

## Repair and Maintenance Work Order

**Work Order ID:** 2101                      **Date of Request:** 2/3/2020                      **Status:** Routing Completed

### Emergency Request

<p><b>Person Submitting Request:</b> Smith-Slaughter, Pennie S.</p> <p><b>Program Area:</b> Detention</p> <p><b>Address:</b> 450 E 11th St, Panama City</p> <p><b>Program Contact Person:</b> Rhonda Hartwell</p> <p><b>Contract Manager/Superintendent:</b> Hartwell, Rhonda</p> <p><b>General Services Liaison:</b> Smith-Slaughter, Pennie S.</p> <p><b>Major Maintenance Fund:</b> No</p> <p><b>Facility Funded/OCO:</b> No</p> <p><b>Item Needing Repair:</b> Mold remediation</p> <p><b>Description of Problem:</b> old mold was discovered in the medical clinic at Bay RJDC.</p> <p><b>Recommended Repair or Correction:</b> Remediation</p> <p><b>Proposed Amount of Repairs:</b> 5,757.64</p>	<p><b>Phone Number:</b> (850) 717-2836</p> <p><b>Region:</b> North</p> <p><b>Facility:</b> Bay RJDC</p> <p><b>Phone Number:</b> 850/527-0454</p> <p><b>Phone Number:</b> (850) 872-4706</p> <p><b>Phone Number:</b> (850) 717-2836</p> <p><b>Current Balance:</b> N/A</p> <p><b>Change Order?</b> No</p>	<p><b>County:</b> Bay</p> <p><b>Circuit:</b> 14</p> <p><b>Other:</b> Emergency</p> <p><b>Related Work Order:</b></p>
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Office	Assigned Approver	Approved/Denied By	Date Approved/Denied	Approval Status
Regional Director	Antozzi, Colette	Antozzi, Colette	2/4/2020	Approved
Assistant Secretary	Fosler, Dixie	Fosler, Dixie	2/4/2020	Approved
Facility Services	Bass, Robert W.	Stoutamire, Gerald H.	2/5/2020	Approved

**Additional Comments**

Keech, Tanya (2/10/2020 10:16 AM): Signed PUR attached.

Harris, Vickie J. (2/6/2020 3:48 PM): Signed PUR will be returned to General Services.

Moten, Sandra (2/5/2020 10:25 AM): Director of Admin. Please sign PUR 7800 Form

Stoutamire, Gerald H. (2/5/2020 8:37 AM): Work Order Status: Approved for Routing– Sign scan attached/Approved – Sign scan attached Amount: \$5,757.64  
 Procurement Method: DO by Facilities Services / North West Detention region Permit Required: No Contractor License: Confirmed and attached Contractor Insurance: Confirmed and attached Notes: Remediation in Clinic

**Attachments**

- FCOLFTP1 2.6.2020 Detention.pdf  Delete
- Insurance.pdf  Delete
- License.pdf  Delete
- Notice of Emergency Purchase (PUR 7800) - Work Order 2101 signed.pdf  Delete
- PUR form BayRJDC.pdf  Delete
- Quote.pdf  Delete
- WO2101 FY 2019-20 FCO 2.6.2020.pdf  Delete

[Printing the Work Order Page](#)

To print, open this request in display mode, rather than edit mode. To do this, save this request (or cancel it to go back to the list of requests).  
Open the request from the list of requests by clicking on the Item Needing Repair field. You will then find a printer icon to the right of the tabs for printing.  
You can also email a page to someone by clicking on the envelope icon.

Version: 46.0

Created at 2/3/2020 12:01 PM by Smith-Slaughter, Pennie S.

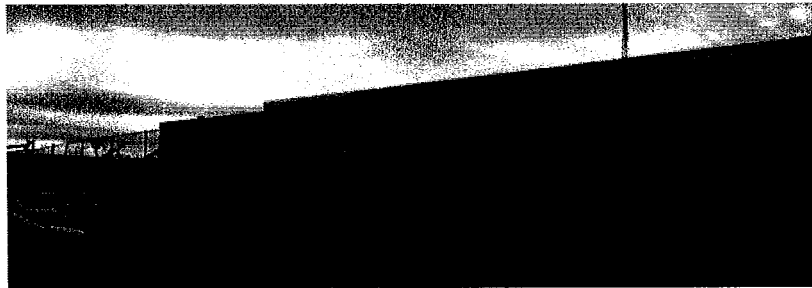
Last modified at 2/10/2020 10:23 AM by Keech, Tanya

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## **Moisture Damage and Mold Remediation Scope & Protocol**



### **Bay Regional Juvenile Detention Center**

***Prepared for:***

Mr. G. Hamp Stoutamire  
Florida Department of Juvenile Justice, Facility Services

**Submitted January 30, 2020**

Reviewed by:

A handwritten signature in cursive script that reads "Eric D. Althouse".

Eric D. Althouse  
Certified Indoor Air Quality Professional  
Florida Mold Assessment Consultant  
(License #MRSA2228, Expires 7-31-20)

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**Air Intellect, LLC**

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# **BAY REGIONAL JUVENILE DETENTION CENTER MOISTURE DAMAGE & MOLD REMEDIATION PROTOCOL MEDICAL ROOM**

## **Address:**

450 E. 11th St.  
Panama City, FL

## **Prepared for:**

Mr. G. Hamp Stoutamire  
Construction Project Consultant II, Northwest Region  
Florida Department of Juvenile Justice, Facility Services  
2737 Centerview Drive  
Alexander Building, Suite 1307  
Tallahassee, FL 32399

## **Introduction**

The Bay Regional Juvenile Detention Center in Panama City, Florida, has experienced moisture damage as a result of roof leakage during Hurricane Michael, resulting in significant mold growth on the north wall, requiring remediation. The mold growth was discovered behind cabinets during renovation and work was halted until remediation could begin. A fur-down made of sheetrock may have been impacted but the amount of water and mold damage will remain uncertain until remediation begins and the area is opened. At this point, we know that that areas exceed the 10 contiguous square feet area of mold required for a Florida licensed mold contractor Florida Administrative Code, Rule: 61-31.101

Because this room is a clinic, it is our opinion that priority steps outlined in this Moisture & Mold Remediation Protocol are prudent and necessary to minimize risks for occupants' health and safety from exposure to mold growth and/or mold mycotoxin.

## **Overview & General Requirements**

Issuing a Certificate of Clearance (ensuring that the mold has been properly remediated and the conditions that made mold possible have been corrected) depends upon proper correction of building problems, after thorough diagnosis of causation to identify all sources.

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By submitting a quote to the Florida Department of Juvenile Justice, the Mold Remediation Contractor acknowledges that the specifications of this protocol shall be strictly followed and enforced.

The purpose of this protocol is twofold: 1) to provide measures to mitigate mold contamination as currently known; 2) provide systematic investigation of envelope failures, including invasive testing, as necessary to identify a full scope of work.

A Mold Remediation Protocol is defined as - A document, prepared by a mold assessment consultant for a client, that specifies the estimated quantities and locations of materials to be remediated and the proposed remediation methods and clearance criteria for each type of remediation in each type of area for a mold remediation project.

An assessment consultant shall prepare a mold remediation protocol for each project and provide the protocol to the client before the remediation begins. The mold remediation protocol must specify:

1. the rooms or areas where the work will be performed;
2. the estimated quantities of materials to be cleaned or removed;
3. the methods to be used for each type of remediation in each type of area;
4. the personal protection equipment (PPE) to be used by remediators. A minimum of an N-95 respirator is recommended for all mold remediation projects. Using professional judgment, a consultant may specify additional or more protective PPE if he or she determines that it is warranted;
5. the proposed types of containment to be used during the project in each type of area; and
6. the proposed clearance procedures and criteria for each type of remediation in each type of area.

Implementation of the Mold Remediation Protocol shall not begin until:

- Contractor shall provide verification that all air scrubbers, negative air machines and HEPA vacuums were cleaned and equipped with new HEPA filters, primary and secondary, prior to beginning project.

Once the mold remediation has begun, the Mold Assessment Consultant may conduct periodic inspections of the on-going work to observe and document progress and specific site visits to address and document any newly discovered conditions in a timely manner.

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## **Section 1. - Work Area:**

For purposes of compass orientation in this document, the front entrance into the Bay RJDC shall be identified as the north side of the structure. For purposes of identification, the following information in this section includes the scope of work for mold remediation to provide measures to remove moisture damage and mold associated with roof leakage in the Bay RJDC as presently known.

During the removal of water-damaged materials, the Contractor should treat the work area as though mold is potentially hidden. Hidden mold and/or conditions that were not evident at the time of inspection may require modifications to the Mold Remediation Protocol as directed by the Mold Assessment Consultant once discovered. The Mold Assessment Consultant must be notified of newly discovered moldy materials. The conditions must be photo or video documented prior to further actions. Any modifications to the Mold Remediation Protocol will only be issued in writing.

Due the potential amount of water-damage and mold growth in the work areas, the Contractor shall plan to work in compliance with EPA Table 2 "Medium" criteria for total surface area affected with mold over 10 square feet each, with "full" PPE (full face respirators with P-100 filters, suits, gloves, etc.) as defined by EPA and OSHA:

### **Bay RJDC Medical Room Remediation Scope:**

- 1) Cabinets from the walls have already been removed and discarded.
- 2) Contractor shall ensure compliance with Florida mold remediation licensing requirements.
- 3) Each cause of the mold damage has been fixed so that it can be reasonably sure that it will not return from the same source (third-party water leak testing to verify is recommended). Roof damage is the cause.
- 4) The Medical Room shall be contained with by establishing plastic critical barriers at doors and HVAC grills, and using HEPA air scrubbers to exhausted so a negative pressure is created within the work area.
- 5) A warning sign shall be placed on a plastic critical barrier at the entrance that states "Mold Remediation in Progress: No Unauthorized Entry."
- 6) Inventory, clean, and temporarily move all contents from the work area. Servpro and/or DJJ shall maintain chain of custody for inventoried contents.
- 7) Remove lay-in ceiling tiles as necessary to perform work.
- 8) Remove sheetrock from the fur-down from wall to wall (15'6" x 1'6" x 1'4") as noted below. (Replacing sheetrock with a paper-free type such as DensArmor Plus is recommended.)

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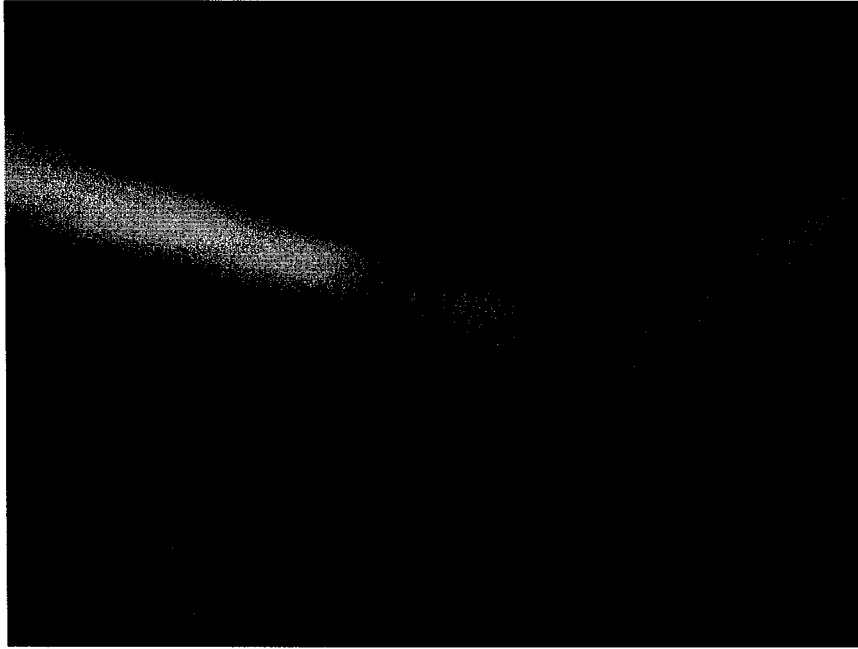


- 9) Sand and clean staining from concrete roof deck in small areas as needed, including in exam room (see photos below)



*EDA*

- 10) Clean paint and mold growth from the north wall (15'6" wide) from floor to roof deck (10'5")
- 11) Remove small (3') section of pipe fiberglass insulation with ASJ jacket above the suspended ceiling. (See following photo)



- 12) Detail-clean interior surfaces including ceilings, walls and floors. The cleaning shall be from top down to remove residues.
  - a. Systematically clean the room from top down using treated, microfiber cloths, Swiffer treated cloths, HEPA vacuums, and/or disposable cloth dampened with amended water, as detailed herein.
  - b. HEPA vacuum all flooring in preparation for Consultant Post-remediation verification testing.
- 13) Use hydrogen peroxide or a tuberculocidal detergent wipe to clean all surfaces.
- 14) Following complete cleaning of each room, representative samples shall be collected for fungal enzyme analysis.
  - a. Fungal enzyme swabs shall be collected from areas where mold growth was found, and cleaning was conducted. Failure of any one of the tests (as per Air Intellect's cleaning standard) shall require re-cleaning of the room.

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- 15) Have a Florida-licensed HVAC contractor perform routine cleaning air handler evaporator coils, blower, interior HVAC air handler surfaces, clean registers, and replace HVAC filter. Air handler cleaning shall be cleaned according to the National Air Duct Cleaners Association (NADCA) guidelines ACR 2013.<sup>1</sup>
- 16) Post-remediation verification inspection and testing must pass prior to replacement of removed materials

**Notes:**

- While we performed limited invasive evaluation the room, the extent of microbial growth could be greater than noted. "Studies of microbial problems in large buildings have shown that perhaps 50% of microbial problems are not visible."<sup>2</sup>
- Building materials shall be removed to a point of at least twenty-four inches beyond water damage stains or visible growth. Remove any materials necessary to expose areas that have conditions like or similar to the identified moisture intrusion sites.

**Special Considerations:**

**Smoke & Fire Detection Equipment On-Line/Off-Line:** Any activities during the course of performing the remediation shall not permanently impair, alter or damage any smoke and fire detection equipment located within the Residence.

All polyethylene sheeting used for barriers shall be fire-resistant.

Note: Workmanship shall be of top quality (poor workmanship will be rejected, and the Contractor will be required to re-do any rejected work without cost to the Owner). The work area and millwork shall be inspected prior to work by the Contractor and the Owner's representative. Damaged millwork shall be noted to the Owner prior to commencement of work. Any damaged millwork as a result of the work shall be repaired or replaced by the Contractor at no cost to the Owner.

**Chemical usage:** The Contractor shall supply safety data sheets (SDS) for all chemical products (e.g., HVAC disinfectants, tuberculocidal detergent cleaners, etc.) which shall be used on the project for review by the Consultant. The SDS must be readily available on-site at all times.

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<sup>1</sup> *Assessment, Cleaning, & Restoration of HVAC Systems, An Industry Standard Developed by the National Air Duct Cleaners Association. ACR 2013*

<sup>2</sup> AIHA Field Guide for the Determination of Biological Contaminants in Environmental Sampling, Introduction, Page 4

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General project requirements:

- This is a secure building so contractor shall be expected to follow DJJ security requirements at all times.

**Section 2. - Estimated Quantities for entire structure:**

It is the responsibility of the General Contractor and the Mold Remediation Contractor to verify their own quantities, to identify their quantities at the time of bid, and to base the bid on their quantities.

**Section 3. - Remediation Method:**

Cleaning protocol shall be in accordance with Environmental Protection Agency (EPA) Table 2 Guidelines for Remediating Building Materials. The following progression should be used in cleaning room surfaces. In general, work should begin with the ceiling or highest affected area and work toward the floor:

- Ceilings
  - Doors
  - Wall Surfaces
  - Floors
- a. The following procedure should be used for cleaning hard surfaces:
- i. Visibly dirty surfaces - Wipe with a dampened disposable cloth using clean water with a mild detergent solution, let dry. The mild detergent solution should be applied using a damp cloth. Work from the top of the object downward, taking care not to re-use soiled portions of the cloth. Whenever cloths are used, dirty cloths should be placed in a plastic bag immediately. The wiping action should be firm and steady, but "scrubbing" is not advisable. Allow the mild detergent solution to dry completely. Wipe the surfaces again with a dampened cloth using clean water in the same manner specified above.
  - ii. Visibly clean surfaces - Wipe with a dampened rag using clean water, let dry. Work from the top of the object downward, taking care not to re-use soiled portions of the rag. Whenever cloths are used, dirty cloths should be placed in a plastic bag immediately. The wiping action should be firm and steady, but "scrubbing" is not advisable.
- b. The following procedure should be used for semi-porous and porous surfaces:

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- iii. High Efficiency Particulate Air (HEPA) vacuum. The first step of the HEPA vacuum is intended to remove particles that would become dislodged during wiping or scrubbing. HEPA vacuuming should be performed slowly and lightly, beginning at the top or highest point of the object and gradually working downward. The entire area should be vacuumed twice each in one direction and then twice 90° to the initial vacuuming before proceeding to step two.
  - iv. Wipe with mild detergent solution, let dry. The mild detergent solution should be applied using a damp cloth. Work from the top of the object downward, taking care not to re-use soiled portions of the cloth. Whenever cloths are used, dirty cloths shall be placed in a plastic bag immediately. The wiping action should be firm and steady, but "scrubbing" is not advisable. Allow the mild detergent solution to dry completely before proceeding to step three.
  - v. HEPA vacuum. Repeat the vacuum procedure as described above. This pass may be performed with more pressure to remove loose surface particles.
- c. *Cleanup Methods for Building Materials*<sup>3</sup>
- i. *Method 1: Wet vacuum (in the case of porous materials, some mold spores/fragments will remain in the material but will not grow if the material is completely dried).*
  - ii. *Method 2: Damp-wipe surfaces with plain water or with water and detergent solution (except wood—use wood floor cleaner); scrub as needed.*
  - iii. *Method 3: High-efficiency particulate air (HEPA) vacuum after the material has been thoroughly dried. Dispose of the contents of the HEPA vacuum in well-sealed plastic bags.*
  - iv. *Method 4: Discard – remove water-damaged materials and seal in plastic bags while inside of containment, if present. Dispose of as normal waste. HEPA vacuum area after it is dried.*
- d. Cleanup Methods for HVAC systems shall be in accordance with NADCA Standard ACR 2013.<sup>4</sup>
- e. Content cleaning/disposal.
- Note: For all content items, the cost of cleaning should be compared to the cost of replacement before cleaning is commenced on the item.
- v. Non-Porous Materials – These contents are to be cleaned using a HEPA, wipe, HEPA procedure as stated in 3a. *Non-porous materials*

<sup>3</sup> *Mold Remediation (Table 2)*, U.S. EPA Indoor Environmental Division. March 2008

<sup>4</sup> *Assessment, Cleaning, & Restoration of HVAC Systems, An Industry Standard Developed by the National Air Duct Cleaners Association. ACR 2013.*

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(e.g., metal ductwork, metal studs, vinyl flooring, and glass) can readily be cleaned and reused.<sup>5</sup>

- vi. Semi-Porous Materials – These contents are to be cleaned using a HEPA, wipe, HEPA procedure as stated in 3b. Materials which cannot be cleaned shall be discarded and replaced. Semi-porous items will be evaluated by the Mold Assessment Consultant at the cleaning facility and the remediation contractor shall either clean or discard as directed. *Slightly porous or semi-porous materials (e.g., wood furniture) that are visibly contaminated may be reusable depending on the depth to which microbial growth has penetrated the substrate. ...wood should be discarded if fungal growth has affected its soundness (i.e., if hyphae have penetrated the wood extensively).*<sup>6</sup>
- vii. Porous Materials – *Porous materials from which microbial growth cannot be adequately cleaned must be removed from buildings.*<sup>7</sup>
  - a) Soft upholstery near the end of their usable life should be discarded and replaced. Useable upholstery shall be cleaned using the HEPA, wipe, HEPA method as stated in 3b.

#### **Section 4. - Personal Protective Equipment (PPE):**

Worker protection should be guided by the *Guidelines for the Protection and Training of Workers Engaged in Maintenance and Remediation Work Associated with Mold.*<sup>8</sup> Full PPE, as outlined in EPA document *Mold Remediation in Schools and Commercial Buildings* (Table 2), is required in all mold remediation areas. Anyone who is issued PPE must fully comply with 29 CFR 1910.134, Respiratory Protection, 29 CFR 1010.132 Personal Protective Equipment, and 29 CFR 1910.102 Eye and Face Protection. At a minimum, all persons entering work areas must wear personal protective equipment consisting of a half-face air-purifying respirator with cartridges suitable for particulate matter and organic chemicals (HEPA filter), a disposable protective dust/particulate suit with hood and foot coverings, and chemical protective gloves suitable for exposure to organic solvents. All persons entering work areas must have documentation from a licensed physician indicating that each person is physically fit and capable of wearing a respirator, respirator and PPE training certification, and fit test results indicating the type and size of respirator to be used during the visit. Those who do not meet the requirements of the above referenced standards and do

<sup>5</sup> 15.5.1 Non-Porous and Semi-Porous Materials; *Bioaerosols: Assessment and Control* (ACGIH 1999)

<sup>6</sup> 15.5.1 Non-Porous and Semi-Porous Materials; *Bioaerosols: Assessment and Control* (ACGIH 1999)

<sup>7</sup> 15.5.2 Porous Materials; *Bioaerosols: Assessment and Control* (ACGIH 1999)

<sup>8</sup> May 20, 2005 The National Institute of Environmental Health Sciences WETP  
[http://www.wetp.org/wetp/newsbriefs/may05/Final\\_NIEHS\\_Mold\\_Guide\\_05-20-05.pdf](http://www.wetp.org/wetp/newsbriefs/may05/Final_NIEHS_Mold_Guide_05-20-05.pdf)

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not provide the appropriate documentation and PPE shall not be granted access to the site. Where containments are not required it is the responsibility of the contractor to comply with all OSHA requirements as a minimum including but not limited to respiratory protection, personal protective equipment, and eye and face protection. Respiratory protection is NOT required during barcode labeling and pack-out provided the containment is not in place at that time. Note: Once a mold work area is established, respiratory protection is required.

### **Section 5. - Containment:**

1. Use one layer of fire-retardant polyethylene sheeting. Maintain area under negative pressure with HEPA filtered fan exhausted outside of building. Block supply and return air vents within containment area. Double layers of polyethylene should be used to create a barrier between the moldy area and other parts of the building. All contaminated PPE, except respirators [and respirator cartridges], should be placed in a sealed bag while in this chamber. Respirators should be worn until remediators are outside the decontamination chamber. PPE must be worn throughout the final stages of HEPA vacuuming and damp-wiping of the contained area. PPE must also be worn during HEPA vacuum filter changes or cleanup of the HEPA vacuum.<sup>9</sup>
2. Isolate the HVAC system and duct systems in the containment area from the rest of the structure.

### **Section 6. – Dust and Moisture Controls:**

1. During the abatement/cleaning process, air scrubbers with HEPA filters shall be used to re-circulate and reduce the particulate load in the work air.
2. Negative air machines with HEPA filters shall be used to evacuate air from the work area and keep the work area under a negative pressure of at least 5 Pascals (0.02" w.c.) as compared to all surrounding areas. Monitoring and recording equipment shall be used to verify compliance.
3. Pre-filters for air scrubbers shall be inspected by the Contractor daily, and replaced as necessary. All equipment utilized in containments will be HEPA vacuumed and wet wiped prior to moving equipment from containment to containment.
4. Transport of Contaminants: All contaminated materials removed from the containment shall be properly contained to prevent cross-contamination.

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<sup>9</sup> *Mold Remediation in Schools and Commercial Buildings*, U.S. EPA Indoor Environmental Division. March 2008

Removed debris shall be double-bagged and sealed in 6-mil polyethylene bags for storage and transport. Materials deemed to be hazardous by governmental agencies shall be handled in strict accordance with any applicable local, regional or national codes. All vacuum collection devices and air scrubbers used in the removal process shall be sealed prior to relocation. Any activity requiring the opening of contaminated vacuum collection equipment or air scrubber for servicing or filter maintenance shall be performed in a negatively pressurized containment area or outside the building.

5. Post Construction Final Clean – clean entire area applying a minimum of two passes with a HEPA vacuum and a damp wipe of all area surfaces using the approved EPA-registered disinfectant prior to dust control containment removal.
6. A minimum of 200 air changes shall be accomplished in each work area of the building after the cleaning process is completed. Negative containment pressure shall be turned off for a minimum of four hours and before clearance testing. Recirculating HEPA air scrubbers shall remain in place.

## **Section 7. - Post-Remediation Assessment and Clearance**

### **Introduction**

The purpose of the post-remediation assessment and clearance process is to evaluate a mold remediation project for the purpose of certifying that identified mold contamination has been remediated and that the underlying cause of the mold has been repaired to the extent possible at this phase of the remediation.

### **Clearance Criteria**

For a remediation project to achieve clearance, a mold assessment consultant shall conduct a post-remediation assessment using visual, procedural, and analytical methods.

The post-remediation assessment shall be conducted while the walk-in negative pressure containment is in place.

Make-up air and negative air machines shall be turned "off" during the inspection/testing procedure.

The post-remediation assessment shall determine whether:

- (1) the work area is free from all visible mold and wood rot;

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- (2) all work has been completed in compliance with the remediation protocol and remediation work plan and meets clearance criteria specified in the protocol; and
- (3) the underlying cause of the mold has been remediated, to the extent feasible, so that it is reasonably certain that the mold will not return from that remediated cause.

1. Analytical: Methods

- a. The mold assessment consultant will have on-site inspection available with 48-hour prior written notice prior to completion of remediation and the need for inspection. The mold assessment consultant shall perform a visual, procedural, and analytical evaluation deemed appropriate by the mold assessment consultant for the particular situation present in each remediated area in order to determine whether the mold contamination identified for the project has been remediated.
  - i. Visual: the work area shall be inspected for odors, cleanliness, water damage, excessive moisture on surfaces, and possible microbial growth sites. Where visual inspection reveals deficiencies sufficient to fail clearance, further investigation is not necessary.
  - ii. Procedural: document the following:
    1. worksite conditions/observations;
    2. type and location of all measurements made and samples collected at the worksite. Conduct sampling (as required) in accordance with procedures defined in Appendix;
    3. data obtained at the worksite, including temperature, humidity, and material moisture readings. Log the data, include information identifying specific location, type (material, etc.), and pertinent instrument information;
    4. results of analytical evaluation of the samples determined by the Mold Assessment Consultant as appropriate for the situation and collected at the worksite;
    5. relevant work-site observations and surface sample sites with digital photos containing a date stamp and a photo log; and
    6. the underlying cause of the mold has been remediated, to the extent feasible, so that it is

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reasonably certain that the mold will not return from that remediated cause to the extent possible in this first phase.

2. Analytical -- Clearance Criteria:
  - a. Visible mold - mold contaminated materials that have not been removed or appropriately cleaned and/or adjacent surfaces are not free of visible dust and debris will fail clearance criteria.
  - b. Odor - musty/pungent odors detected in the remediated area or contiguous areas will fail clearance criteria.
  - c. Moisture sources - unresolved moisture sources that caused the mold contamination and/or physical conditions that can allow mold to grow will fail the clearance criteria.
  - d. Containment - improper or breached containment will fail the clearance criteria.
  - e. HVAC - visual inspection and/or sampling results that fail the NADCA ACR 2013 criteria for clean system air pathways will fail the clearance criteria.
  - f. Temperature/Humidity – Environmental conditions conducive to condensation from high humidity will fail the clearance criteria. (Guideline - the target temperature in the remediated area should be  $72 \pm 5^{\circ}\text{F}$ . When the remediated area is mechanically dehumidified, relative humidity shall be  $\leq 55\%$ )
  - g. Moisture Readings – moisture meter readings in surfaces of building materials indicating inconsistent and/or high moisture content will fail the clearance criteria.
  - h. Mycometer Samples – Initial clearance sampling will be performed by Mycometer™ analysis, a method of analysis based on the quantification of a mold enzyme activity by use of fluorescence which can provide results in as little as an hour. Mold and mold fragments (e.g., hyphae and spores) possess this enzyme. Sampling is performed with a sterile cotton swab on a defined sample area (9 cm<sup>2</sup>). A value >25 will fail clearance.
  - i. Tape Slide Samples. Tape slide samples shall be evaluated to identify mold spores, hyphae, debris, and growth sites. The presence of indicator organisms, the presence of abundant fungal spores and/or hyphal fragments, spore chains, and/or indoor growth sites will fail clearance criteria.
  - j. Swab Samples - (if deemed necessary by the Consultant) The consistent presence of indicator organisms on more than one

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sample from the same area indicates potential indoor fungal contamination and will fail clearance criteria.

- k. **Culturable Air Samples (if deemed necessary by the Consultant)-** Acceptable conditions will include, but are not limited to, an indoor environment that has a microbial composition similar to outside composition; similar organisms in dominance inside to outside. The presence of organisms of concern (indicator organisms), such as, but not limited to, *Stachybotrys* sp., *Chaetomium* sp., and/or *Memnoniella* sp. in concentrations higher than average outside counts fail clearance criteria. Mycotoxin Swab Samples – the detectable presence of aflatoxin, ochratoxin or trichothecene mycotoxins in settled dust shall fail the clearance criteria.

I.

**COST OF RE-TESTING: Oversight of re-cleaning activities by the Project Consultant, sample collection, and sample analysis costs that are required shall be borne by Contractor.** Re-testing of areas that fail clearance testing shall be billed to the Contractor by Project Consultant.

Once clearance is achieved, the Consultant will issue a letter that will notify the Contractor that the containment may be removed.

It is beyond the scope of this protocol to supervise reconstruction; however, we recommend third-party supervision of this as well.

## **APPENDIX**

### **Sample Collection Procedures**

Microbiological samples shall be packaged, inventoried, and sent via overnight to an accredited laboratory with a signed and dated chain of custody form. All equipment calibration shall be current. Mycometer samples may be processed on site by an individual certified to perform analysis.

### **Surface Samples**

**Mycometer Samples** - Sampling shall be performed with a sterile cotton swab on a defined sample area (9 cm<sup>2</sup>). The cotton swab shall be then transferred to a buffer containing a synthetic enzyme buffer containing a synthetic enzyme substrate and incubated for 20-40 minutes depending on ambient temperature. The synthetic enzyme substrate shall be hydrolyzed by the mold enzyme, releasing a fluorophore which shall be quantified using a fluorometer. All analysis shall be conducted by a certified Mycometer™ analyst.

**Tape Slide Samples** - Tape surface samples shall be collected on clear cellophane tape and applied to glass slides. Slides shall be placed in sterile tubes and marked for identification.

**Swab Samples** - Swab surface samples shall be collected on sterile swabs and placed in sterile tubes and marked for identification.

**Moisture Readings** – Moisture meter readings shall be collected from selected locations in containment areas and in contiguous areas outside the containment. Data shall be logged and identified.

**HVAC** –inspection and sample procedures collected from HVAC systems and components shall conform to NADCA ACR 2013.

**Mycotoxin Wipe Samples** - Surface samples shall be collected on sterile and mycotoxin-free wipers from at least 10 sq. ft. of composite surface area and placed in transport bags and marked for identification.

### **Air Samples**

**Outside air samples** – Outside air samples are collected, and used as a reference, for comparison to indoor air samples. Outside air samples (Culturable Air Sample, Particle counts, and Temperature/Humidity) shall be collected from the outdoor air at the beginning of the sampling period and every 4 hours during indoor sampling period (minimum of 2 per samples day). Preferably, three outside air samples should be collected if the sampling spans the entire day. Samples should be taken in the morning, at noon, and in the afternoon.

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Indoor air samples – Indoor air samples shall be collected at a minimum of one air sample set (Culturable Air Sample, PCR Air Samples, Particulate readings, and Temperature/Humidity) measurements per enclosed room or 2,000 square feet of floor space, whichever is less.

PCR Air Samples – Air sampling for PCR analysis shall be collected on sterile 3-piece cassettes containing a polycarbonate filter with 0.2 micron pores. The samples shall be sealed and marked for identification and shipped to an AIHA accredited laboratory for analysis.

Culturable Air Samples (if deemed necessary) – Culturable air sampling for mold shall be collected on malt extract agar (MEA) using an Andersen air sampler at a flow rate of 28.3 Liters/minute (L/m) for 5 minutes. Samples shall be sealed with Parafilm and marked for identification.

Particulate measurements - Respirable dust (Aerosol/Particulate) measurements shall be collected by the Mold Consultant before, during, and after remediation. In addition, the samples shall be collected indoors and outdoors for relative comparisons. Average measurements of 0.100 mg/m<sup>3</sup> over the outdoor measurements in work areas shall be considered excessive, and appropriate control strategies must be implemented. The samples shall be collected using a TSI DustTrak Aerosol Monitor Model 8520. The instrument provides on-site screening of concentrations of respirable dust with a detection limit of 0.001 mg/m<sup>3</sup> (calibrated to respirable fraction of standard ISO 12103-1, A1 test dust). A 10-mm Nylon Dorr-Oliver Cyclone shall be used to discriminate between the respirable fraction and other portions of the ambient aerosol. The instrument shall be calibrated at 1.7 liters per minute. Records of data shall be kept. Air scrubbers with high efficiency particulate air filters (HEPA) shall be operated inside the containment area during remediation. Once remediation activities are completed, the scrubbers shall be operated for either a minimum of 200 air changes or until the average indoor particulate measurements, measured with an aerosol monitor are less than 0.100 mg/m<sup>3</sup> over the outdoor measurements. The sampling duration shall be a minimum of five (5) minutes. After the air scrubbing has been completed, the air scrubbers shall be turned off for four hours before culturable and total fungal airborne samples from inside air shall be collected.

Temperature/Humidity - Temperature and humidity measurements shall be collected with a direct reading hand-held instrument such as a sling Psychrometer. Data shall be logged and identified.

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**REFERENCES to Mold Remediation Protocol: (\*AS IF ATTACHED AND CONSIDERED A PART OF THE MOLD REMEDIATION PROTOCOL)**

1. *\*EPA Mold Remediation in Schools and Commercial Buildings, 2008.*  
[http://www.epa.gov/iaq/molds/mold\\_remediation.html](http://www.epa.gov/iaq/molds/mold_remediation.html)
2. *\*Assessment, Cleaning, & Restoration of HVAC Systems, An Industry Standard Developed by the National Air Duct Cleaners Association. ACR 2013*
3. *\*Bioaerosols: Assessment and Control (ACGIH 1999)*