Indoor Air Quality: What Facility Managers Need to Know

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Introduction

90%

People spend about 90% of their time indoors.[1]

How a built environment supports comfort and concentration influences how people work, live, learn, heal, and shop within it. Indoor air quality is central to that experience, influencing health, productivity, and confidence in the spaces we occupy every day.

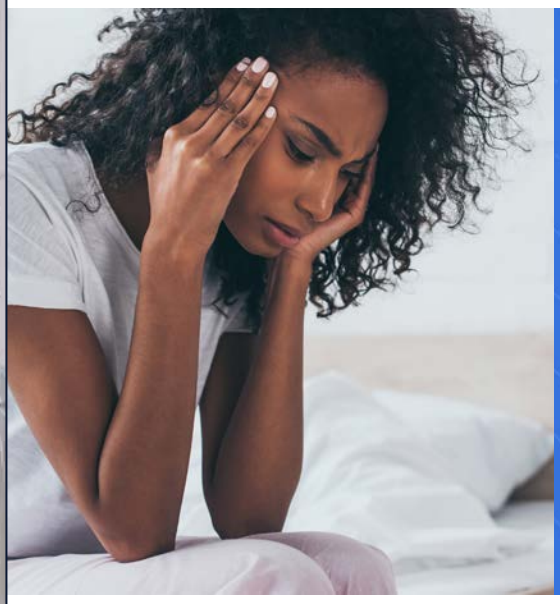
The challenge is that air quality issues often develop quietly and over time. A musty odor may appear long after moisture has migrated into wall cavities. Comfort complaints may increase only after carbon dioxide levels have been rising in a poorly ventilated space for months. Patterns of occupant illness may surface only after mold has already spread into insulation or HVAC components. By the time symptoms are obvious, the issue is rarely isolated. Poor air quality often affects environmental health, mechanical performance, and building materials simultaneously.

This white paper explains how indoor air quality issues emerge, what effective testing and monitoring involve, and how engaging qualified environmental and restoration experts can help restore safe conditions and maintain operational continuity.

The Hidden Impacts of Indoor Air Quality

Indoor air quality directly affects the health, safety, and well-being of the people who occupy a building.[2] Clean, breathable air helps protect individuals from illness, discomfort, and long-term health risks, making it a fundamental responsibility for any organization that manages indoor spaces.

Air quality also influences how effectively buildings support the work, learning, care, and services that take place inside them in a number of ways.



Indoor air is commonly two to five times more polluted than outdoor air and sometimes much more.[3]

Source: American Lung Association

Indoor Air Impacts Performance

When air supports comfort and clarity, people focus more easily, think more clearly, and remain productive longer.[4] Poor indoor air quality triggers symptoms such as headaches, fatigue, irritation, and breathing strain, which can lead to distraction, delays, and reduced output across teams.[5]

Healthier Indoor Environments Drive Better Outcomes

Hospitals and long-term care facilities see fewer complications and more consistent recovery when they control airborne contaminants.[6] Students learn more effectively in classrooms with adequate ventilation.[7] Indoor air quality plays a critical role in occupant comfort and overall experience, which are key drivers of customer satisfaction and repeat visits in hospitality environments.[8]

Compliance Expectations Are Rising

Organizations that take air quality seriously strengthen their protection against legal and safety risks. Air quality complaints, especially those involving mold, combustion byproducts, and chemical exposure, can evolve into regulatory investigations or workers' compensation claims.

Proactive Air Quality Management Reduces Operational Costs

Moisture and particulate control slows structural wear and helps HVAC systems work more efficiently, extending equipment life and reducing energy waste.

Preparedness Builds Resilience Into Every Facility

Monitoring indoor air conditions and having a plan for water, fire, or mechanical incidents ensures a faster, more complete recovery. Buildings that manage environmental challenges well protect their assets, maintain continuity of operations, and reinforce the confidence of the people who depend on them every day.

Proactive maintenance protects your bottom line.

Top Air Quality Issues and Preventive Guidance

Indoor air quality issues often start small and out of sight in places that are easy to overlook and escalate over time if the underlying cause is not addressed. Understanding how these issues develop and what prevents them is key to keeping small concerns from becoming building-wide problems.

MOISTURE INTRUSION

RISKS: Water commonly triggers air quality problems. It can arrive suddenly, through pipe failures, sprinkler discharges, or storm damage, or develop slowly behind walls and ceilings. Once materials such as drywall, carpeting, or insulation become damp, they create ideal conditions for mold growth. Visible standing water is not required; spores can spread easily through air-handling systems and affect large areas quickly.

STEPS TO TAKE: Preventing water-related issues starts with aggressive moisture control. Regular inspections of roofs, plumbing systems, and building envelopes help facility teams identify leaks early. When water appears where it should not, immediate drying and repair prevent microbial growth and stop contaminants from spreading into occupied spaces.

FIRE AND SMOKE DAMAGE

RISKS: Fires degrade air quality well beyond the immediate burn area. Fine smoke particles and soot travel through buildings, settling on walls, ceilings, and HVAC systems. These residues often contain acidic and hazardous compounds that can continue to off-gas and damage materials if not properly removed. Water used in suppression introduces added risk by creating damp conditions that can promote mold growth and compound indoor air quality issues.

STEPS TO TAKE: Effective prevention after a fire requires thorough removal of smoke and soot residues, targeted HVAC cleaning, and full drying of affected materials. Addressing contamination and moisture together reduces the risk of long-term air quality deterioration.

RENOVATION MATERIALS

RISKS: Renovation activities can unintentionally degrade indoor air quality. New flooring, adhesives, paints, and furnishings release volatile organic compounds (VOCs) as they cure. Without adequate ventilation or containment, these vapors remain trapped indoors long after construction work ends.

STEPS TO TAKE: Mitigation begins with material selection and work planning. Choosing low-emission products where possible, isolating renovation zones, increasing ventilation, and scheduling work during off-hours help limit occupant exposure and prevent lingering air quality complaints.

POOR VENTILATION

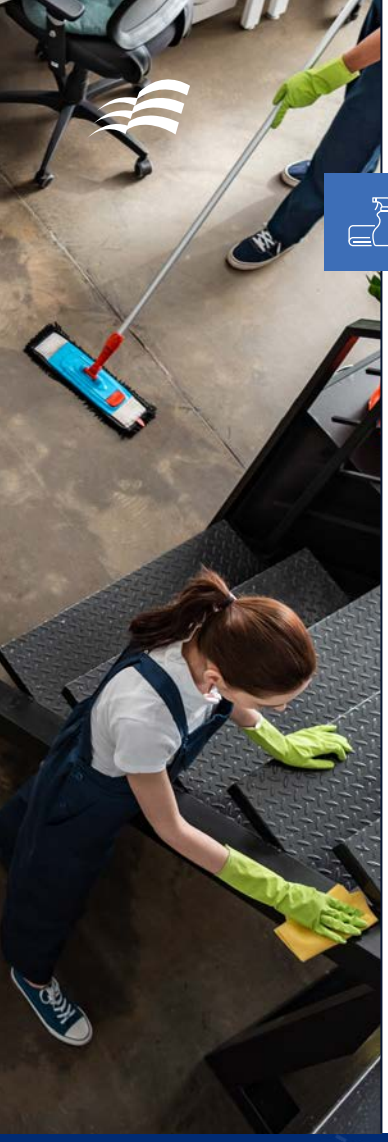
RISKS: Ventilation systems that no longer match how a building is used allow pollutants to accumulate. As occupancy increases, so do heat, humidity, and carbon dioxide levels. Indoor air becomes stagnant and particulates such as dust, fiberglass, and pollen remain in circulation when HVAC systems are imbalanced, poorly maintained, or using outdated filtration.

STEPS TO TAKE: Regularly evaluate ventilation performance to prevent problems. Adjust fresh-air delivery and filtration whenever facility layouts change or activities increase space demand.

LEGACY BUILDING MATERIALS

RISKS: Older facilities may contain asbestos or lead in insulation, flooring, ceiling tiles, or fireproofing. These materials are not hazardous when intact, but water damage, demolition, and mechanical disruption can release dangerous particulates into the air.

STEPS TO TAKE: Proactive management includes identifying legacy materials before renovation or repair work begins and engaging certified professionals when disturbance is unavoidable. Proper handling and abatement restore air safety and protect occupants and workers alike.



EVERYDAY ACTIVITIES

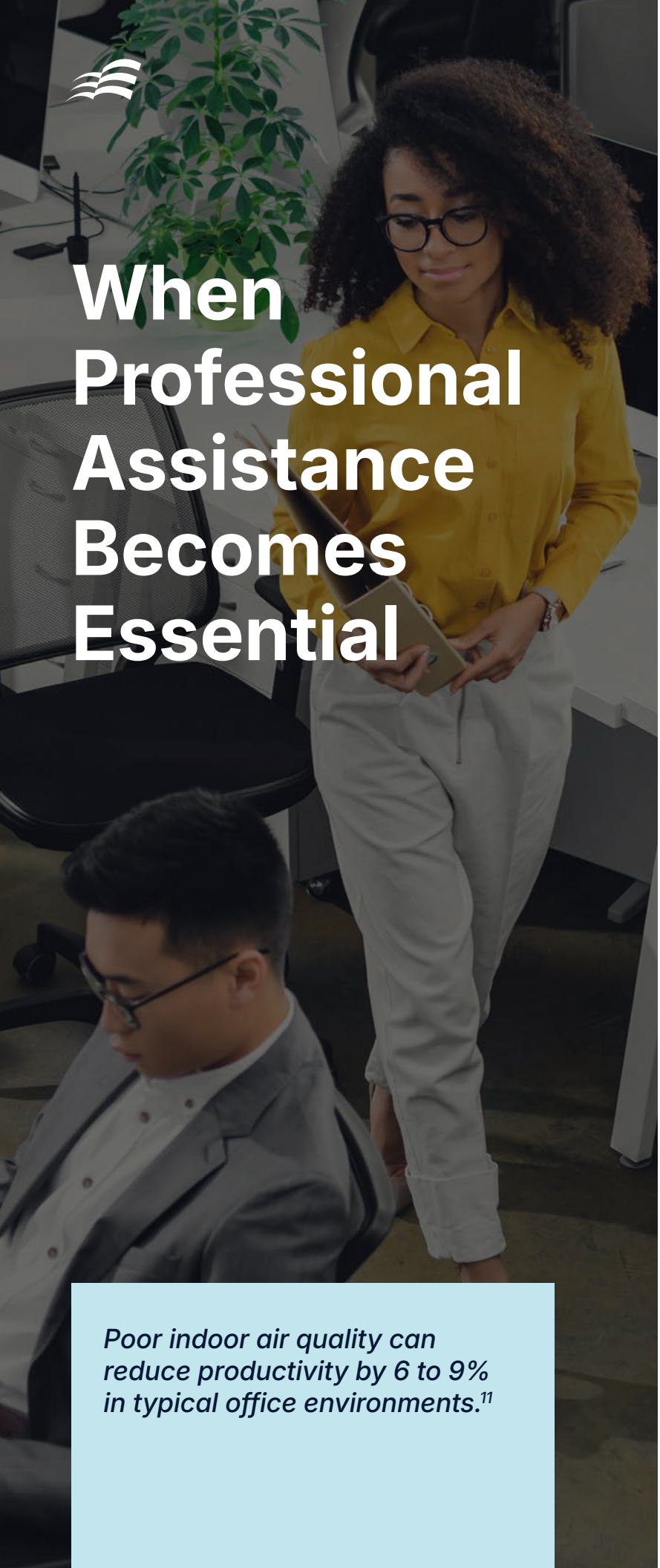
RISKS: Daily operations also influence indoor air quality. Cleaning products emit chemicals into the breathing zone, crowded rooms elevate carbon dioxide levels, and storage areas can introduce odors and off gassing from supplies. In environments serving vulnerable populations—such as hospitals, senior living facilities, and childcare centers—biological transmission risks further heighten concern.

STEPS TO TAKE: Continuous monitoring strengthens prevention across all these scenarios. Sensors tracking humidity, particulate matter, and carbon dioxide provide early warnings when conditions begin to shift, allowing facility teams to respond before discomfort escalates into downtime or damage.

The faster a facility identifies and addresses a change, the easier it is to maintain clean, comfortable, and compliant indoor air. Rapid response minimizes disruption, reduces remediation costs, and preserves building performance. Facility managers who understand these cause-and-effect relationships and respond accordingly help their buildings remain healthier, more efficient, and more resilient.

30%

Up to 30% of new or recently renovated buildings experience indoor air quality complaints.[9]



When Professional Assistance Becomes Essential

Poor indoor air quality can reduce productivity by 6 to 9% in typical office environments.[11]

Some indoor air quality conditions require expertise, equipment, and containment procedures beyond the scope of routine facility operations.

- Remediation by certified professionals is necessary when mold growth affects an area greater than 100 square feet,[10] where the source of microbial growth is unknown or unresolved, or where exposure may impact immunocompromised individuals, older adults, or children. Certified containment and removal practices can prevent spores from spreading into clean spaces through airflow, foot traffic, and HVAC systems.
- Professionals must treat smoke damage at its chemical source to prevent ongoing emissions.
- Experts must extract water that has penetrated structural materials and dry those materials fully to preserve building integrity.
- Strong indicators that professional support is necessary include persistent odor complaints that defy basic mitigation, unexplained occupant symptoms concentrated in one location, and air quality contamination affecting medical, food handling, or childcare operations.
- Sensitive settings require validation that indoor air meets strict standards before occupancy resumes.

Professional environmental response teams know how to isolate affected zones, control airflow, remove damaged materials, decontaminate surfaces, and verify through testing that air quality has returned to acceptable levels.

Common Equipment Used to Improve Air Quality

- **INDUSTRIAL DEHUMIDIFIERS:** Remove moisture from the air and lower humidity levels.
- **HIGH-VELOCITY AIR MOVERS:** Circulate air across wet surfaces to accelerate evaporation and prevent moisture from remaining trapped in walls, flooring, and structural components.
- **WATER EXTRACTION EQUIPMENT:** Remove standing water following leaks, floods, and sprinkler discharges.
- **HEPA AIR FILTRATION DEVICES (AIR SCRUBBERS):** Capture airborne particulates such as mold spores, dust, and debris.
- **NEGATIVE AIR MACHINES:** Create controlled pressure differentials that keep contaminated air from migrating into clean areas.
- **ACTIVATED CARBON FILTRATION UNITS:** Absorb odors and gaseous pollutants, including VOCs released from smoke damage, building materials, and cleaning products.
- **HVAC CLEANING AND FILTRATION EQUIPMENT:** Remove dust, soot, and biological contaminants in ductwork, coils, and air-handling components.

Conclusion

Recovery from compromised air quality often involves more than cleaning the air. Facilities must retain professionals to address water intrusion at its source using advanced equipment and certification-backed methods. Fire and smoke response should include complete deodorization, soot removal, and HVAC system cleaning to prevent ongoing contamination. Hazardous building materials, like asbestos or lead, may need to be abated safely when disturbed.

Indoor air quality becomes manageable with a proactive plan and a trusted restoration partner. A full-service restoration partner knows how to integrate environmental testing, remediation, structural repair, and insurance-related documentation into a unified recovery plan. A single-source approach limits delays, maintains strict containment throughout remediation, and returns facilities to normal operations as efficiently as possible.

Connect with ATI's experts today to learn more and start building a healthier, more resilient indoor environment.

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Endnotes

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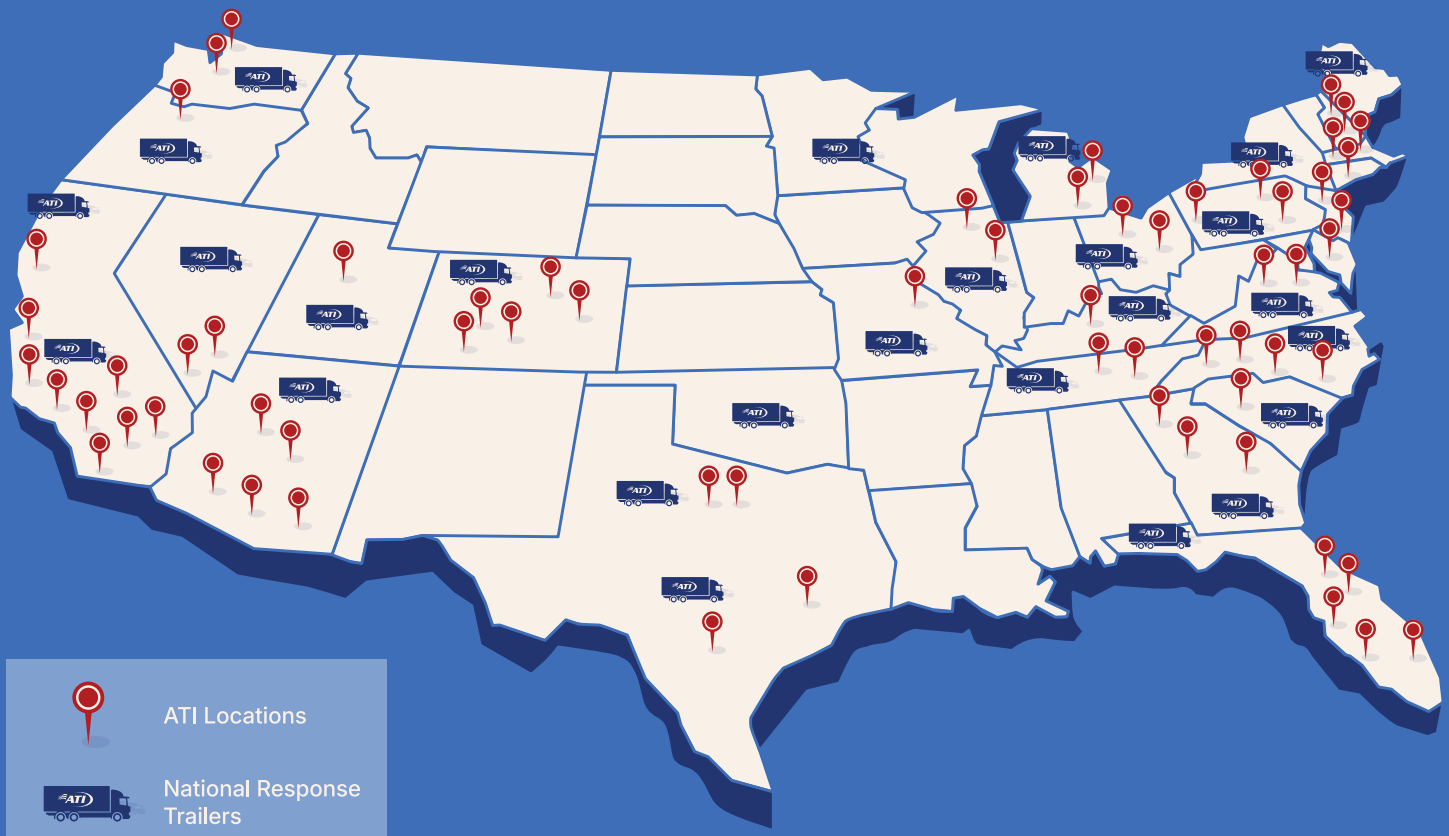

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