS

Poor indoor air quality is an occupational hazard, and the cause must be identified and managed to



ensure the well-being of all employees. In some cases, inadequate ventilation, airborne particles (especially PM<sub>2.5</sub>), and airborne chemical pollutants, along with other environmental factors may contribute to sick building syndrome, a situation in which individuals experience acute health-effects associated with time spent in the building. Signs and symptoms include headache, dizziness, nausea, cough, skin irritation, allergies, and flu-like symptoms, among others, which can contribute to reduced work efficiency and increased absenteeism.

Perhaps one of the leading factors contributing to concern over indoor air quality is the COVID-19 pandemic, and the high transmissibility of the novel SARS-CoV-2 virus. According to the World Health Organization, the main route of transmission for SARS-CoV-2 is via respiratory droplets between individuals in close contact in crowded, indoor settings and inadequately ventilated spaces. Many workplaces must implement new measures, including air filtration, to ensure employee safety.

Laboratories pose additional challenges for maintaining air quality, as they are unique environments with multiple potential contaminants. In addition to common allergens, bacteria, and viruses, many laboratories

contain chemicals such as formaldehyde and other organic compounds (VOCs) that pose health risks. Air filtration systems must be equipped with appropriate filters to safely remove these gases and vapors.

Ultimately, the effects of poor indoor air quality are not constrained to the laboratory space. Offices, meeting rooms, and lunch rooms, among other spaces may also contain air contaminated with allergens, particulates, aerosols, and viruses that can impact human health. As such, implementing a robust air filtration system throughout multiple spaces is essential to support employee health and well-being across the laboratory organization.

## SELECTING THE RIGHT PRODUCT AND CONFIGURATION FOR MAXIMUM BENEFIT

To ensure optimal results when implementing an air filtration system, it is important to consider several factors such as the type of filter, airflow, room size, and performance sensors, among others.

HALO air purification stations can be configured with filters for gases and vapors, or particulates and aerosols, depending on requirements. The exclu-





sive modular filtration column enables users to select from a variety of molecular and particulate filters to create a powerful solution for any space. The one size fits all approach is significantly flawed due to a number of factors, such as; molecular retention and the effects of too much air flow, type of chemicals to be captured, and flow rates to allow for diffusion of smaller particles such as those between 2.5 and 0.125 micrometers in size.

The HALO C carbon filters are designed with Neurodine® technology for organic vapors, formaldehyde vapors, and acid vapors. These filters effectively adsorb toxic chemical emissions in ambient air, and HALO C is compliant with ANFOR NF X 15-211 laboratory grade molecular filtration safety standard.

Alternatively, for the filtration of airborne viral and bacterial pollutants, HEPA (high-efficiency particulate air), and ULPA (ultra-low particulate air) filters are required. The HALO P filtration system can be equipped with HEPA H14 filtration with 99.995 percent efficiency according to the most penetrating particle size (MPPS) method, and EN1822 standard. H14 HEPA filters are designed to specifically provide filtration to complex sanitary conditions, including the significant reduction and propagation of all

airborne viral and bacterial pollutants in clean-rooms and in all laboratory grade microbiological safety cabinets for safe handling of pathogenic microorganisms. ULPA filters are provided as an option based on customer requirements. U17 ULPA filters have 99.99995 percent efficiency according to the MPPS method and EN1822 standard. Both the HEPA H14 and ULPA U17 offer a dust free air filtration efficiency 10 to 1000 times more powerful than many commercially available air purifiers.

In addition to filter type, the room size and airflow requirements must be considered. CFM (cubic feet per minute) quantifies the amount of air the purifier can scrub, and must be sufficient for the space to ensure optimal protection. The HALO C provides 135 CFM of air treatment, and one unit is recommended for every 3,000 cubic feet of volume area. The HALO P provides 170CFM of air treatment and one unit is recommended for every 3,500 cubic feet of volume area. When implementing an air filtration system, it is advisable to consult a product expert to ensure sufficient CFMs for reliable protection.

Each air filtration system should also be equipped with an appropriate performance sensor, coupled to a simple communication system. HALO C filter performance for organic vapors, formaldehyde vapors, acid vapors, and



organic vapors, formaldehyde vapors, acid vapors, and their pollutants relies on semiconductors and electrochemical sensors, whereas HALO P HEPA and ULPA filter performance is timer-based and measures static pressure drops. HALO purifiers enable simple and intuitive communication via light interface.

Light pulsations provide real-time information to room occupants of the unit's performance status and their level of protection.

## A SMART SUSTAINABLE SOLUTION

Air filtration systems offer a unique advantage over HVAC in that they constantly filter room air without releasing it back into the atmosphere. This prevents the redistribution of chemical or biological airborne pollutants throughout the building. The HALO P addresses room level virus mitigation for optimal viral load concentration reductions.

Compared to HVAC, these systems also create energy and space savings. HALO has a minimal 50 Watt energy requirement, and the compact unit is easily ceiling-mounted to save space.

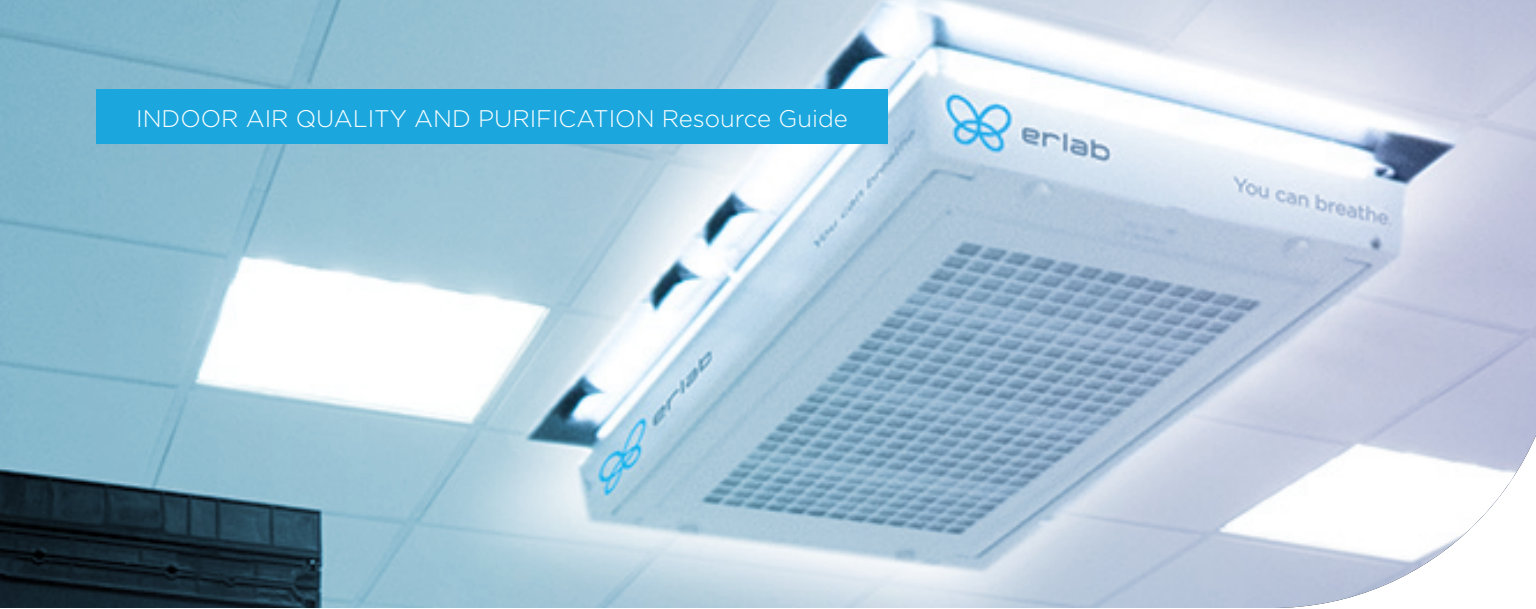
The effects of poor indoor air quality are significant, and taking steps to ensure a safe and healthy workplace benefits the entire laboratory organization. Erlab's HALO air purification stations offer superior protection and ease of use, and their technical team has the necessary expertise to ensure the correct filters and configuration for every room of your organization, to help everyone breathe easier.



**erlab**  
You can breathe.

To learn more,  
visit: [iaq.erlab.com](http://iaq.erlab.com)





# HALO C

An effective air purification system for toxic chemical emissions

## DECONTAMINATION: TRAP POLLUTANTS AT THE SOURCE

Halo C air purification systems capture chemical emissions at the source and permanently locks them in an ultra-high-efficiency activated carbon filter. To achieve this, Erlab has developed the world’s most powerful activated carbon.

Originally developed to capture hazardous chemical emissions produced by chemical laboratory experiments, Halo C purification systems are recommended for all laboratories, businesses, or offices concerned with maintaining excellent air quality for their staff and employees. Compliant with the NF X 15-211 safety standard for laboratories, they ensure comprehensive molecular filtration of a wide variety of atmospheric pollutants, including VOCs (Volatile Organic Compounds), which can threaten the health of all occupants.

## DETECTION AND FILTRATION OF VOCs

Volatile organic compounds – or VOCs – comprise a variety of substances of both natural and human origin. The most well known are butane, ethanol (90% alcohol), acetone and benzene, and formaldehyde. Long term exposure to these VOCs can pose serious health risks. VOCs are used in a number of processes, primarily as solvents, degreasers, dis-solvents, cleaning agents, preservatives, synthetic agents, etc. VOCs are used in numerous industries in the fields of metallurgy, printing, engineering, plastics, automobile manufacturing, agribusiness, textiles, construction, pharmaceuticals, chemistry, histology and pathology, etc.

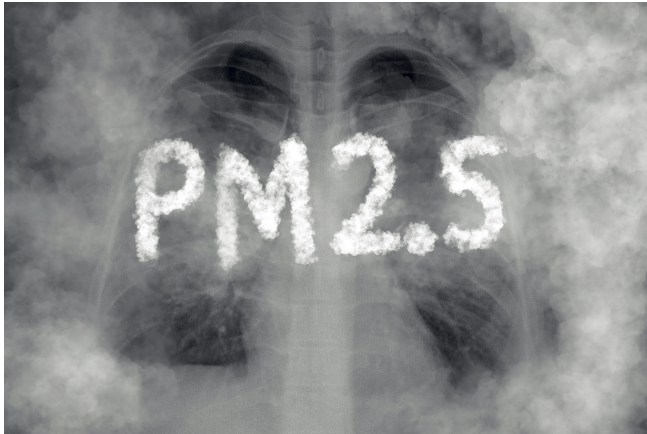
VOCs are characterized by their high volatility and spread easily throughout the atmosphere in laboratories and



offices, thereby directly and indirectly impacting human lives and the environment. Each year, VOCs, which are a significant contributor to PM2.5, are responsible for several million premature deaths worldwide.

## AIR SAFETY AND ENERGY SAVINGS

A single device provides a dilution equivalency of 3 ACH for every 2,648 Cu’, working continuously drawing polluted air away from the breathing zone through what is know as a coanda air flow pattern. Placement and air flow movement also allows for an increase in the overall ventilation.



### EASY TO INSTALL WITH REAL TIME 24/7 SMART TECHNOLOGY ALERTS

Halo C air purifications systems are easily installed in the ceiling and take up no floorspace, unlike other air filtration systems on the market. Their elevated position puts them out of the user’s way, but more importantly this is the best position for optimal performance and efficiency.

As they are directly connected to the building’s main power lines, Halo C air purification systems cannot be unplugged or turned off accidentally. They are designed to operate 24/7 and carry out real-time treatment of large quantities of air.

Halo air purification systems are all fitted with Smart technology. It can communicate simply and intuitively with the user, using a bright halo light and alarm, which indicates:

- The unit’s operational status
- The sudden presence of pollution
- The need to replace the filter
- The fan’s operational status

effectiveness and all without the need for additional HVAC, or outside air reliance.

Installing a HALO C in a laboratory or office space guarantees a high level of air quality without having to resort to cumbersome air renewal systems or connections to HVAC systems (Heating – Ventilation – Air conditioning) which can redistribute chemical or biological atmospheric pollutants throughout a building. In addition, by constantly filtering the air in the room without releasing it into the atmosphere, installing a Halo C can result in substantial energy savings.

<i>Product Specifications Halo C Smart</i>	
Specific treatment	Gas and toxic vapors
Area covered	269 ft2
Air flow rate	7,769 ft3/hour
Standards compliance	Filtration performance tested under the conditions of the AFNOR NF X 15-211:2009 - CE marking
Mode of operation	24/7, Day/Night, Adjustable detection level
Installation	On the ceiling using the 4 included suspension rings
Width, Length, Height	W 23.3 in., L 35.1 in., H 10.2 in.
Energy consumption	50W



For more information:  
[usa.erlab.com](http://usa.erlab.com) / [iaq.erlab.com](http://iaq.erlab.com)  
 or call 1-800-964-4434



# Sustaining Healthy Indoor Air for the Protection of Lab Personnel and Experimental Results

## SMART AIR PURIFICATION STATIONS ARE AN EFFICIENT SOLUTION FOR CLEANER AIR



### How do you counter the dangerous risk of contaminated air affecting lab personnel and experimentation?

Aerosolized particulate matter in the 0.1 to 2.5 micron size range (called PM2.5) is known to be a human health risk as it is more readily drawn deeper into our lungs where it can easily cause disease and exacerbate medical conditions. PM 2.5 is one of the key risk factors associated with the severity of SARS-CoV-2 cases and mortality rates, and one of the leading causes of death, representing over 7 million premature deaths per year. While we are consumed with finding ways to reduce transmission rates of COVID-19, we must not ignore overall indoor air quality issues (IAQ). This problem is especially predominant in laboratories working with toxic chemicals and in fact is linked to laboratory technicians' decreased life expectancy.



### The Halo Air Purification Station is an efficient solution for sustaining healthy indoor air, independent of building HVAC systems.

These Modular filtration systems are exclusive to Eriab, allowing the choice of 3 laboratory-grade molecular filters, based on handling applications and chemicals to be adsorbed. Each filter also has a corresponding sensor to continuously detect pollution levels in your lab, ensuring the air you breathe is safe at all times. HALO safely captures chemicals contained in the ambient air before recirculating clean air back into the laboratory. Easily and effectively mounted into the ceiling it pulls contaminated air up and away from the breathing zone. HALO is totally independent of the building ventilation system with no impact on the existing HVAC system. HEPA systems are also available to properly mitigate virus, bacteria and mold pollution.

Discover the laboratory grade power of HALO C and the complete ecosystem of chemical filtering ductless fume hood and storage products - delivered to laboratories around the world for safety, ease of use, sustainability and cost savings.



Eriab's Halo C removes VOCs, viruses, bacteria, and environmental pollution (PM 2.5).



To learn more, visit:  
[usa.erlab.com](http://usa.erlab.com) / [iaq.erlab.com](http://iaq.erlab.com)



# Product datasheet

## HALO

Professional Laboratory Grade Air Purifiers

**Filtration of VOCs, Viruses,  
and Viable/Non-Viable Pollutants**

- Ceiling mounted for optimal efficiency
- Energy efficient (50W) output
- Validated performance
- Independent and self sustainable, no HVAC required
- SMART remote management with SMART light technology
- Guaranteed ventilation
- Improvement with increased air change rates (ACH)



Laboratory



Senior Living

Classroom



	Molecular Filtration			Viable & Non-viable Particulate Filtration	
	VOC	Formaldehyde	Acids	HEPA	ULPA
	HALO C			HALO P	
External width (mm / in)	592 / 23 <sup>3/4</sup>			592 / 23 <sup>3/4</sup>	
External depth (mm / in)	892 / 35 <sup>1/4</sup>			892 / 35 <sup>1/4</sup>	
External height (mm / in)	260 / 10 <sup>1/4</sup>			303 / 12	
Air flow (m3/h / CFM)	220 m <sup>3</sup> /h / 130 CFM			300 m <sup>3</sup> /h / 176 CFM	
Safety Standards :	*Filtration performances tested according to the AFNOR NF X 15-211:2009 standard : France EN 1822 : 1998 (HEPA H14 & ULPA U16 Filters) - CE Marking				
Voltage / Frequency (V/Hz)	80-240VAC 50/60Hz			80-240VAC 50/60Hz	
Power consumption	50 Watt			50 Watt	
Operating mode	24/24h - 7/7, Night/Day, Min Max detection, Detection value only			24/24h - 7/7, Night/Day	
Ceiling mounted	Hung via 4 eye bolts (included)			Hung via 4 eye bolts (included)	
Weight (kg/lbs)	31 kg - 68 lbs (filter included)			31 kg - 68 lbs (filter included)	
Protected surface (m <sup>2</sup> )	25 m <sup>2</sup> / 269 ft <sup>2</sup>			Up to 93 m <sup>2</sup> / 1,000 ft <sup>2</sup>	

## Features

Communication interface	Simple communication by LED pulses: fan settings, usage timer, fan failure, automatic detection of air quality performance			
Connectivity	RJ45 ethernet cable connection			
Air quality performance sensors	Semiconductor for VOCs	Electro-chemical sensor for Formaldehyde	Semiconduct or Electro-chemical for a wide array of pollutants	Timer Based

## Options

Carbon filtration for gases and vapors	For organic vapors	For formaldehyde vapors	For organic vapors and acid vapors	
Particulate filtration for powders			HEPA H14 filtration efficiency: 99.995 %	ULPA U16 filtration efficiency: 99.99995 %
Pre-filter	Particulate filter			
Post-filter	Particulate filter			
NPBI	Optional Needlepoint Bipolar Ionization			

## Structure

Metallic frame	Anti-corrosion steel coated with 100% polyester	
Filtration module	Injected polypropylene	Aluminum

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