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AWA Environmental Protocol

1150 County Rd 14B
Halletsville, TX 77964

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Introduction:

AWA Environmental, LLC was retained to conduct a mold assessment of the building located at 1150 County Rd 14B.

- Purpose

  The purpose of the mold assessment was to determine the presence and extent of microbial growth in the home.

- Investigative Work Andrew Whitney visited the site on 01/6/2023. The conclusions and recommendations contained in this report are based on information obtained during the mold assessment, which included:
- Interviews of property representatives
- Visual observations

Synopsis:

This protocol is based upon the mold assessment conducted on 0`1/6/2023.

Hypothesis of cause of growth:

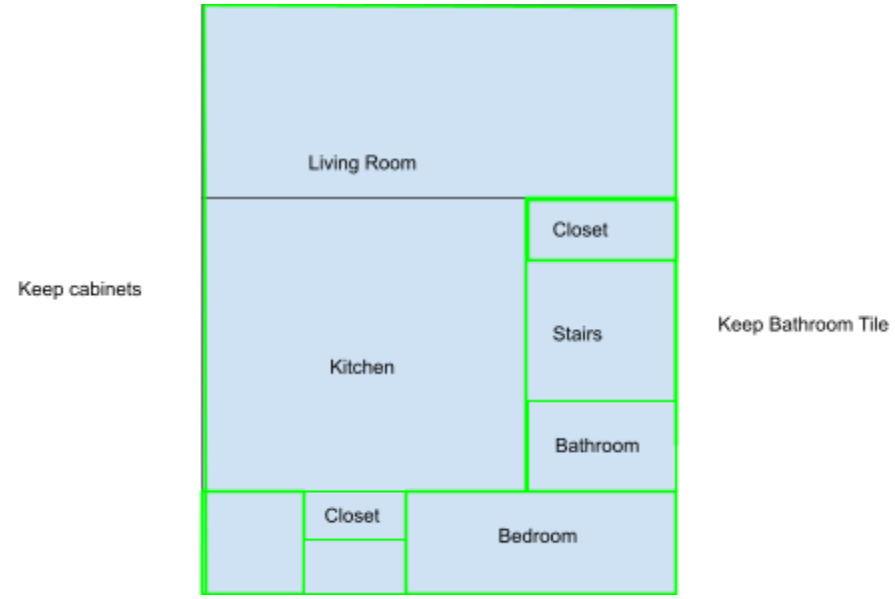
The household underwent long periods of time without adequate air conditioning which contributed to microbial growth due to built up humidity..

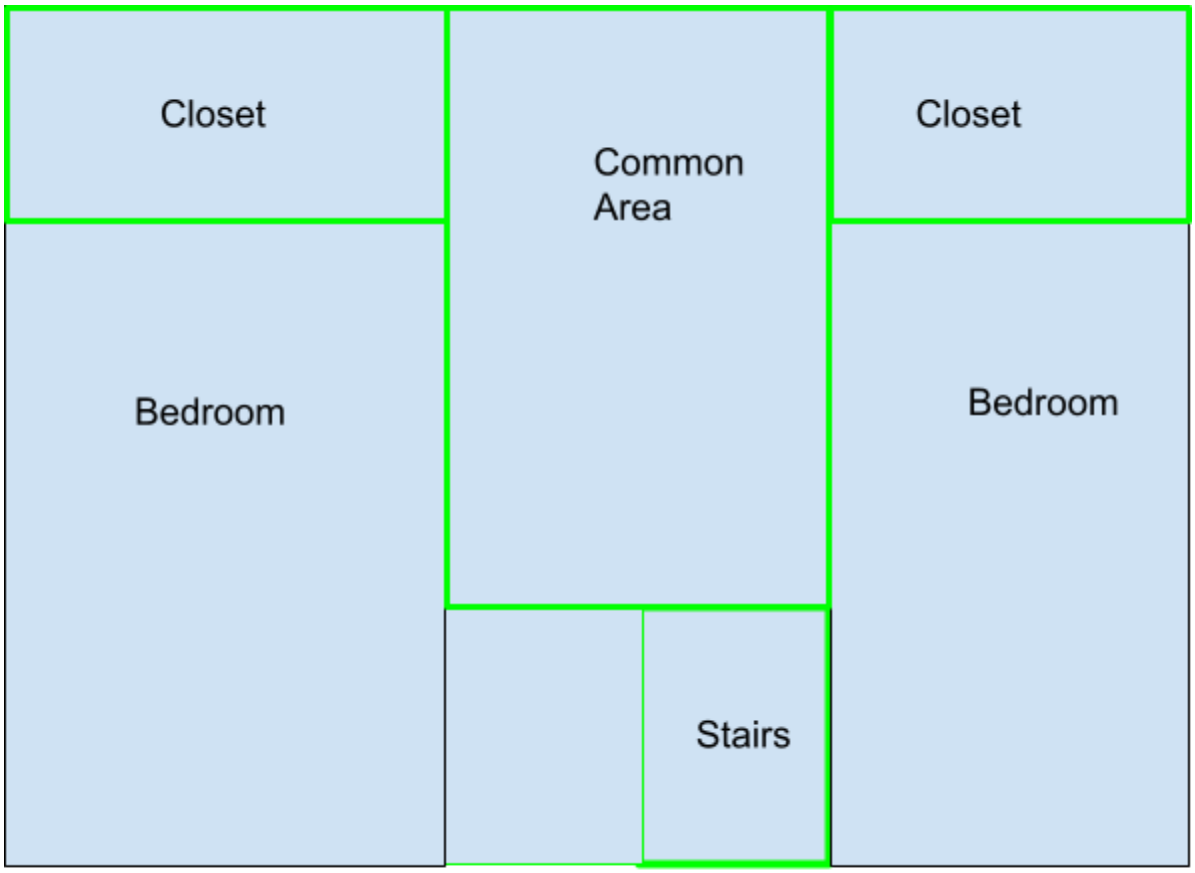
It is imperative that sources of moisture be fixed prior to remediation.

Procedures:

1. **Remove personal possessions from: N/A**

2. **Setup containment barriers around entrance to** Exterior doors





Keep Bathroom Tile

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ENVIRONMENTAL

Red areas are the beginning of containment areas that need to be closed off

Blue areas are water damaged material that needs to be removed

Green areas are places that need to be mechanically agitated.

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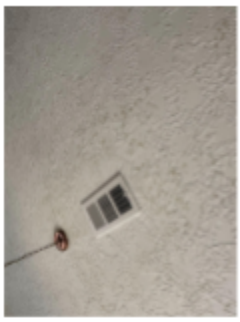
3. **<u>Remove all water and microbial damaged building material</u>:**

<u>1st floor (12’ x 7’) -</u> Remove ALL ceiling estimated 1400 Sqft, remove all sheetrock estimated 3500 sqft. Kitchen cabinets are to remain unless visual microbial growth is discovered during the course of remediation. Bathroom tile is to remain. Mechanically agitate all wooden structures with microbial growth. Encapsulate all wooden structures in area of remediation.







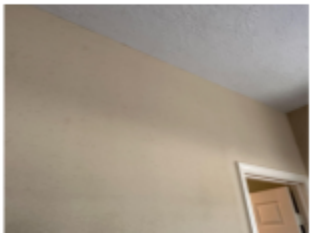
2nt floor (12’ x 7’) - Remove ceiling estimated 900 sqft, remove all sheetrock estimated 1500 sqft. Mechanically agitate all wooden structures with microbial growth. Encapsulate all wooden structures in area of remediation. Bedrooms are to remain unaffected, bedroom closets remove all drywall and ceiling.











4. **Hepa Vacuum throughout containment areas –**Whole House
5. **Run HEPA vac air scrubbers for 48 hours throughout containment areas –**Whole House**.. If any additional mold growth is identified during remediation, please contact the office for any amendments to the protocol that may need to be applied as well as for any questions regarding the protocol. The office phone number is 713.401.9751.**
6. **Wipe down area of remediation with EPA approved anti-microbial agent.**

Work Area Preparation:

Full containment requirements: Entrances of home.

Personal items and furnishings should be removed from the work area and stored in a climate controlled environment for the duration of the work. The HVAC system serving the work area should be deactivated and critical barriers consisting of one layer of polyethylene sheeting should be placed over all openings to the work area including HVAC system openings, light fixtures, and non-moveable items. One layer of 6-mil polyethylene sheeting should be used to work area openings (including unaffected rooms) and non-moveable items.

Non-moveable items and all openings to the HVAC system in the building should be sealed with one layer of 6-mil polyethylene sheeting. The work area should be ventilated through the use of HEPA filtered air filtration devices (AFDs). A sufficient number of AFDs must be used to provide at least 4 air changes per hour inside the building. AFDs must be exhausted to the outdoors. The decontamination unit and containment shall be left in place until after a successful post remediation assessment is performed.

Remediation/ Restoration:

XXXX room (XXXX ft^3 = XXX CFM)

- Remove and place any wet or mold-contaminated insulation in sealed plastic bags and remove from area.
- Wire brush or lightly sand any mold-contaminated wood structures, HEPA-vacuum and dry all exposed surfaces, including the structural members and all other items

inside of the exposed cavities up to and including two feet beyond the edge of damage or contamination

General recommendations:

- A contractor licensed in mold remediation in the state of Texas should conduct all microbial removal from the property
- Air exchanges reduce airborne fungal concentrations in work or containment areas. For contained areas, industrial hygiene statues recommend no less than four Air Changes per Hour (ACH). In a containment area, when the air is exhausted, replacement air will enter. One cubic foot of exhausted air requires one cubic foot of replacement air. The general calculation recognized in the industry to achieve proper Cubic Feet per Minute (CFM) is as follows:
- Length X Width X Hight (cubic foot) X number of ACH (4 or more)/ 60minutes = CFM required
- For the purpose of our remediation specifications we use the minimum recommendation of four ACHs.

This calculation is used in determining what size or how many air machines are required for the area(s) that may be contained.

- Any water or mold damage materials within the localized area of remediation, the contractor should remove the water or mold damaged materials until at least 18-24 inches of visual undamaged materials have been removed. If additional mold damage is discovered outside the described work areas, the contractor should contact the consulting company or adjuster and request a supplemental recommendation letter.
- HEPA vacuums should be utilized during cleanup efforts.
- Exposed framing should be wiped down with a EPA recommended anti-microbial
- In the event a tinted or white mold resistant coating is utilized, the post remediation verification must be performed prior to any coatings being applied to the surface. This is because a tined coating does not allow for a visual evaluation of the area. The use of bleach and similar chemicals is not recommended as part of current mold remediation guidelines.
- HEPA filtered air filtration device(s) should be operated in the work area for a minimum of 48 hours prior to the post remediation verification. The intake and exhaust of the AFD should be inside the work area during this “air cleaning” period.

The AFD should be shut down prior to collecting post remediation air samples. Doors and windows should be kept closed for a minimum for 12 hours prior to the post remediation verification.

Post remediation verification (applicable rooms):

Post remediation verification is recommended prior to restoration of the work area. Post remediation verification is recommended prior to restoration of the work area.Visual inspection along with air sampling of the building is the recommended method for clearance. Cost of Post Remediation Verification will be $675.

The work area should free of dust, dirt, debris, rot, active sources of moisture and any other indicator of unusual moisture conditions. Significant damage to the building that may result in water intrusion must be repaired prior to the post remediation assessment. Work area containment, if used, shall remain in place until successful written confirmation of a successful post remediation assessment is provided.

Post remediation verification will include the following areas: Whole House

HVAC system requirements and cleaning:

The A/C system servicing the area of the remediation should be sealed prior to beginning remediation. Environmental control equipment (portable A/C, dehumidifiers) may be necessary to maintain the proper environment during remediation.

Based on [the laboratory results of spore trap air samples collected at the property] [the presence of visible microbial growth on interior HVAC components], the HVAC system should be cleaned. Cleaning should include the diffusers, ductwork, supply plenum, blower compartment and all other accessible components. Contaminated porous A/C materials must be removed and replaced. Fogging of the system should not be performed. Upon completion of A/C system cleaning and final work area cleaning sealing, the A/C system may be returned to operation. In conducting the contamination evaluation during the cleaning process, the contractor should consider visible growth as cause for removal of porous items. The mere fact that contamination existed within the structure does not typically warrant the removal of porous HVAC components. According to ACR 2005 published by the National Air Duct Cleaners

Association (NADCA), an HVAC system is considered contaminated when evidence of significant particulate debris and/or microbial growth exists. Further, the guideline suggests that "porous materials with biological growth be removed".

The HVAC cleaning contractor must also maintain proper pressurization of the system during the entire cleaning process.

In conducting the system cleaning the contractor must consider the impact of indoor microbial levels on the entire HVAC system. HVAC system components to consider include the entire heating, air-conditioning and ventilation system from the points where the air enters the system to the points where the air is discharged from the system, including the return air grills, return air ducts to the air handling unit (AHU), the interior surfaces of the AHU, mixing box, coil compartment, condensate drain pans, humidifiers, supply air ducts, fans, fan housing, fan blades, air was systems, spray eliminators, turning vanes, filters, filter housing, reheat coils, and supply diffusers. The HVAC system may also include other components such as dedicated exhaust and ventilation components and make up air systems.

Further, the contractor should be familiar with and follow all other requirements of ACR 2005:

Assessment, Cleaning & Restoration of HVAC Systems published by the National Air Duct Cleaners Association.

Personal effects:

Personal effects and furnishings should be removed from the work area and stored in a climate controlled environment for the duration of the work.

In general, porous items with visible mold growth should be discarded. Semi-porous items, such as wood should be evaluated on a case by case basis and a determination made as to whether the items can be cleaned or should be discarded. Non- porous materials such as metals, plastic, and fiberglass can usually be cleaned.

Removal of mold-affected and water-damaged materials:

The work should be conducted in accordance with industry accepted practices and guidelines, including but not limited to the following:

- United States Environmental Protection Agency (2001). Mold Remediation In Schools and Commercial Buildings (EPA Publication No. 402-K-01-001). Washington DC: **US EPA**
- American Conference of Governmental Industrial Hygienists (1999). Bioaerosols: Assessment and Control. ISBN: 882417-29-1 Cincinnati OH: **ACGIH**
- New York City Department of Health (2000) Guidelines on Assessment and Remediation of Fungi in Indoor Environments. New York New York: New York City Department of Health
- Institute of Inspection Cleaning and Restoration Certification (2003, 2004, 2008). Standard and Reference Guide for Professional Mold Remediation. Vancouver, WA: **IICRCS520**
- American Industrial Hygiene Association (2008). Recognition, Evaluation, and Control of Indoor Mold. Fairfax, VA: **AIHA**
- American Industrial Hygiene Association (2005). Field Guide for the Determination of Biological Contaminants in Environmental Samples. Fairfax, VA: **AIHA**
- American Council for Accredited Certification. CIE, CMI, CMR. Glendale, AZ: **ACAC**
- Occupational Safety and Health administration guidelines (**OSHA**).

Where conflicts exist between industry practices and guidelines and the recommendations contained herein, the contractor's professional judgement should dictate the appropriate course of action. Additional environmental exposures which were not part of the assessment may occur during the remediation, such as asbestos and or lead exposure. All work should be performed according to federal, state, and local laws.

The contractor should maintain relative humidity in the work area of less than 60 percent for the duration of the work. Relative humidity measurements should be recorded at least twice daily, a minimum of 4 hours apart. If two consecutive measurements are recorded above 60 percent, additional dehumidification equipment should be installed in the work area to reduce humidity levels below 60 percent. A log of measurements should be submitted upon completion of the project.

Portable cooling equipment may be necessary to provide a comfortable work environment for workers and reduce the risk of heat stress.

Removal protocol – mold-affected materials

Removal of mold-affected material must be conducted in a controlled manner. The use of HEPA vacuums during gross removal will assist in reducing the concentration of airborne fungi. Work area preparation should be as indicated elsewhere in this report. Discarded items and material will be placed in 6 mil poly bags for removal from the work area immediately after cutout. Removal of contaminated materials will begin upwind of the airflow pattern within the work zone. All the exterior of bagged or wrapped debris shall be HEPA vacuumed before leaving the work area(s) to prevent cross-contamination.

If additional microbial growth is identified beyond the recommendations addressed above, removal should continue 18-24" past the areas of visible growth. Professional judgement should dictate the need for further removal. Insulation within walls and/or ceilings in the area of drywall/plaster removal should also be removed and discarded. Exposed wood framing should be wiped down with a detergent and water solution. Areas of wood rot should be removed and discarded. If contamination exists on cabinetry, it should be removed for cleaning and evaluation or discarded depending on the extent of damage and the material. Non-porous fixtures (tubs, shower stalls, marble counter tops, sinks, refrigerators, ect.) may be cleaned within the work area in preparation of re-install. Upon completion of microbial remediation work, a final cleaning of the work area should be conducted by thoroughly damp wiping and HEPA vacuuming all exposed surfaces.

Removal of water-damaged material

Generally, water-damaged materials can be addressed without special controls or establishment of containment. In general, water-damaged materials that are delaminating, deformed, or have otherwise lost their integrity should be removed and discarded. Where materials are stained but have not lost their integrity, the materials can generally be repaired by repainting or refinishing. General dust control measures should be implemented during removal of water-damaged material that does not contain visible microbial growth. Dust control measures may include, but not be limited to, removal of personal effects and furnishings from the work area, covering floors and non-moveable items with polyethylene sheeting, and the use of local exhaust ventilation equipment.

If removing water-damaged materials, care should be taken to initially remove small amounts of the material while evaluating the back sides of the material or exposed cavities for the presence of visible microbial growth. If microbial growth is observed during removal of water-damaged material, work should stop, and the microbial growth evaluated in terms of degree of growth, quantity, and remediation methods required prior to proceeding. Often, if the amount of microbial growth is small (i.e. less than 10 square feet) a HEPA vacuum or damp wiping with a detergent solution can be used to remove the microbial growth prior to the removal of the material as water-damaged material. However, where any amount of microbial growth is removed, it is recommended that access to the work area be restricted to those performing the work using limited containment methods and that personal effects be removed or protected as necessary during the work. Previously unidentified areas of microbial growth larger than 30 square feet in area should be evaluated prior to removal.

Preventive measures:

As stated by the ACGIH, "any remediation plan attempt that does not include long-term plans to maintain systems and prevent recurrence is short-sighted and destined to fail. There is no onetime, complete "cure" to microbial contamination within structures. Rather, continued oversight and attention to conditions that may allow microbial growth must become an integral part of the control plan." Once remediation efforts have been conducted, three basic strategies should be implemented: (a) routine surveillance inspections and prompt response to problems, (b) adequate preventative maintenance of the building structure, as well as, HVAC and plumbing systems, and (c) adequate housekeeping including an emphasis on proper and routine cleaning.

The EPA recommends that the Relative Humidity (RH) levels in the living spaces are maintained between 30% - 50%. Relative Humidity levels that exceed 50% can influence dormant mold to grow or may promote favorable conditions for new mold growth. It is further recommended that RH levels do not go below 30% as that may cause an uncomfortable living environment.

Indoor temperatures also are a factor that is considered for mold growth. When temperatures exceed 85° F or 29.5° C mold can start to flourish. Mold growth is slower at colder temperatures and at 32° F or 0° C mold colonies will go dormant. If temperatures and RH are not controlled, dewpoints (condensation) can be reached. This will allow moisture to be present on or under

surfaces which can cause the start of mold. For example, if an indoor temperature in a room is 80° F, the RH is 75% and the outdoor temperature is 45° F, the exterior walls may achieve dew point and start to sweat. This example can also be reversed. If the outdoor temperature is 90° F, the RH is 70% and the indoor temperature is 60° F, the same occurrence can happen. It is recommended as a guideline by American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) that indoor temperatures in the winter months are maintained between 68° F – 75° F (20° C – 24° C). During the summer months it is recommended as a guideline that indoor temperatures are maintained between 73° F – 79° F (23° C – 26° C).

It is important to note that the cause of any mold growth need to be identified, corrected and the mold/old contaminated materials be appropriately cleaned or removed. IICRC S520 Standard and Reference Guide for Professional Mold Remediation states the use of detergents, antimicrobials, Ozone, heat treatment or other biological controls used in killing mold as a standalone method, has not been shown to eliminate the contaminants nor their potential allergenic or toxigenic properties.

Record Keeping

This section describes the suggested record keeping materials that should be maintained throughout the project.

Daily log

The daily log should include a record of all pertinent information related to the project. The daily log should be maintained by the on-site shift supervisor.

Visitor log

A log of all personnel not specifically designated to the job by the remediation contractor should be maintained. The log will include a disclosure to all visitors the hazards related to entering a microbial work site.

Equipment usage log

A log of equipment usage should be maintained. The log will indicate the time and date of filter changes and hours used. The log will also include, if applicable all field calibration tests

conducted and the results of the calibrations. Calibration certificates will be maintained at the contractors office and be available for inspection.

MSDS book

An MSDS (material safety data sheet) book should be maintained on-site that includes an MSDS for all required materials and equipment used at the job site. Workers utilizing these materials and/or equipment will be educated on the MSDS and the location of the MSDS book in case of emergency.

Personal Protection/Notifications

Employee Instruction

Employees must be instructed on the proper procedures required during microbial remediation projects. This includes but is not limited to, the proper protective gear required, the potential hazards associated with microbial remediation, time limits for working inside containment (typically 1-3 hours depending on internal conditions), location of all exists in case of emergency, etc.

Respiratory Protection

N-95 respirators are the minimum respiratory protection recommended for workers during removal of microbial growth. It is recommended that respiratory protection for workers be upgraded to a minimum of full-face air-purifying respirators equipped with HEPA (P-100) cartridges if the amount of microbial growth removed is between 30 and 100 contiguous square feet. For areas of microbial growth greater than 100 contiguous square feet, powered air purifying respirators with HEPA (P-100) cartridges are recommended for workers during removal. Authorized visitors to work areas involving removal of more than 30 contiguous square feet of mold growth should wear a minimum of half-face air purifying respirator equipped with HEPA cartridges and ANSI-approved eye protection. The contractor's Safety and Health Plan or microbial remediation Work Plan should contain contingencies for upgrading and/or downgrading respiratory protection based on prevailing site conditions and hazard levels. Use of respiratory protection shall be in accordance with 29 CFR 1910.134, OSHA Respiratory Protection Standard.

Protective Clothing

Minimum protective clothing during work involving removal of not more than 10 contiguous square feet of microbial growth should be cotton coveralls, sturdy work shoes, work gloves, and safety glasses or goggles. For work involving between 10 and 100 contiguous square feet of mold-affected material workers should wear Tyvek™ (or equivalent) coveralls equipped with hoods and foot coverings and work gloves. For work involving removal of more than 100 contiguous square feet of mold-affected material, Tyvek™ (or equivalent) coveralls equipped with hoods and foot coverings, and disposable gloves in combination with sturdy work gloves should be worn in the work area.

All openings in protective coveralls, such as those at the ankles and wrists should be sealed with duct tape or other appropriate method. If full face respirators are not utilized, then additional eye protection should be used. Hearing and head protection should be available for use when site conditions require them. The contractor's Safety and Health Plan or microbial remediation Work Plan contain contingencies for upgrading and/or downgrading protective clothing and equipment based on prevailing site conditions and hazard levels.

Warning and exit signs

All areas within the work area should clearly denote the direction towards the exit area. This may include fluorescent tape in the shape of arrows or actual signs providing the same information.

All entrances into the work area shall be marked to indicate the type of work being performed and the potential hazards of entry. These signs may be posted on the first stage of the decontamination station versus outer building doors.

Notification

Occupants of the building should be notified against entry into the work area.

Equipment Requirements

Dehumidification equipment

It may be necessary to employ the use of dehumidification equipment in order to maintain appropriate humidity levels (40-60%) during remediation activities. Monitoring of humidity levels should be conducted and recorded at least twice daily. Any levels above 60% should be noted in the daily log and corrected immediately.

Temporary HVAC/electrical

During periods of high heat and humidity it may be necessary to employ the use of portable HVAC systems. Temperatures inside the containment area should be maintained below 78° F.

Any temporary electrical connections should be equipped with group-fault circuit interrupters (GFCI) and established by a qualified electrician.

Air scrubber/negative air machines

All air scrubbers utilized in mold remediation projects should be HEPA rated equipment. This includes equipment vented outdoors. Care should be given in selecting such equipment due to the claims made by many manufactures of filtering equipment. The equipment should have CADR of 99.97%

HEPA vacuums

The same precautions above apply to HEPA vacuum equipment. The equipment should be labeled for the use of hazardous waste removal. Disinfectants, biocides, and anti-microbial coatings

All disinfectants, biocides, or anti-microbial coatings used on mold remediation projects shall be registered with United States Environmental Protection Agency (EPA) for the intended use and if the use is consistent with the manufacturer's labeling instructions. A decision to use such products must take into account the potential for occupant sensitivities and possible adverse reactions to chemicals that have the potential to be off gassed from surfaces coated with such products.

General mold inspection limitations disclaimer

Do not depend on you mold inspector for any medical advice; that is the job of a medical specialist. If any illness is experienced that may be related to mold or other indoor environmental factors, then a family doctor should be consulted regarding health complaints. In addition, the unhealthy persona should obtain a referral to the appropriate medical professionals specializing in allergies, environmental medicine, or occupational health, as prescribed by the physician. If building related symptoms, such as allergy or asthma-like symptoms or other similar symptoms are experienced, then a mold investigation is often the logical starting point in an effort to locate, define, and control the problem as mold is often the culprit.

One must keep in mind that occasionally other Bio-aerosols can result in symptoms or illness as well. This inspection is not intended to sample or report on what the inspector considers to be typical tiny amounts of expected mold. Unless arrangements are made and agreed to in written form and paid for, this is not an environmental investigation for conditions, such as dust mite, roach, and pet allergens, virus, bacteria, lead-based paint, asbestos, radon, VOC's, mycotoxins, or any other environmental conditions. This is not a wood destroying organism or termite inspection report for dry rot fungus or other fungus that causes wood decay. This is a mold inspection only. The inspector does not offer an option as to the advisability of the purchase or sale of property, unless you pay for and request mold sampling in every room, inner wall stud bay, AC duct, carpet, and all other surface in all areas, then items tested and sampled during this standard mold inspection will be randomly tested and sampled. Environmental testing equipment when used are used in representative or random areas and each and every area of the property is not checked with such devices due to time constraints. Inspector is not responsible or liable for the non-discovery of any water damage, water problems, mold or mycotoxin contamination, mold problems or other conditions of the subject property, or any other problems which may have developed or become more evident after the inspection and testing time and date. Inspector is not responsible for or liable for the non-discovery of any water problems, mold contamination, or any other problems that were not discovered due to inadequate sampling in specific areas where sampling was not requested and paid for or where not readily visible clues existed that would have warranted sampling in those areas. You inspector is unlikely to sample for, or locate mold which may be hidden inside walls, behind wallpaper, appliances, furniture, or other inaccessible areas.