

MOLD REMEDIATION PROTOCOL

**139 VILLA ARBOLES
SAN ANTONIO, TEXAS**

PREPARED FOR:

**SAN ANTONIO HOUSING AUTHORITY (SAHA)
818 S FLORES
SAN ANTONIO, TEXAS 78204**

PROJECT CONSULTANT

**ASTEX ENVIRONMENTAL SERVICES
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PART 1 - GENERAL

The remediation activities shall comply with this Mold Remediation Protocol, The Texas Department of State Health Service's Mold Assessment and Remediation Rules and, where applicable, regulations of the US Environmental Protection Agency (EPA), the US Occupational Safety and Health Administration (OSHA), and any other applicable state or local regulations. Whenever there is a conflict or overlap among or between the above references the most stringent provisions shall apply.

The remediation Contractor is solely responsible for protection of health, safety and the environment at the job site. The remediation Contractor is solely responsible for all required training and licensure related to any work covered by this Mold Remediation Protocol.

1.01 SUMMARY OF AFFECTED AREAS REQUIRING REMEDIATION

This project consists of the removal of certain building materials and systems and the sanitization of mold contamination on certain surfaces and building components in the residence located at 139 Villa Arboles, San Antonio, Texas. Specific details for the construction of containments and removal activities will be located in PART 3 – EXECUTION. The remediation Protocol covers the specific activities to be conducted within the school and each location will be discussed separately.

The following areas are specifically addressed within this scope of work:

- A. the window sill and associated gypsum board wall system materials (at least 2 feet beyond the window and at least 1 foot above the top of the sill)

1.02 SCOPE OF WORK

Provide a copy of the state mandated Mold Remediation Contractor's Work Plan based on this Scope of Work and Protocol to Astex Environmental at least 12 hours before beginning work.

A. Delineation of Containment(s)

1. The following areas shall be placed under limited containment: bedroom with broken window (far left corner bedroom).
2. Designated onsite Clean Storage Area(s): the remainder of the residence.

B. Personal Protective Equipment (PPE) Requirements

1. For areas of full containment the use of gloves, disposable full body clothing, headgear, foot coverings, and full-face respirator with HEPA filter are required (not applicable for this project).
2. **For areas of limited containment the use of gloves, disposable clothing, headgear, foot coverings, and half face respirator with HEPA filter are required.**
3. The Remediation Contractor shall insure that OSHA appropriate personal protective equipment (PPE) is worn while remediating all Containment Areas.
4. Refer to Section 2.01 for further PPE guidance.

5. Contractor assumes all responsibility for PPE compliance.
- C. Specific setup procedure (follow in sequence)
1. HEPA vacuum clean the carpeting within the room
 2. Isolate and contain those designated areas under the Limited Containments as per Sections 2.03 ENGINEERING CONTROLS and 3.01 PROCEDURES-MINIMAL CONTAINMENT.
 3. Place ample dehumidification equipment within the containment area and clean storage areas to maintain relative humidity at 50% (+- 5%) during the remediation process.
 4. Isolate all HVAC diffusers throughout the affected areas.
 5. HEPA vacuum flooring (carpet and/or hard) part to the installation of the engineering control.
 6. Isolate all flooring (carpet and/or hard) with one layer of 6-millimeter polyethylene sheeting and seal with duct tape.
 7. Proceed with removal activities.
- D. Removal Activities (all areas)
1. Upon adequate isolation from the remainder of the residence, begin removal of the affected sheetrock and exposed batt insulation. Conduct a visual inspection of the wood framing materials.
 2. HEPA vacuum clean and sanitize the exposed wall cavity.
 3. Conduct a joint visual inspection with Astex Environmental.

1.03 SPECIAL CONDITIONS

The following special conditions shall apply to this project.

- A. The Contractor shall coordinate a post-material removal inspection and, finally, a limited post-remediation sampling event. The Remediation Contractor shall not apply long-term anti-microbial compounds (e.g. quaternary ammonia coatings, etc.) until the post-remediation evaluation by the Project Consultant has been successfully completed and then only in a manner consistent with the Texas Department of State Health services rules.
- B. No sanitization shall be done until all demolition is complete and until Astex Environmental has conducted a visual inspection.
- C. Clearance criteria: clearance air samples shall have less than 75% in comparison to outside samples' mold spore counts with no significant genera variation with no more than 1 total spore count of *Stachbotrys* being reported. Surface samples shall identify no more than 10 spores per square inch and not to include water intrusion types of fungal spores.

- D. The Remediation Contractor shall re-clean and re-sanitize at his/her expense if the post remediation samples fail or if the final visual inspection fails. This process of re-cleaning and re-sanitization shall continue at the Remediation Contractor's expense until a successful post remediation is achieved. ***THIS SECTION WILL NOT BE APPLICABLE IF THERE ARE SPECIAL OR UNUSUAL CONTAMINATION CONDITIONS DISCOVERED DURING THE REMEDIATION ACTIVITIES AND ASTEX ENVIRONMENTAL IS CONTACTED AND AGREES IN WRITING THAT THIS WOULD SUBSTANTIALLY CHANGE THE SCOPE OF WORK AND AFFECT POSSIBLE POST REMEDIATION EVALUATION.***

PART 2 - PRODUCTS

2.01 PERSONAL PROTECTION EQUIPMENT (PPE)

- A. Minimum Protection – half face HEPA filtered respirators, disposable suits, eye protection, gloves (e.g. polynitrile)
- B. Full Protection – full face HEPA filtered respirators or PAPR, full protective suits with head cover and foot covers, eye protection, gloves (e.g. polynitrile)

2.02 MATERIALS

- A. Stiff brooms, hand brushes, scrapers, toothbrushes, rough edge sponges and cleaning cloths shall be utilized during sanitization procedures. All equipment shall be new and clean and disposed of as waste at the end of this project.
- B. Polyethylene sheeting of 4 or 6 mil thickness that is clear, opaque or black shades and moisture resistant duct tape and spray on glue capable of continuously sealing polyethylene through project's remediation duration.
- C. PVC or wood supporting frames shall be utilized to ensure that the containments remain intact during the entire remediation and post-remediation procedures.
- D. Polyethylene bags of 6-mil thickness such as those used for asbestos-containing waste.
- E. Airless sprayers to be used for dust control and application of sanitization solution (as directed by manufacturer's label instructions as per the Texas Department of State Health Services Mold Remediation Rules).
- F. A wet-vacuum cleaner and a HEPA-filtered vacuum cleaner. All areas should be cleaned and sanitized and new filters installed prior to beginning the project. All filters shall be disposed of as contaminated waste material at the end of this project.
- G. Ground Fault Circuit Interrupters (GFCI) to be used on all electrical equipment within the containment.

2.03 ENGINEERING CONTROLS (GENERAL INFORMATION)

The following descriptions for the construction of the containment may not be applicable to all remediation projects; however, the Remediation Contractor should refer to this section if any of the following details are specified.

- A. HVAC Systems – All HVAC equipment in or passing through any containment area shall be shut down, and preventative measures taken to prevent accidental start-ups. All intake and exhaust openings shall be sealed with at least one (1) layer of 6-mil polyethylene sheeting. The seals shall be installed in such a manner as to guarantee that the seals shall remain in place for the duration of the project.
- B. Critical Barriers – Containment areas within which remediation activities are to be conducted shall be separated from adjacent areas by impermeable barriers with a minimum of one (1) layer of 6-mil polyethylene sheeting attached securely in place and completely sealed with tape. All openings between containment area(s) and adjacent area(s), including but not limited to windows, doorways, elevator openings, corridor entrances, ventilation openings, drains, ducts, grills, grates, diffusers, skylights, etc., shall be sealed. All cabinets, shelving etc, that have cracks, holes or other openings shall also be sealed.
- C. Movable Objects – All movable objects shall be cleaned and removed from the containment area(s), as specified in the Scope of Work.
- D. Floors – As required, floor sheeting shall consist of at least one (1) layer of 6-mil polyethylene sheeting. The sheeting shall be overlapped at least one (1) foot and completely sealed with tape.
- E. Walls – As required, wall sheeting shall consist of at least one (1) layer of 6-mil polyethylene sheeting and shall be constructed in such a manner to prevent falling during normal use. Wall sheeting attached to structural walls shall be held in place with staples and/or furring strips. Wall sheeting that is not to be supported by structural walls shall be supported by PVC or wood frames and held in place with staples and/or furring strips. All sheeting shall be overlapped at least one (1) foot and completely sealed with tape.
- F. Full Containment Area Ventilation – Air Filtration Devices with HEPA filtration and in a sufficient number to provide a negative pressure between the containment and outside areas shall be operated continuously from the time containment is established through the time acceptable final post-remediation results are obtained. All units should be clean and sanitized with new filters installed prior to the beginning of the project. All units utilized to provide clean filtered air into the containment area shall be vented to the exterior of the entire structure whenever possible. The Remediation Contractor shall carefully coordinate with the Assessment Consultant and Property Owner prior to the establishment of the Air Filtration Device's exhaust into a particular area. Air exhaust locations will be secured from criminal entry by using burglar bars or other satisfactory method during the remediation process and protected against water intrusion during rainfall events. Provisions for make-up air should be made; dedicate a portion of a wall critical barrier for fresh make-up air. Ensure that each make-up air opening is adequately filtered. All filters shall be disposed of as contaminated waste material at the end of the project.
- G. De-Humidifiers – Air dehumidifiers should be utilized as required in the Scope of Work and in a manner consistent with maintaining the relative humidity to approximately 50% (+- 5%) during the remediation/sanitization activities until the project's Post Remediation Assessment Passed Clearance Report has been issued.

PART 3 – EXECUTION

3.01 PROCEDURES – (AS REQUIRED IN THE SCOPE OF WORK)

When delineating containments, the Remediation Contractor should plan for the need to expand the containment area if additional contamination is identified during the remediation activities. Any decisions regarding the expansion of the containment(s) shall be done after consultation with the project's Assessment Consultant. Under no circumstances shall the Contractor modify the containment to a smaller size than it was initially established.

- A. Minimum Containment Procedures (See Section 2.03 for details):
 - 1. Isolate and critical the HVAC system throughout the containment(s) area.
 - 2. Install critical barriers to isolate the containment area(s)
 - 3. All polyethylene sheeting seams should be completely sealed with adequate tape
 - 4. Air Filtration Devices may be required to operate in scrub mode as directed in the Scope of Work.

3.02 SANITIZATION PROCEDURES (MANDATORY)

The following procedures shall be followed at the completion of the demolition activities defined in the Scope of Work and are a part of the final clean up. The Assessment Consultant shall be notified upon completion of the demolition and sanitization for a visual inspection *no less than 48 hours prior to the completion of the demolition*. This inspection shall be conducted prior to beginning the sanitization process.

- A. The Remediation Contractor shall initially wet-vacuum all debris within the containment area(s) and thoroughly HEPA vacuum clean of all remaining dust and debris reminiscing of the removal activities. Any exposed wood materials should be sanded during the remediation activities prior to vacuuming.

Note: Prior to vacuuming, sand all wall studs, sills, plates, joists, sub-flooring, exterior sheathing, rafters and roof decking exposed during the remediation activities. Special care should be given to discolored building materials and the following areas: (1) interface between the vertical framing stud surfaces and exterior sheathing surfaces; (2) interface between the roof rafters and roof decking.

- B. The sanitization solution shall consist of a solution that is consistent with the Texas Department of State Health Services Mold Remediation Rules.
- C. The Remediation Contractor shall spray the sanitization solution over all surfaces identified as contaminated. The Remediation Contractor should use a sufficient amount of solution to wet all

affected areas, but not to cause excessive pooling of water or solution. Special attention should be made at all cracks and crevices, particularly at the framing joints, as these shall be located and subject to post-remediation sampling.

- D. The Remediation Contractor shall use stiff brooms, hand brushes and toothbrushes to scrub all affected surfaces within the containment area(s). Special attention should be made at all cracks and crevices, particularly at the framing joints, as these shall be located and subject to post-remediation sampling.
- E. Clean and sanitize all bathroom surfaces, fixtures and drains, where applicable.
- F. At the completion of the initial clean up, the Remediation Contractor shall HEPA vacuum and damp wipe all surfaces within the containment area(s) with clean cloth towels and fresh sanitization solution.
- G. It should be noted that one HEPA vacuum and sanitization procedure might not be sufficient to satisfactorily clean the containment area and its affected surfaces. If the Remediation Contractor has any concerns regarding the effectiveness of the sanitization procedures, the Contractor should contact the project's Assessment Consultant.

3.03 POST REMEDIATION EVALUATION PROCEDURES

Post remediation evaluation for the project shall be accomplished with the collection of samples based on the following protocol. All Minimum Containments shall remain operational and in place until all work areas have successfully passed sample analysis. *The Assessment Consultant shall be notified prior to the remediation area's readiness for visual inspection and post-remediation sampling.* The Remediation Contractor shall not apply long-term, anti-microbial compounds (e.g. quaternary, ammonia coatings etc.) until a Post-Remediation report documenting a successful sampling event with the Assessment Consultant has been issued.

- A. Air samples shall be collected utilizing aerosol cassettes for total particle microscopically screen. These samples shall be collected from within the containment areas, the adjacent areas outside the containment and the exterior as appropriate.
- B. Surface samples shall be randomly collected from within the containment areas and analyzed for mold spores using a microscopic screen. These samples will be collected from the wall cavity.
- C. CLEARANCE CRITERIA: clearance air samples shall have less than 75% in comparison to outside samples' mold counts with no significant genera variation and no *Stachybotrys* spores being identified.

3.04 ASSESSMENT CONSULTANT COORDINATION

Coordination between the project's Assessment Consultant and the Remediation Contractor is essential in achieving a complete remediation project and first-time passed clearance post-remediation evaluation. The Remediation Contractor should immediately contact the Assessment Consultant if any of the following circumstances occur.

- A. Additional water damage and/or mold amplification is encountered that may alter the Scope of Work.

- B. Wood components are encountered that remain blackened after repeated cleaning or appear to be rotted or in substantial decay. If removal of suspect materials substantially affects the Scope of Work, then the Assessment Consultant should be contacted immediately for resolution.
- C. Any time there is a concern regarding the containment area construction, extent of the demolition and/or the effectiveness of the sanitization process.

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