# Decontamination & odor removal in remediation


ODOROX®

POWERED BY PYURE TECHNOLOGY®

Air & surface purification solutions

# Environments requiring remediation are challenged with multiple pathogen risks and odor management — in occupied spaces.

Indoor environments impacted by natural disasters, floods, fires, smoke, raw sewage backups, biological decay and chemical contamination can quickly become areas of hazardous concern for occupants. Bacteria, mold, fungi, and viruses can propagate in the air and on surfaces, creating health concerns, and smoke from building fires, forest fires, or nicotine residue releases chemicals that can permeate surfaces and cause irritation to the eyes and respiratory system.

Powered by Pyure Technology® Odorox® products readily and effectively break down airborne pathogens and pollutants, can be easily set up in any environment, and are safely operated 24/7 in the presence of people, animals, and plants.

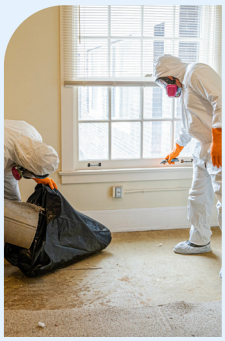
**Odorox systems takes care of these issues:**

## Deodorization

- Smoke - fires & nicotine
- Biological sources - fungi (mildew) and bacteria
- Chemical odors
- Garbage & waste areas

## Pathogen mitigation

- Microbial growth
- Viral transmission



## Chemical reduction

- Volatile organic compounds (VOCs)
- Hydrogen sulfide
- Ammonia
- Off-gassing from cleaning agents

## Mold reduction

- Black mold
- Mold spores
- Prevention of future infestations

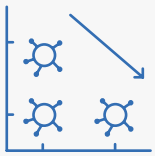
# Replicating nature to deliver safe and effective cleaning.

Odorox products produce the same natural cleansers present outdoors in the same concentrations — ensuring effective purification of air and cleaning of surfaces in occupied spaces.

**Odorox products treat:**

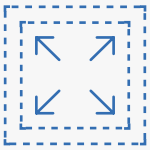
- Odor
- Mold
- Fungus
- Bacteria
- Viruses

**Why Odorox products are better:**



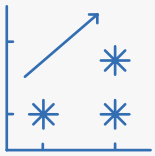
Provides superior performance in reducing microbial loads in the air and on surfaces.


Runs continuously 24/7 while treated spaces are occupied.



Treats any size space with the same efficacy.

Delivered through an existing air handling system or installed as a stand alone solution.



Improves the effectiveness of existing cleaning and sanitation protocols.

# Proven to reduce microorganisms in the air and on surfaces.

## Reduction in air

| PATHOGEN | REDUCTION | TIME |
|---|---|---|
| **MS2 (simulant of RNA viruses ie. Corona)** | 99.9% | 30 mins |
| | 99.999% | 90 mins |
| **Phi-X174 (simulant for DNA viruses ie. Smallpox)** | 99.9% | 30 mins |
| | 99.99% | 90 mins |
| **Staphylococcus epidermis (Gram-positive bacterium)** | 99% | 30 mins |
| | Undetectable | 90 mins |
| **Erwinia herbicola (Gram-negative bacterium)** | 99% | 30 mins |
| | 99.99% | 120 mins |
| **Aspergillus niger (black mold)** | 99.9% | 30 mins |
| | Undetectable | 90 mins |
| **SARS-CoV-2 (COVID-19 virus)** | 99% | 20 mins |
| | Undetectable | 80 mins |

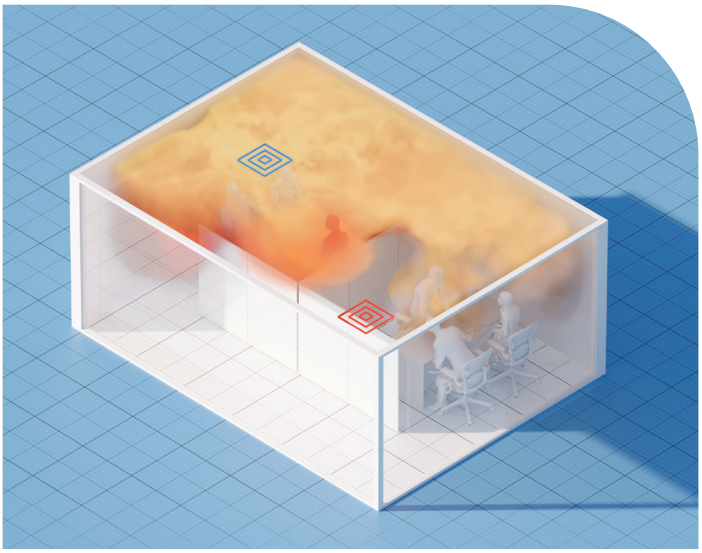
## Reduction on surfaces

| PATHOGEN | REDUCTION | TIME |
|---|---|---|
| **Escherichia coli** | 99.99% | 180 mins |
| **Salmonella enterica** | 99.97% | 180 mins |
| **Listeria monocytogenes** | 98.6% | 240 mins |
| **Staphylococcus aureus** | 99.98% | 360 mins |
| **Vancomycin-resistant enterococcus (VRE)** | 99% | 360 mins |
| **Bacillus Subtilis** | 99.99% | 48 hrs |
| **Candida Albicans** | 99.99% | 48 hrs |
| **Aspergillus Niger** | 99.99% | 48 hrs |
| **H1N1 Influenza virus** | 99.999% | 360 mins |
| **Murine norovirus** | 99.99% | 360 mins |
| **SARS-CoV-2 virus** | 99.999% | 120 mins |

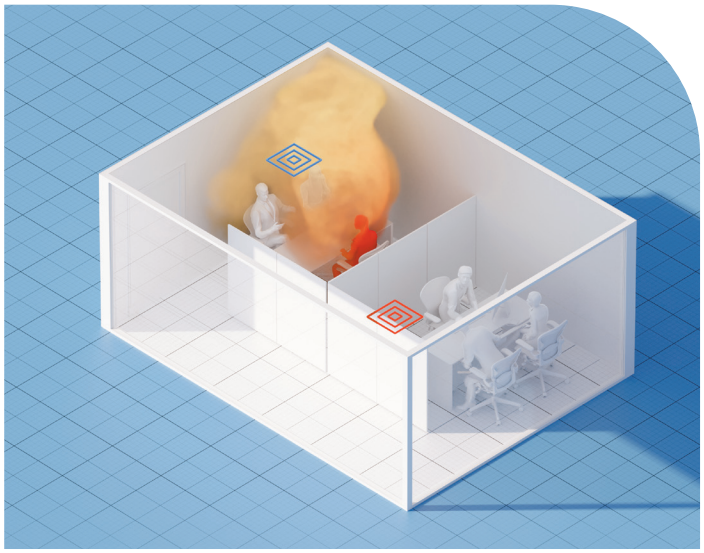
Consult your Pyure representative for the full testing reports.

# Demonstrated to make shared environments significantly safer.

Computational fluid dynamics (CFD) modeling has shown Pyure can provide a 73% reduction in the size of the cloud of infection versus ventilation alone.



3 Air changes per hour
with **ventilation only.**



3 Air changes per hour
with **ventilation and Pyure.**

↓73%

When added to ventilation, Pyure can substantially reduce the risk of transmission. In addition, Pyure enables you to operate at lower air changes per hour and still lower transmission risk, thereby improving energy efficiency.

Computational fluid dynamic modelling by Dr. Kishor Khankari, ASHRAE Fellow - presented at ASHRAE webinar September 2022 and ASHRAE Annual Conference February 2023.
Modeling is based on a 2,600 cu ft room with one supply and one return.

# Proven to reduce airborne pollutants.

Controlled atmospheric studies assessed the impact of Pyure on VOCs and the possible accumulation of chemical intermediates.

TVOC reduction after 15 hours:

↓59%

No accumulation of intermediates above background levels, including:

- Formaldehyde
- Acetaldehyde
- Other aldehydes

Pyure has demonstrated significant reductions of other airborne pollutants in real-world settings:

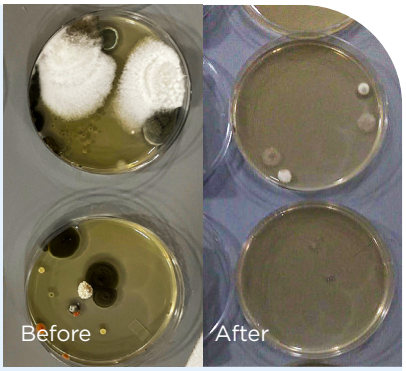
- Chemicals produced by fires
- Nicotine
- Hydrogen Sulfide
- Ammonia
- Ethylene
- Non-methane hydrocarbons

# Case studies

## Ship with mold in HVAC system

### Problem

A 150-foot-long yacht was infected with multiple species of mold, threatening the crew's and passengers' health and safety. Mold was in the air handling system, facilitating the propagation of spores throughout the ship. Mold test kits placed in various locations revealed significant mold contamination.




### Pyure impact

A Pyure IDI™ unit was installed into the air handling system's ductwork to treat the yacht. After seven days of continuous treatment, subsequent testing revealed that the ship's mold was virtually eradicated. The mold-related odors disappeared, and the crew found that the various cabins smelled fresh. They no longer had any difficulties breathing and resumed sleeping on the yacht.

### Customer benefit

The ongoing active purification delivered by the Pyure solution significantly reduced the sanitation and cleaning required on the ship lowering operating costs. In addition, the reduced mold contamination provided passengers and crew with a better experience and helped preserve the asset's value.

## Military base with mold in buildings

### Problem

A military base had a mold issue in barracks and other buildings, creating an unhealthy environment for service people and generating unpleasant odors. The mold was on various surfaces, and it was believed that spores were being distributed through the facility by contaminated ductwork. The contamination in some buildings was so bad that the barracks had to be demolished. In others, the personnel had to be temporarily housed in hotels until a solution could be implemented.

### Pyure impact

Pyure IDU™ units were installed into ductwork to treat the barracks using the air handling system. Portable Pyure Mini® units were also introduced into some areas that had poor air circulation. The base saw a significant reduction in mold and mold-related odors. In addition, personnel saw a considerable improvement in air quality and could resume living in the barracks.

### Customer benefit

Following the introduction of Pyure, the base was able to return personnel to the barracks and provide living quarters with improved air quality.  The mold outbreak was brought under control and did not require any further mitigation. Personnel noted that the air smelled fresher in the treated spaces.

# Case studies

## Tropical resort with mildew odor

### Problem

A luxury resort on a Caribbean island had 170 hotel suites rented at high prices. Despite extensive cleaning protocols and high occupancy rates, the rooms would develop a musty, moldy smell that negatively impacted guest experiences. The resort would have to keep the rooms empty periodically to remediate the odors, and the persistent odors negatively impacted the resort's ability to charge premium rates.

### Pyure impact

Small units were placed in each of the suites, and in the weeks that followed, the resort workers noticed that the musty, mildew odors were eliminated, and guests began commenting on the "freshness" of the suites.

### Customer benefit

The resort shortened turnaround times between guests and was able to charge higher prices for the suites due to the high level of guest satisfaction. The higher revenues generated a rapid payback on the Pyure devices, and the resort has continued to use the Pyure units since, ordering replacement UV optics each year.

## Retail store with fire damage

### Problem

A 150,000 square foot retail store had a fire in the adjacent warehouse that generated much smoke, resulting in the merchandise on the retail floor and warehouse having a strong "burning" odor.  Initial remediation quotes called for a 30 day closure of the store ($900,000 in lost sales per day) and the disposal of $8 million in non-recoverable inventory.

### Pyure impact

The store used large Pyure MVP48™ units to treat the main space and portable Odorox XL3™ units to treat specific inventory items within an area with greater damage. After 36 hours of continuous treatment, the odor was largely mitigated, and the store could open to the public and resume operations. All of the inventory was recovered.

### Customer benefit

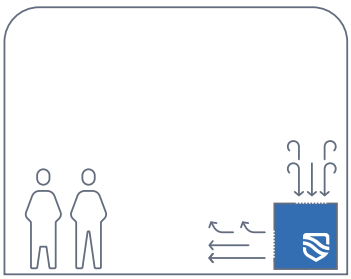
The retailer limited the revenue losses to under $2M, far less than the $27M in lost revenue that would have resulted from a 30 day closure. The company also saved several million dollars in recovered inventory. With Pyure, the outlet was able to open within 36 hours and continue to operate the Pyure technology in the presence of shoppers, running for a total of 10 days to remove the odors completely and permanently.

# Hassle free installation and upkeep.

Pyure solutions are simply plugged into a standard outlet or added to an air handling system.

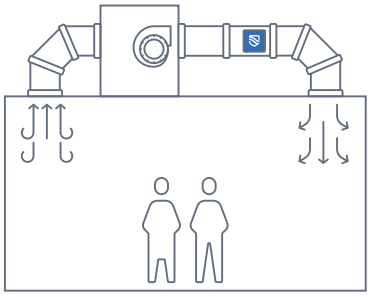
## Standalone

- Heavy-duty portable, stand alone units
- Wall mounted units
- Large stand alone units with blowers



## Decentralized air handling

- Smaller units inserted in ducts throughout the building
- Wall mounted units where there is no ductwork



## Pyure makes maintenance easier.

### Little impact on existing handling system

- Minimal increase in airflow resistance
- Virtually no extra wear and tear
- Marginal impact on energy consumption

### Low frequency maintenance and a system that helps clean

- Annual replacement of UV optics and sensors
- Periodic cleaning of filters (frequency depends on the dust and oil concentrations in the air)
- Reduces the frequency and intensity of duct decontamination

# Odorox restoration & remediation product line.

Odorox products can be added to air ducts, wall mounted or plugged into a standard outlet. Switch them on for instant air purification and surface cleaning in small to medium size environments.

## Odorox® Slimline™ Purifier Family

Rugged purifiers with a durable exterior beneficial for public spaces and commercial or industrial installations that require a portable or wall-mounted unit.

**TREATMENT AREA:**
up to 900 - 1,500* sq ft

## Odorox® Boss™ Purifier

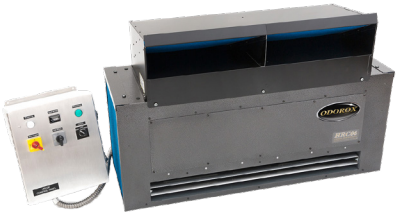
Designed for tough environments, the Boss purifier is suited to applications like remediation following fire or water damage. It's also ideal for areas with frequent movement and contact.

**TREATMENT AREA:** up to 2,500* sq ft


## Odorox® Boss XL3™ Purifier

By adding an external fan to provide greater air movement, the Boss XL3 purifier is ideal for spaces that have been affected by smoke, flooding, wastewater, and other air pollutants.

**TREATMENT AREA:** up to 3,250* sq ft



## Odorox® HRC06™ Air Purifier

The HRC06 purifier is wall mounted and can modulate its output to purify and deodorize commercial and industrial applications.

**TREATMENT AREA:** up to 6,600* sq ft


## Pyure IDU™ Purifier

The IDU purifier is a duct mounted purifier that is easy to install and requires only an electrical connection for operation.

**NOMINAL TREATMENT AREA:**
2,000* sq ft (model dependant)


## Pyure Mini® Purifier

The Mini series is designed to fit in with its small proportions, modern design and low noise levels. This makes it ideal for cleaning and deodorizing air in offices, waiting rooms or any other small commercial space.

**TREATMENT AREA:** up to 500* sq ft

*Based on typical operating conditions: 3 air changes per hour, 90% recirculated air, and 9-foot (2.7 m) ceiling. Sq ft range can vary based on the treated application. Consult your Pyure representative.

# Simple solutions for big spaces with big problems.

Even the largest spaces can be treated without deploying multiple small portable units. A single system can deodorize and decontaminate from 3,000 to half a million square feet. By connecting to the air handling system or a temporary air distribution system our powerful hydroxyls get into every corner of big spaces with single units.


## Pyure IDI™ Purifier

A versatile solution that fits into the ductwork of any air handling system. Connect with more IDI units to increase the treatment area.

**TYPE:** Indoor, inline with HVAC
**NOMINAL TREATMENT AREA:** 3,000* sq ft


## Pyure MVP16™ Purifier

Integrates into a new or existing air-handling system where space is limited and provides more cleansing power than induct systems.

**TYPE:** Indoor, inline with HVAC
**NOMINAL TREATMENT AREA:** up to 85,000* sq ft
**BLOWER:** optional

## Pyure MVP24™ Purifier

A heavy-duty unit built with a reinforced shell suitable for outdoor applications.

**TYPE:** Rooftop, inline with HVAC
**NOMINAL TREATMENT AREA:** up to 200,000* sq ft
**BLOWER:** optional

## Pyure MVP48™ Purifier

Our most powerful system, ideal for the largest installations.

**TYPE:** Indoor, inline with HVAC
**NOMINAL TREATMENT AREA:** up to 450,000* sq ft
**BLOWER:** optional

*Based on typical operating conditions: 3 air changes per hour, 90% recirculated air, and 9-foot (2.7 m) ceiling. Sq ft range can vary based on the treated application. Consult your Pyure representative.

# Let’s discuss a solution tailored to your needs or plan a trial.

At Pyure, we’re dedicated to finding the right solution for solving your challenges and delivering the outcomes you need.

Get in touch to find out more about how we can help.

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1-877-735-3701

Who we work with:

GOLD OEM Partner – Rockwell Automation
Microsoft
STERIS
TOYOTA
Molson Coors beverage company
Carnival
Texas Motor Speedway
Google
Royal Caribbean International
Athenian Living Assisted Living Community
Spruce Meadows
ATCO Group
Newark Board of Education
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