



Cleaner environment. Safer workplaces.

MOLD ABATEMENT SPECIFICATION
for
192 Deerfield Road
Windsor, CT 06095

Prepared for
Jim Burke
Town of Windsor
275 Broad Street
Windsor, CT 06095

November 5, 2020

Prepared by
EnviroMed Services, Inc.

Project # IH-20-695

TABLE OF CONTENTS

SECTION

02100 MOLD ABATEMENT

INSPECTION REPORT

MOLD INSPECTION REPORT

SECTION 02100

MOLD ABATEMENT

SECTION 02100 – MOLD ABATEMENT

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Inspection identified amplification of mold and toxigenic mold in the air, and amplified mold on surfaces.
Refer to EnviroMed Mold Report No. IH-20-695 (attached).
- B. The Scope of Work in this section provides for all labor, materials, facilities, equipment and services to remove and dispose of mold-contaminated building material and clean the work area.
- C. Contractor shall perform the following scope of work.

Basement

Contractor shall prepare work area with 6 mil polyethylene critical barriers.

Contractor shall remove (or cover with 6 mil polyethylene) all non-impacted basement items prior to abatement.

Contractor shall remove lower 1' height from floor: wall panels, column casing, framing and insulation, as these items were previously impacted by water.

Contractor shall clean all remaining materials with Fiberlock Shockwave or approved alternate per manufacturer specification.

Contractor shall clean all masonry foundation walls, steel supports and floors with Fiberlock Shockwave or approved alternate per manufacturer specification.

Contractor shall bag or wrap damaged substrates and associated debris, insulation, etc. prior to leaving work area.

Contractor shall remove and replace exterior basement door, which has been water impacted.

1.2 QUALITY ASSURANCE

- A. The Contractor shall be a member of a nationally accepted organization that recognizes the remediation of mold and restoration of building systems, and shall have at least three years of experience in this field. The Contractor shall have at least one (1) trained and/or Certified Microbial Remediation Specialist (CMRS) certified by American Indoor Air Quality Council on a full time basis, or have a staff certified by a nationally recognized certification program and organization dedicated to the remediation of mold and other microbial materials.

1.3 TRAINING

- A. Contractor must provide documentation that the labor force has been properly trained in the operation of all equipment and materials to be utilized for cleaning and sanitizing on this project.

1.4 SUBMITTALS

- A. Provide Safety Data Sheets (SDS) and manufacturers product data on materials to be used in the project.
- B. State permit to use the cleaner / sanitizer (biocide) in the State of Connecticut.
- C. Fit test documentation and medical clearance to wear a respirator for all workers who will be wearing respirators.

1.5 PERSONAL PROTECTION

- A. All workers on the job site are to wear hard hats, safety glasses, and work boots.
- B. All workers within the mold work area are to wear at minimum, half face respirators with P100 HEPA filters and disposable suits.

PART 2 – PRODUCTS

2.1 CLEANER / SANITIZER AND ANTI-MICROBIAL COATINGS

- A. Quaternary Ammonium-Based Cleaner/Sanitizer
Fiberlock Shockwave or approved alternate
- B. Anti-Microbial Coating
Fiberlock Shockwave or approved equal.

PART 3 – EXECUTION

3.1 CONTAINMENT SET-UP

- A. The Contractor is responsible for thoroughly pre-cleaning each work area and removal of debris and garbage for disposal as solid waste.
- B. The Contractor is responsible for coordination with Town of Windsor for removing movable objects from the work area prior to mold remediation.

- C. Cover windows, exterior doors, and vents in the unit using barriers consisting of 1 layer of 6 mil polyethylene sheeting.
- D. Provide single layer of disposable 6 mil polyethylene ground tarps under the work area.
- E. Set-up HEPA filtered fan units, exhausted outdoors, in sufficient quantity to maintain a -0.02 inches of water pressure differential between the work area and adjacent areas.
- F. Contractor shall erect a decontamination system so as to allow Contractor's employees and equipment to be properly decontaminated prior to exiting the area. The decontamination system shall be a 3-chamber system with a clean room for change out of street clothes into work clothes, a shower for decontaminating personnel of mold and other debris prior to exiting, and a dirty room where contaminated equipment and personal protective equipment can be stored prior to use or disposal. The water used in showering shall be properly filtered and containerized for disposal. Each chamber of the system shall be segregated with overlapping curtains to prevent materials or air from exiting the system.

3.2 REMOVAL

- A. Remove the mold-impacted building materials.
- C. Remove demolished building materials from the work area in 6 mil bags.
- D. Dispose of removed building materials.
- E. Keep disposal container covered or locked when not in use.

3.3 CLEANING PROCEDURES

- A. Contractor shall thoroughly vacuum the work area clean dust, dirt, and debris with HEPA vacuums.
- B. Upon completion of HEPA vacuuming, the Contractor shall wipe down all surfaces in the work area with cleaner / sanitizer agent.
- C. Contractor shall allow the area to dry of excessive moisture from cleaner / sanitizer prior to performing a second vacuuming of the area with the use of a HEPA vacuum.
- D. Thoroughly vacuum the work area clean of dust, dirt, and debris a second time with HEPA vacuums.
- E. Upon completion of HEPA vacuuming, the Contractor shall wipe down all surfaces in the work area with cleaner / sanitizer agent a second time.
- F. Remove the negative air units, decontamination units, and critical barriers on windows and doors following final cleaning.

3.4 FINAL INSPECTION & CLEARANCE TESTING

- A. Clearance sampling will be done by the Owner's Consulting Industrial Hygienist using spore trap air samples and tape lifts. Spore trap air samples will be reported in fungal structures and fungal structures/m³. Outdoor spore trap air sampling will be performed concurrently with the indoor spore trap air samples.
- B. If any single indoor spore trap sample is identified with a toxic mold genus or if there are more fungal structure counts of a particular fungal genus than the outdoor levels of that genus then the work area fails the clearance testing. If any tape lift sample is identified with toxic mold or has moderate or heavy fungal loading, the work area fails the clearance testing.
- C. If the work area fails the clearance testing protocol, repeat the cleaning, inspection, and testing protocol specified in paragraphs 3.3 & 3.4 at the Contractor's expense.

END OF SECTION 02100

INSPECTION REPORT



**Residential Microbial and Moisture Assessment Report
for
192 Deerfield Road
Windsor, CT 06095**

Basement

Prepared
for
Jim Burke
Town of Windsor
275 Broad Street
Windsor, CT 06095

November 5, 2020

EnviroMed Project # IH-20-695

470 Murdock Ave., Meriden, CT 06450
Telephone (203) 238-4846 • Fax (203) 238-4243

TABLE OF CONTENTS

Section	Page
I. PROJECT NARRATIVE	1
Overview	1
II. PHOTOGRAPHS.....	4
III. ANALYTICAL LABORATORY REPORT.....	6

I. PROJECT NARRATIVE

Overview

On November 5, 2020, EnviroMed Services performed a mold and moisture assessment at a residential property located at 192 Deerfield Road in Windsor, CT. The assessment included air sampling for the presence of airborne fungal structures and surface sampling to check for the presence of fungal structures.

Methods

Air-O-Cell

Conduct air sampling for the presence of airborne fungal structures, including spores, by drawing air through an Air-O-Cell cassette using a pre-calibrated vacuum pump. In this method air enters the cassette and particles become impacted on the sampling substrate. Zefon International Air-O-Cell cassettes were used for this testing. The manufacturer recommended flow rate of 10 liters per minute of air, for a duration of 15 minutes, was applied for each sample. A total of 2 Air-O-Cell samples were collected. The sample locations were selected based on input from the client. The purpose of this testing was to obtain concentrations of airborne fungal material. These samples were sent to *Hayes Microbial Consulting* in Midlothian, VA, for analysis by optical microscopy. The results of this testing are represented in counts of fungal structures, and fungal structures per cubic meter of air. The results are compared with a sample collected in an area outside the building to further assess the indoor environmental.

Bio-Tape

Conduct surface sampling to check for the presence of fungal structures, including spores, by using 2 adhesive glass slides. The sample locations were selected based on input from the client. The purpose of this sampling is to lift any spore colonies present from the surface so they can be identified, and relative growth density can be quantified. These samples were sent to *Hayes Microbial Consulting* in Midlothian, VA, for analysis by optical microscopy. Results of this testing are reported in percent spore estimate by genus type along with the mycelial estimate for determining probable growth.

Moisture

Perform moisture screening to test for moisture-impacted building substrates. Monitoring for moisture was done using a General MMD7NP Pinless Moisture Meter. This meter measures up to 3/4-inch deep into the surface and can measure substrates such as softwood, hardwood and drywall. The instrument measures from 0 to 53% for softwood and 0 to 35% for hardwood. Therefore, results closer to 53% (softwood) and 35 (hardwood) would indicate excessively wet moisture.

Summary of Results

Air-O-Cell Spore Trap Sampling Results

There are currently no federal or State of Connecticut regulatory standards for concentrations of mold in air. However, some commonly used guidelines have been established. Commonly accepted guidelines of 2,500 counts/m³ for commercial buildings and 5,000 counts/m³ for residential buildings (“Assessment and Sampling Approaches for Indoor Microbiological Assessments” by G. Clark, published in *The Synergist*, November 2001) can be considered valid for air quality assessment purposes.

Section III of this report contains a copy of the analytical report.

Basement

Sample #1

The dominant fungal genus present is *Aspergillus/Penicillium*, which was found to be significantly higher than the baseline and is a common allergen. *Ascospores* was also found to be significantly higher than the baseline and is a common allergen.

Other lower levels of *Alternaria*, *Basidiospores*, *Chaetomium*, *Cladosporium*, *Curvularia*, *Myxomycetes* and *Stachybotrys* were also detected. *Alternaria* and *Curvularia* were not detected in the outside baseline sample, and were detected at low fungal densities in the basement.

Of these lower detections, note that *Chaetomium* and *Stachybotrys* are known water damage indicators and both genera are known to produce toxigenic spores.

Outside (Baseline)

Sample #2

The prominent fungal genus present is *Aspergillus/Penicillium*, which is a common allergen. Other lower spore densities of *Basidiospores*, *Chaetomium*, *Cladosporium*, *Myxomycetes*, *Stachybotrys* and *Torula* were present.

Chaetomium and *Stachybotrys* were also present at lower spore counts. These genera are considered toxigenic mold and known indicators of water damage.

Bio-Tape Sampling Results

Basement – Base of Wood Covering Structural Column

Sample #3

A very heavy spore estimate and few *Ascospores* and *Aspergillus/Penicillium* mycelium present.

Basement – Base of Hardwood Support

Sample #4

A very heavy spore estimate and many *Ascospores* and mycelium present.

Moisture

The base of the softwood wood covering the structural column was found to contain moisture near 25%, which indicates moderately wet material. Other porous materials tested such as wood wall bases, wooden wall framing and wooden staircase did not contain moisture above 5%, which indicates dry material.

Conclusions and Recommendations

Based on the results obtained and observations made during the assessment, EnviroMed Services, Inc. has come to the following conclusions and recommendations:

- The results in the basement contained spore counts of *Ascospores* and *Aspergillus/Penicillium* that were significantly higher than the baseline outside sample.
- Both inside and outside the basement contained low detections of *Chaetomium* and *Stachybotrys*, which are considered toxigenic mold and known indicators of water damage.
- The floor and base of the wooden structural column covering and hardwood support contained evidence of water damage.
- The base of the wood covering the structural column contained a very heavy spore estimate of *Ascospores* and *Aspergillus/Penicillium*, which had few active mycelial growth. This genus is classified as a common allergen.
- The base of the hardwood support near the base of the stairs contained a very heavy spore estimate of *Ascospores*, which had few active mycelial growth. This genus is classified as a common allergen.
- Moisture found on the base of wooden materials indicates current water damage.

Due to the active mold growth of *Ascospores* and *Aspergillus/Penicillium* found on porous substrates in the basement, as well as the presence of *Chaetomium* and *Stachybotrys* in the air, the basement area is not deemed fit for occupancy. EnviroMed will produce a mold abatement design based on the high levels of allergenic mold and low levels of toxigenic mold found in this area due to water damage. After remediation, it is recommended that sumps remain active and a dehumidifier installed due to previous waster accumulation.

II. PHOTOGRAPHS



Outside Air



Basement



Base of wood covering structural column



Base of hardwood support

III. ANALYTICAL LABORATORY REPORT



#20041641

Analysis Report prepared for

Enviromed Services, Inc.

470 Murdock Avenue
Box 13
Meriden, CT 06450

Phone: (203) 238-4846

IH-s0-695
192 Deerfield Road

Collected: **November 5, 2020**
Received: **November 6, 2020**
Reported: **November 6, 2020**

We would like to thank you for trusting Hayes Microbial for your analytical needs!
We received 4 samples by FedEx in good condition for this project on November 6th, 2020.

The results in this analysis pertain only to this job, collected on the stated date, and should not be used in the interpretation of any other job. This report may not be duplicated, except in full, without the written consent of Hayes Microbial Consulting, LLC..

This laboratory bears no responsibility for sample collection activities, analytical method limitations, or your use of the test results. Interpretation and use of test results are your responsibility. Any reference to health effects or interpretation of mold levels is strictly the opinion of Hayes Microbial. In no event, shall Hayes Microbial or any of its employees be liable for lost profits or any special, incidental or consequential damages arising out of the use of these test results.

A handwritten signature in black ink that reads "Stephen A. Hayes".

Steve Hayes, BSMT(ASCP)
Laboratory Director
Hayes Microbial Consulting, LLC.



EPA Laboratory ID: VA01419



Lab ID: #188863



DPH License: #PH-0198

Sample Number	1			2				
Sample Name	Basement			Outside				
Sample Volume	150.00 liter			150.00 liter				
Reporting Limit	7 spores/m ³			7 spores/m ³				
Background	3			3				
Fragments	40/m ³			53/m ³				
Organism	Raw Count	Count / m ³	% of Total	Raw Count	Count / m ³	% of Total		
Alternaria	1	7	<1%					
Ascospores	96	640	13.1%	28	187	8.0%		
Aspergillus Penicillium	616	4107	84.3%	280	1867	79.5%		
Basidiospores	4	27	<1%	2	13	<1%		
Bipolaris Drechslera								
Chaetomium	3	20	<1%	15	100	4.3%		
Cladosporium	6	40	<1%	21	140	6.0%		
Curvularia	1	7	<1%					
Epicoccum								
Fusarium								
Memnoniella								
Myxomycetes	2	13	<1%	2	13	<1%		
Pithomyces								
Stachybotrys	2	13	<1%	3	20	<1%		
Stemphylium								
Torula				1	7	<1%		
Ulocladium								
Total	731	4874	100%	352	2347	100%		

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
------------------------	-----------------	-------------------------------	------------------------------------	-------------------



Collected: Nov 5, 2020

Received: Nov 6, 2020

Reported: Nov 6, 2020

Project Analyst:
 Steve Hayes, BSMT *Stephen N. Hayes*

Date:
11 - 06 - 2020

Reviewed By:
 Ramesh Poluri, PhD *P. Ramesh*

Date:
11 - 06 - 2020

#3	Bio-Tape (1.00 cm2)	Organism	Spore Estimate	Mycelial Estimate
3 - Base of Wood Covering Structural Beam		Ascospores	Very Heavy	Few
		Aspergillus Penicillium	Very Heavy	Few
#4	Bio-Tape (1.00 cm2)	Organism	Spore Estimate	Mycelial Estimate
4 - Base of Hardwood Support		Ascospores	Very Heavy	Many



Collected: **Nov 5, 2020**

Received: **Nov 6, 2020**

Reported: **Nov 6, 2020**

Project Analyst:
 Steve Hayes, BSMT *Stephen A. Hayes*

Date:
11 - 06 - 2020

Reviewed By:
 Ramesh Poluri, PhD *P. Ramesh*

Date:
11 - 06 - 2020

Spore Trap Information

Reporting Limit	The Reporting Limit is the lowest number of spores that can be detected based on the total volume of the sample collected and the percentage of the slide that is counted. At Hayes Microbial, 100% of the slide is read so the LOD is based solely on the total volume. Raw spore counts that exceed 500 spores will be estimated.					
Blanks	Results have not been corrected for field or laboratory blanks.					
Background	<p>The Background is the amount of debris that is present in the sample. This debris consists of skin cells, dirt, dust, pollen, drywall dust and other organic and non-organic matter. As the background density increases, the likelihood of spores, especially small spores such as those of Aspergillus and Penicillium may be obscured. The background is rated on a scale of 1 to 5 and each level is determined as follows:</p> <p>NBD: No background detected due to possible pump or cassette malfunction. Recollect sample. (Field Blanks will display NBD)</p> <p>1 : <5% of field occluded. No spores will be uncountable.</p> <p>2 : 5-25% of field occluded.</p> <p>3 : 25-75% of field occluded.</p> <p>4 : 75-90% of field occluded.</p> <p>5 : >90% of field occluded. Suggested recollection of sample.</p>					
Fragments	Fragments are small pieces of fungal mycelium or spores. They are not identifiable as to type and when present in very large numbers, may indicate the presence of mold amplification.					
Control Comparisons	There are no national standards for the numbers of fungal spores that may be present in the indoor environment. As a general rule and guideline that is widely accepted in the indoor air quality field, the numbers and types of spores that are present in the indoor environment should not exceed those that are present outdoors at any given time. There will always be some mold spores present in "normal" indoor environments. The purpose of sampling and counting spores is to help determine whether an abnormal condition exists within the indoor environment and if it does, to help pinpoint the area of contamination. Spore counts should not be used as the sole determining factor of mold contamination. There are many factors that can cause anomalies in the comparison of indoor and outdoor samples due to the dynamic nature of both of those environments.					
<table border="1"> <tr><td>Water Damage Indicator</td></tr> <tr><td>Common Allergen</td></tr> <tr><td>Slightly Higher than Baseline</td></tr> <tr><td>Significantly Higher than Baseline</td></tr> <tr><td>Ratio Abnormality</td></tr> </table>	Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality	<p>Blue: These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.</p> <p>Green: Although all molds are potential allergens, these are the most common allergens that may be found indoors.</p> <p>Orange: The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.</p> <p>Red: The spore count is significantly higher than the baseline count and probably indicates a source of contamination.</p> <p>Violet: The types of spores found indoors should be similar to the ones that were identified in the baseline sample. Significant increases (more than 25%) in the ratio of a particular spore type may indicate the presence of abnormal levels of mold, even if the total number of spores of that type is lower in the indoor environment than it was outdoors.</p>
Water Damage Indicator						
Common Allergen						
Slightly Higher than Baseline						
Significantly Higher than Baseline						
Ratio Abnormality						
Color Coding	Fungi that are present in indoor samples at levels lower than 200 per cubic meter are not color coded on the report, unless they are one of the water damage indicators.					

Spore Estimate		Percentages
ND	None Detected	0%
Rare	Less than 10 spores	< 1%
Light	10 - 99 spores	1-10%
Moderate	100 - 999 spores	11-25%
Heavy	1000 - 9999 spores	26-50%
Very Heavy	10000 or greater spores	51-100%

Mycelial Estimate	
ND	None Detected No active growth at site.
Trace	Very small amount of Mycelium Probably no active growth at site.
Few	Some Mycelium Possible active growth at site.
Many	Large amount of Mycelium Probable active growth at site.

Organism Descriptions

Alternaria	Habitat: Commonly found outdoors in soil and decaying plants. Indoors, it is commonly found on window sills and other horizontal surfaces. Effects: A common allergen and has been associated with hypersensitivity pneumonitis. Alternaria is capable of producing toxic metabolites which may be associated with disease in humans or animals. Occasionally an agent of onychomycosis, ulcerated cutaneous infection and chronic sinusitis, principally in the immunocompromised patient.
Ascospores	Habitat: A large group consisting of more than 3000 species of fungi. Common plant pathogens and outdoor numbers become very high following rain. Most of the genera are indistinguishable by spore trap analysis and are combined on the report. Effects: Health affects are poorly studied, but many are likely to be allergenic.
Aspergillus Penicillium	Habitat: The most common fungi isolated from the environment. Very common in soil and on decaying plant material. Are able to grow well indoors on a wide variety of substrates. Effects: This group contains common allergens and many can cause hypersensitivity pneumonitis. They may cause extrinsic asthma, and many are opportunistic pathogens. Many species produce mycotoxins which may be associated with disease in humans and other animals. Toxin production is dependent on the species, the food source, competition with other organisms, and other environmental conditions.
Basidiospores	Habitat: A common group of Fungi that includes the mushrooms and bracket fungi. They are saprophytes and plant pathogens. In wet conditions they can cause structural damage to buildings. Effects: Common allergens and are also associated with hypersensitivity pneumonitis.
Chaetomium	Habitat: Ascomycete fungus, commonly isolated from soil and decaying plant materials. It is cellulolytic and grows well indoors on damp sheetrock and other paper substrates. It is often found growing with Stachybotrys. Effects: It is reported to be allergenic and may produce toxins.
Cladosporium	Habitat: One of the most common genera worldwide. Found in soil and plant debris and on the leaf surfaces of living plants. The outdoor numbers are lower in the winter and often relatively high in the summer, especially in high humidity. The outdoor numbers often spike in the late afternoon and evening. Indoors, it can be found growing on textiles, wood, sheetrock, moist window sills and in HVAC supply ducts. Effects: A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.

Curvularia	Habitat: They exist in soil and plant debris, and are plant pathogens. Effects: They are allergenic and a common cause of allergic fungal sinusitis. An occasional cause of human infection, including keratitis, sinusitis, onychomycosis, mycetoma, pneumonia, endocarditis and disseminated infection, primarily in the immunocompromised.
Myxomycetes	Habitat: Found on decaying plant material and as a plant pathogen. Effects: Some allergenic properties reported, but generally pose no health concerns to humans.
Stachybotrys	Habitat: Commonly found in soil and on decaying plant material. It is cellulolytic, and can be found indoors on wet materials containing cellulose, such as wallboard, ceiling tile, and other paper-based materials. It is found outdoors on decaying plant material although it is rarely detected on outdoor air samples. Effects: Allergenic properties are poorly studied and no cases of infection have been reported in humans. They do however produce potent tricothecene mycotoxins. The toxins produced by this fungus can suppress the immune system affecting the lymphoid tissue and the bone marrow. The mycotoxin is also reported to be a liver and kidney carcinogen.
Torula	Habitat: Found in soil and on wood and grasses. Occasionally found growing indoors on cellulose containing materials. Effects: A known allergen. No known cases of human infection.
