Boston Green Tourism
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Boston Marriott Long Wharf

Preventing Mold in Hotels
And
Safely Treating It

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May Indoor Air Investigations, LLC
Since 1992, we have completed more than 1,500 “sick building investigations” in homes, schools, businesses, hotels and offices.

We have taken and analyzed by microscopy over 30,000 air and dust samples.
Periodic inspection and sampling of carpets and HVAC equipment, along with proper maintenance, can help you keep your hotel rooms healthy.
Outline

What is dust?
Why does mold grow?
Importance of filtration in HVAC
Care for Heat Pumps and Heat Recovery Ventilators (HRVs)
Bathroom exhausts
Suggestions for cleaning
Why All HVAC Equipment Needs Efficient Dust Filtration

Why care about dust??

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Soil particles
Outdoor Air
Pollen
Spore
Pollen with mold growth
What is Indoor Dust?

- Skin scales
- Pet dander
- Starch granules
- Lint fibers

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The filter is supposed to remove dust

What happens when we don’t remove dust?
Most of indoor dust is **biodegradable**, so:

- skin scales
- pet dander
- pollen
- plant materials
- corn starch granules
- cellulose fibers

become FOOD for microorganisms when conditions are wet or very humid (above 80% RH).
Above: *Aspergillus* mold on the front door of a split level home.

*Cladosporium* mold on a basement door.

**If RH >>80%**
Mold Grows on Surface Dust Anywhere! If RH >>80%
Common Indoor Mold Genera:

- *Penicillium*
- *Aspergillus*
- *Stachybotrys*
- *Cladosporium*

**MOLDS DO NOT CAUSE ROT!**

**DEAD OR ALIVE, INHALED SPORES CAN CAUSE ASTHMA and/or ALLERGY SYMPTOMS**

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The white stains suggest water soaked into this moldy, fibrous A/C lining material.
Mostly Dead Spores from the Moldy A/C Liner

Can cause allergy and/or asthma symptoms dead or alive!
Coil Dust and Mold
(how efficient is this A/C coil???)
Mold hyphae in biodegradable coil dust

Filters must remove biodegradable dust
Coil Dust and Mold

Mold growth can also stink!

That’s why A/Cs often smell

After the coil, the air RH is 100%!

Mold can grow in any dust after the coil
Coil Dust and Mold

Mold and dust collect on the incoming-air side, not the supply side.

Filters MUST remove biodegradable dust.
Coil Dust and Mold Balls

Dusty means musty
Coil Dust and Mold

Moldy insulation;
99% of spores were dead but remained allergenic
Any coils that cool air must have the air filtered so that as much dust as possible is removed from the Incoming air

ASHRAE recommends a minimum efficiency of MERV-8

Dusty means musty
Microbial Growth Leads to “Bioslime” in Pans and Drain Lines

“Bioslime” Clogs Fan-Coil Pans and Drains Causing Pan Overflow
Microbial growth on coils and fibrous liners is a leading cause of sick building syndrome (SBS).

Contaminated HVAC systems can cause allergies, asthma and even life-threatening illnesses like hypersensitivity pneumonitis.
What Do Blowers Look Like?
Window A/C with moldy dust

Test with a tape sample
Window-A/C Blowers

Mold on blower blades

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Relatively New Amana Heat Pump in Hotel Room

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Relatively New Amana Heat Pump in Hotel Room

All this dust will become mold in the summer!

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Relatively New Amana Heat Pump in Hotel Room

All this dust will become mold in the summer!
Relatively New Amana Heat Pump in Hotel Room

Inadequate filter
Solutions

During winter, the coil is dry so NO mold growth

Just cleaning is needed

During warm weather, coil **must** be cleaned
There should not be visible dust
Use antimicrobial tablets in pan

• Best if coil is dry to clean (run heat briefly?)
  • HEPA vacuum coil with **soft**, brush tool
  • Move vacuum brush parallel to fins
• If moldy, treat with steam vapor

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Vapor Steam Cleaner

Fogacci

Produces pure steam

Steam vapor can . . .

sanitize. .

kill dust mites. .

and destroy some allergens
Vapor Steam Cleaner

Can clean heat-pump coils

Help eliminate mite problems in carpets and upholstered items

Reduce allergens in carpets

Caution: must check that fibers are not damaged

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Other:

Only use HEPA-filtered vacuums

Have a no-feather room

Do not use fragranced cleaners

Use a Tramex Moisture meter to check carpets, etc. for dampness

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How About a Heat Recovery Ventilator (HRV) to bring in fresh air?

HRVs are “green”
Heat Recovery Ventilators (HRVs) Must Be Maintained

Supplemental filters must be installed in line to replace the fresh-air filter and indoor-air intake filter

Fantech FB6 with MERV-8
HRV with external, in-line filtration

Must have smooth interior and drain
Ducts

This is where your air comes from. Would you breathe or eat in here?
Ducts

This is where your air comes from. Would you breathe or eat in here?

Have ducts inspected and professionally cleaned
Return Grille and Pre-Filter Material
Jeff’s Filter and Coil After 2 Seasons

No dust = No mold!
Bathroom Exhausts

Fans

Grilles and fans should be cleaned periodically

Fan removes steamy air while showering

It does not dry wet surfaces

An oscillating fan dries surfaces quickly
Summary:

To avoid musty, dust removal is a must!

In real estate, location, location, location

In HVAC, it’s filtration, filtration, filtration

Dry bathroom surfaces quickly

Use vapor steam for cleaning

….and no fragrances please!