



# MOLECULAR AIR FILTRATION FOR THE HEALTHCARE INDUSTRY

Camfil Offers the Most Advanced  
Air Filtration Technology Against  
Gaseous Contaminants

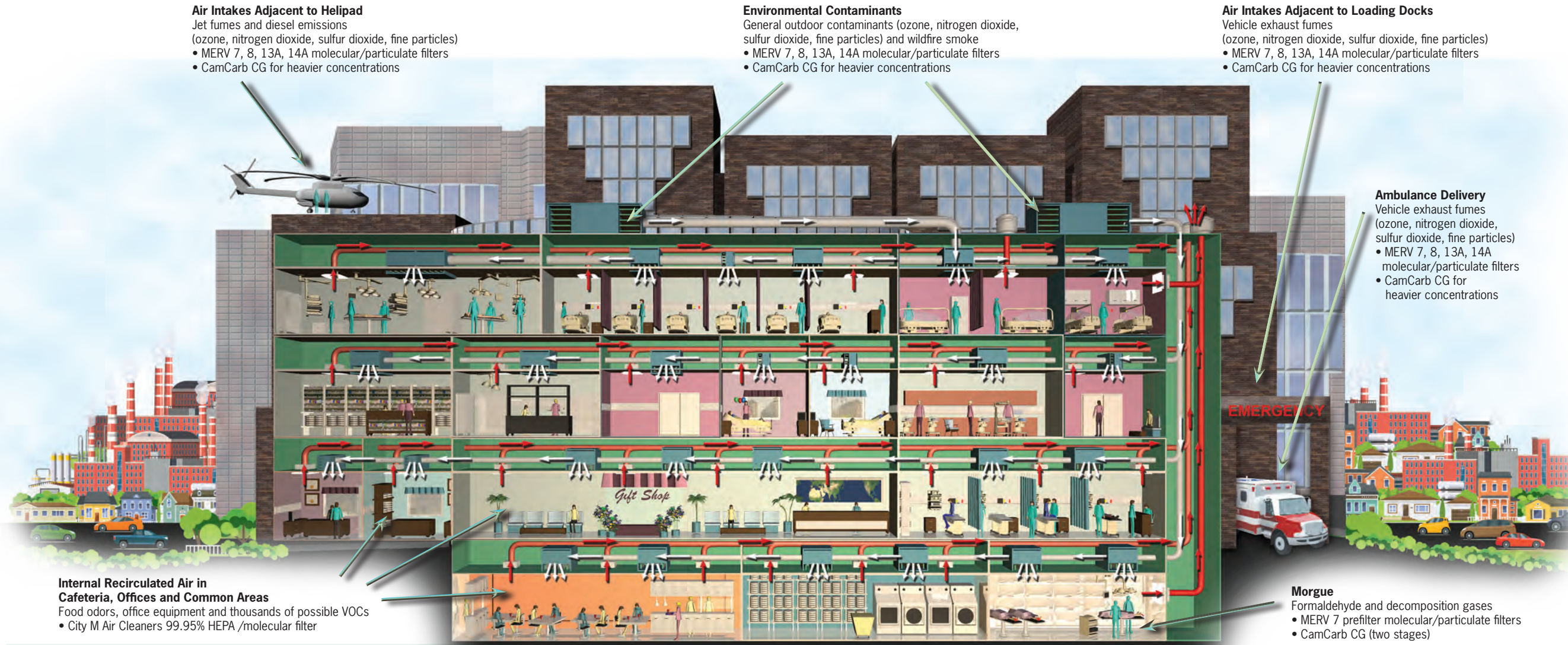


CLEAN AIR SOLUTIONS

# CAMFIL'S MOLECULAR FILTRATION SOLUTIONS

Healthcare facilities must maintain high indoor air quality to promote healing. Recovering patients and those with pre-existing conditions such as chronic bronchitis, asthma or emphysema are at greater risk from the effects of particles found in pollutants that surround a typical hospital.

However, as research into air quality continues, the role molecular contaminants play is becoming more clear. These gaseous contaminants, up to 10,000 times smaller than what particulate filters can capture, do more than produce irritating odors or watery eyes. Molecular contaminants corrode sensitive equipment and also act as toxins that can jeopardize patient and employee health. Unfortunately, the very nature of some common hospital functions generate molecular contaminants.



**Air Intakes Adjacent to Helipad**  
Jet fumes and diesel emissions (ozone, nitrogen dioxide, sulfur dioxide, fine particles)  
• MERV 7, 8, 13A, 14A molecular/particulate filters  
• CamCarb CG for heavier concentrations

**Environmental Contaminants**  
General outdoor contaminants (ozone, nitrogen dioxide, sulfur dioxide, fine particles) and wildfire smoke  
• MERV 7, 8, 13A, 14A molecular/particulate filters  
• CamCarb CG for heavier concentrations

**Air Intakes Adjacent to Loading Docks**  
Vehicle exhaust fumes (ozone, nitrogen dioxide, sulfur dioxide, fine particles)  
• MERV 7, 8, 13A, 14A molecular/particulate filters  
• CamCarb CG for heavier concentrations

**Ambulance Delivery**  
Vehicle exhaust fumes (ozone, nitrogen dioxide, sulfur dioxide, fine particles)  
• MERV 7, 8, 13A, 14A molecular/particulate filters  
• CamCarb CG for heavier concentrations

**Internal Recirculated Air in Cafeteria, Offices and Common Areas**  
Food odors, office equipment and thousands of possible VOCs  
• City M Air Cleaners 99.95% HEPA /molecular filter

**Morgue**  
Formaldehyde and decomposition gases  
• MERV 7 prefilter molecular/particulate filters  
• CamCarb CG (two stages)

The Environmental Protection Agency (EPA) has linked air pollution—including ozone, nitrogen dioxide, sulfur dioxide, fine particulates—to a variety of health problems including:

- Aggravation of respiratory and cardiovascular disease
- Decreased lung function
- Increased frequency and severity of respiratory symptoms such as difficulty breathing and coughing
- Effects on the nervous system, including the brain, such as IQ loss and impacts on learning, memory, and behavior
- Cancer
- Premature death



Source: US Environmental Protection Agency, <https://www.epa.gov/criteria-air-pollutants>

Molecular contaminants are generated by various industrial activities and environmental situations. While there are many causes of contamination throughout healthcare facilities, four sources stand out:

**Helipads**  
Up to one third of hospitals have helipads and must deal with the exhaust fumes from helicopters. Helipads are often located on rooftops and in many cases very near fresh air intake vents that serve the building.

**Ambulance and Other Vehicle Exhaust**  
A typical ambulance contains equipment requiring on-board power to function. Ambulances may idle their motors to maintain a constant power supply. Along with delivery trucks and other nearby traffic, the exhaust contaminates the surrounding air.

**Internally Generated Contaminants**  
Hospitals contain specialized equipment that generate contaminants within the building. Common functions like laundry and housekeeping release volatile organic compounds (VOCs) and cafeterias generate food odors. Specialized areas such as morgues release harmful formaldehyde gas.

**Externally Generated Environmental Contaminants**  
Healthcare facilities near industrial areas are exposed to a variety of gaseous byproducts. In western areas of the U.S., seasonal wildfires produce noxious smoke particles and fumes.

In all cases, these contaminants cannot be captured by particulate filters alone. Fume and gas molecules are so small that the use of molecular filters is required.

## FILTER STYLES

Selecting the appropriate solution to control molecular contaminants depends on the type of gas in question, its concentration, the desired filter service life and the physical configuration of the air handling unit itself. Limited space in the air handling unit requires the use of a particulate/molecular combination filter.

Camfil offers combination molecular/particulate filters: CityPleat (MERV 7 pleated filter), CitySorb DP (MERV 8 deep-pleated filter,) CityFlo XL (MERV13A pocket filter), and CityCarb I

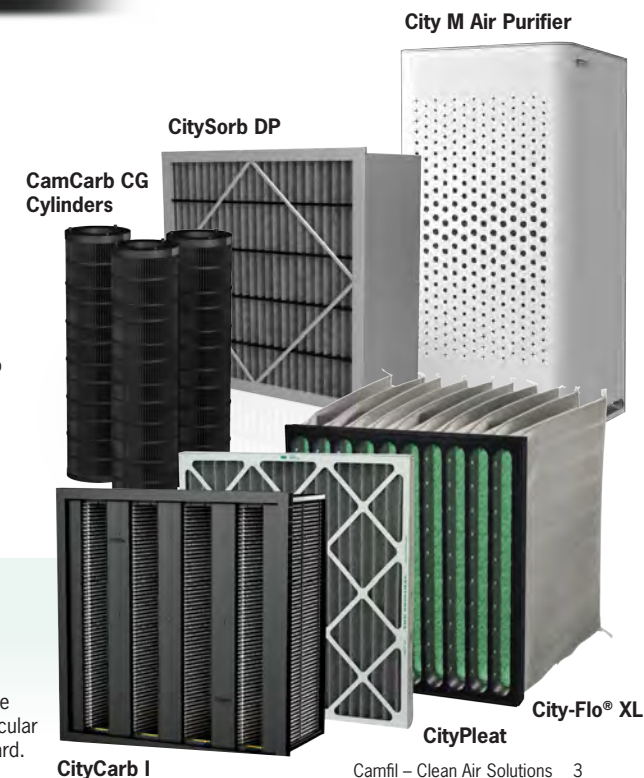
(MERV 14A V-bank filter). All of the combination filters feature Camfil's exclusive broad-spectrum carbon media with Rapid Adsorption Dynamics (RAD).

For high concentrations and heavy duty applications, Camfil offers CamCarb CG, a high capacity cylindrical filter system that is inherently leak-free to provide 99% removal efficiency. In the case where a complex range of contaminants are being targeted, options are available for a multi-stage filter system.

Camfil molecular filtration solutions, are tested per ASHRAE 145 and ISO 10121 to demonstrate performance under realistic operating conditions.

Camfil quality systems are certified per ISO 9001-2000.

Camfil endorses ASHRAE Standard 170 Ventilation of Health Care Facilities as a minimum standard and the particulate filtration recommendations referenced within the standard. In situations where the combination molecular/particulate filter does not achieve the recommended filter efficiency, a molecular filter should be used as a prefilter to achieve the filtration efficiency recommended within the standard.



## CAMFIL is a world leader in air filters and clean air solutions.

For more than half a century, Camfil has been helping people breathe cleaner air. As a leading manufacturer of premium clean air solutions, we provide commercial and industrial systems for air filtration and air pollution control that improve worker and equipment productivity, minimize energy use, and benefit human health and the environment. We firmly believe that the best solutions for our customers are the best solutions for our planet, too. That's why every step of the way – from design to delivery and across the product life cycle – we consider the impact of what we do on people and on the world around us. Through a fresh approach to problem-solving, innovative design, precise process control and a strong customer focus, we aim to conserve more, use less and find better ways – so we can all breathe easier.

The Camfil Group is headquartered in Stockholm, Sweden, and has 30 manufacturing sites, six R&D centers, local sales offices in 30 countries, and about 4,800 employees and growing. We proudly serve and support customers in a wide variety of industries and in communities across the world. To discover how Camfil can help you to protect people, processes and the environment, visit us at [www.camfil.com](http://www.camfil.com).



1 North Corporate Drive | Riverdale, NJ 07457  
Phone: 973.616.7300 | Toll-free 888.599.6620  
[camfil@camfil.com](mailto:camfil@camfil.com)  
[www.camfil.us](http://www.camfil.us)

[www.camfil.us](http://www.camfil.us)

For further information, please contact your nearest Camfil office.