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# Appendix A
## Protocols

# State Board of Equalization 21st Floor Protocol for Pilot Study, Rev. 1 450 N Street, Sacramento, California

PROTOCOL BY: *LaCroix Davis LLC* DGS IH MONITOR: *LaCroix Davis LLC*
BOE IH: *HygieneTech Inc* DGS PM: *Mike Moore*
Remediation Contractor: *JLS Environmental, Inc.*

Note: *This is a protocol specifically designed to address additional mold issues related to contaminated carpet on the 21st floor. The generic floor protocol has been amended in such a way as to properly accommodate the dynamic nature of the ongoing building investigation.*

| DESCRIPTION | INITIAL PILOT STUDY REQUIREMENT |
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| Defined Work Area | Identify areas to be investigated and/or remediated. Determined during the joint initial floor acceptance "walk around" with DGS and BOE.<br><br>The 21st floor will be divided into five work areas: four quadrants and a core area. Each will be established as a negative pressure containment as mold remediation work is established in that area, or when determined by the project industrial hygienists.<br><br>This step includes (with assistance from BPM) deactivation and/or isolation of the building HVAC system for this area. All ceiling vents/openings and other wall penetrations should also be sealed. |
| Floor Assessment Findings | Air: >100,000 *Penicillium/aspergillus* during carpet pull-up; 30% of carpet still remains on floor, but remaining 30% is distributed throughout the entire floor under furniture<br>Furniture: HEPA-vacuumed, wet-wiped, and determined to be clean<br>Ceiling Tiles: Bottom surfaces of all sampled ceiling tile are clean. Top surfaces of many tiles on the south side of building have chaetomium spores; including two ceiling tiles in south core corridor. North side: Seven additional CT samples have *chaetomium* and one on the east side also had *Stachybotrys* spores.<br>Floor with carpet: Microvac sample of south side carpet dust has *chaetomium*.<br>Back of carpet: Back of carpet has *Penicillium/aspergillus*<br>Under carpet: Tape lift samples on bare floor show pen/asp<br>Tape lift samples on mastic, only if they coincide with floor cracks; show *Penicillium/aspergillus*<br>Floor without carpet: Some tape lift samples on clean concrete show *Penicillium/aspergillus* |

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| | Some tape lift samples on mastic that coincides with concrete cracks show *Penicillium/aspergillus* Tape lift samples on mastic that DO NOT coincide with concrete cracks DO NOT show *Penicillium/aspergillus* |
| Personnel Training and Qualifications | Only trained and qualified JLS personnel shall be allowed to enter "established" negative-pressure containments. |
| | Only trained and qualified project IH consulting personnel shall be allowed to enter "established" negative-pressure containments and must be accompanied by JLS personnel. |
| Personal Protective Equipment (PPE) for entering established containments areas | • All JLS personnel performing mold removal or cleaning shall wear a full-face air-purifying respirator with HEPA cartridge; disposable protective clothing that covers head and feet; gloves.<br>• Visiting personnel and consultant observers shall provide their own and wear, at minimum, a half-face air-purifying respirator with HEPA cartridge; disposable protective clothing that covers head and feet; gloves.<br>• During the collection of clearance air samples, no respiratory protection is required; disposable protective clothing and gloves are still required. |
| Occupants/Tenants | • BOE staff personnel shall be interviewed and relocated prior to any cleaning or mold removal activities.<br>• Regular elevator access to the floor shall be "locked out"; stairwell access doors alarmed; construction signage posted; and building occupants/tenants notified of current activities on the floor. |
| Work Area Preparation and/or Containment | • Any areas that may require additional investigation or remediation, outside of the building core area on a floor, may require isolation in containments equipped with exhaust equipment to provide a minimum negative air pressure of .02 inches water gauge.<br>• Restrooms and any other core rooms designated for remediation shall be physically isolated with critical barriers/containments and equipped with ventilation exhaust equipment to provide a minimum negative air pressure of .02 inches water gauge. |
| Stained Gypsum Board Walls | Any "suspect" liquid stains (i.e., has a history or other physical evidence of water-related problems) on the gypsum board walls will be sampled to confirm the presence or absence of VMG; surface samples are to be collected using Bio-Tape™ or similar method(s) at the discretion and consensus of the project industrial hygienists. |

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| Stained Fire-Proofing | All "stained" fire proofing in areas that have been historically impacted by leaks or floods will be identified and sampled at locations showing the most critical staining. A bulk sample shall be collected from each stained area on the fire-proofing with an emphasis on collecting a sample from what appears to be the most severely impacted area of the fire-proofing. |
| Areas With Visible Mold Growth (VMG) | • All areas of visible and suspect mold growth will be sampled and analyzed by direct microscopic examination. |
| Pilot Study | <u>(Initially one quadrant only)</u><br>• Divide floor into quadrants and designate necessary quadrants to be run as a negative pressure enclosures during remediation.<br>• Lift furniture and at the same time damp-wipe the tops and those parts of the furniture that were in contact with the floor; then cover/seal to protect against subsequent contamination; leave furniture in place.<br>Remove carpet:<br>• Use additional air cleaners inside the work quadrant to scrub general air;<br>• Use local exhaust ventilation next to where the carpet is actively being pulled away from the floor;<br>• HEPA vacuum the point where the carpet is being pulled away from the floor; as the carpet is being pulled up from the floor.<br>• Wrap waste carpet as it is being removed to prevent release of loose spores into work area; remove from work area and dispose.<br>Ceiling tile removal:<br>• After lifting <u>and</u> covering of furniture; remove ceiling tiles and immediately bag for disposal.<br>Clean floor:<br>• Clean floor with HEPA vacuum and normal floor scrubbing methods<br>Final clean, inspection, and clearance:<br>• Perform top to bottom detailed cleaning of quadrant<br>• Project industrial hygienists perform inspection<br>• 24-hour air-scrub and then clear<br>• Confirm cleared area meets all criteria established for area<br>Failure to clear:<br>If quadrant fails to clear, project hygienists and JLS will discuss options for achieving clearance.<br>Final completion of quadrant:<br>• Remove furniture covering<br>• Lower furniture<br>• Replace ceiling tiles |

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| | Completion of Pilot Study:<br>At completion of the Pilot Study, project personnel shall meet to discuss the strengths and weaknesses of the processes used during the Pilot Study and determine what practices shall be adopted for completing the balance of the floor remediation. |
| Work and Egress Areas | • HEPA vacuum work area and egress path.<br>• Clean areas with a damp cloth and/or mop and/or detergent solution. |
| Drying Areas | In general, work areas should be left dry and visually clear of contamination and debris. Some contamination and debris may remain during intermediate stopping points in the removal and cleaning process. |
| Air Monitoring | • During removal: no air monitoring is required unless a release episode occurs that could impact other occupied areas within the building.<br>• However, at discretion of the project industrial hygienists, random air sampling may be periodically performed to demonstrate the efficacy of control measures and work practices. |
| Clearance | • Any work areas or containments that have been established, but mold growth is not visually present, shall not require air scrubbing prior to the collection of air clearance. |
| | • Work area to be cleared should be dry and visually clear of contamination and debris as determined by the project industrial hygienists.<br>• Each area that is cleaned shall require a minimum of 24-hours of air scrubbing.<br>• Two (2) outside air samples (one outside the containment, but on the same floor; one at ground level) prior to collection of inside containment samples.<br>• The number of inside air samples shall be determined by the size of the containment and at the discretion and consensus of the project industrial hygienists; as few as one (1) and no more than five (5).<br>• Two (2) outside air samples after collection of inside samples (one outside the containment, but on the same floor; one at ground level on opposite side of the building where initial outside sample was collected).<br>• Criteria for successful air sample clearance:<br>o Quantitative spore counts collected inside containment are less than those observed in outside samples.<br>o Similar in rank order and distribution<br>o Air sample does not contain specific spores of concern that |

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| | were identified during initial identification of VMG. |
| | • Criteria for successful surface sample clearance:<br>o No VMG based on direct microscopic examination.<br>o Surface sample does not contain specific spores of concern that were identified during initial identification of VMG. |
| De minimis Quantities | • Any confirmed quantity of VMG to be removed shall be done so under isolation containment. |

This generic floor remediation protocol directs project personnel on how to proceed when investigating and removing installed carpet. This activity constitutes the planned removal of installed carpet that may or may not be contaminated with mold.

Note: *For the purpose of this protocol, a "suspect" location is an area suspected or known to have been historically impacted by flooding/water damage and a record of subsequent investigation and remediation does not exist. The project certified industrial hygienist (CIH) shall be used to detect, test and direct project management staff when mold is suspected/present.*

## Installed Carpet Removal

### Project Planning

Step 1.

- The floor/area of carpet to be removed by project personnel shall be determined by project management.
- Project personnel assigned the task of carpet removal shall review the proposed location of carpet removal.
- If the proposed area of carpet removal is NOT known to have been historically subjected to flooding or any other complaints (e.g., odors) that may be associated with carpet contamination, DGS contractor may proceed with removal of the carpet. In any case, caution should be taken whenever removing carpet and work should immediately cease if the presence of mold is identified.
- Any carpeted area known to have been historically subjected to flooding and NOT known to have been investigated and remediated, as needed; shall be performed after-hours or weekends and in unoccupied and/or an isolated area of the building.
- Initial Screening: Any location with "suspect" carpet should be initially "screened" by the project certified industrial hygienist to determine if the backside of the carpet or carpet pad is contaminated with mold. For the purpose of this protocol, "screening" means to inspect a representative section of the backside of the carpet; using a HEPA-ventilated glove box or other similar device to control the release of any mold components during inspection of the carpet. If the carpet, pad, and floor appear to be free of any visual mold, then personnel can proceed with careful removal of the carpet.

| Project Execution |
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| Step 2. Removing "Suspect" Carpet<br>• A project CIH shall be used to define control measures to be used for the removal of carpet in an area known to have been historically subjected to flooding or has a history of complaints; the extent of these controls may vary depending on the potential for mold contamination being present.<br>• Prior to removal of the carpet, the project CIH will determine if the activity will require construction of a protective containment at the location of the carpet and evaluate the extent of any VMG.<br>• If VMG is present (See Step 4 below), any protective containment used to isolate the work area shall be cleaned and then cleared by the project CIH before returning the space for use by building personnel. |
| Step 4. Removing Mold-Contaminated Carpet<br>• As needed, BOE staff personnel shall be relocated prior to any carpet removal activities.<br>• This step may also include (with assistance from BPM) planning for deactivation and/or isolation of the building HVAC system for the defined work area. All ceiling vents/openings and other wall penetrations should also be sealed.<br>• Carpet removal personnel shall use carpet removal methods that minimize the generation of dust.<br>• Mold-awareness trained carpet removal personnel shall immediately stop work and notify their supervisor when they notice odors or any other visual indication that mold may be present on the carpet materials or floor.<br>• Local exhaust ventilation (i.e., HEPA-filtered air scrubber) shall be used in the area where the carpet is being actively being pulled away from the floor;<br>• Actively HEPA vacuum the point when the carpet is being pulled away from the floor.<br>• Any waste carpet that cannot be placed in a closed container shall be "shrink wrapped" to prevent the release of any mold or spores that may be on the carpet. Whether or not the waste carpet is properly contained or "shrink-wrapped"; waste carpet shall not be allowed to remain in the area overnight. |

Step 5. Clearance (when isolation containments are used)

- Work area to be cleared should be dry and visually clear of contamination and debris as determined by the project industrial hygienists.
- Each area that is cleaned shall require a minimum of 24-hours of air scrubbing. Shorter scrubbing periods may be allowed at the discretion of the project CIH.
- Two (2) outside air samples (one outside the containment, but on the same floor; one at ground level) prior to collection of inside containment samples.
- The number of inside air samples shall be determined by the size of the containment and at the discretion and consensus of the project industrial hygienists; as few as one (1) and no more than five (5).
- Two (2) outside air samples after collection of inside samples (one outside the containment, but on the same floor; one at ground level on opposite side of the building where initial outside sample was collected).
- Criteria for successful air sample clearance:
  - Quantitative spore counts collected inside containment are less than those observed in outside samples.
  - Similar in rank order and distribution
  - Air sample does not contain specific spores of concern that were identified during initial identification of VMG.
- Any requirements for surface clearances shall be determined by the project CIH.

Project Completion

- Any mold-contaminated areas identified during the carpet removal process shall be documented for future reference by other projects requiring access into the same area.

# State Board of Equalization
# Fire Riser Cabinet Remediation Protocol, Final
# 450 N Street, Sacramento, California

PROTOCOL BY: *LaCroix Davis LLC* DGS IH MONITOR: *LaCroix Davis LLC*
BOE IH: *HygieneTech Inc* DGS PM: *Mike Moore*
Remediation Contractor: *JLS Environmental, Inc.*

Note: *This remediation protocol may be amended in such a way as to properly accommodate the dynamic nature of the ongoing building investigation. This revision of the document was created to address potential issues related to mold-contamination in Fire Sprinkler Riser Cabinets and work may only be implemented in accordance with State Fire Marshall requirements identified for this work. The purpose of this mold remediation protocol is to address any VMG or water staining to which maintenance personnel may inadvertently contact when accessing the FSR cabinet interior.*

| DESCRIPTION | REQUIREMENT |
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| Defined Work Area | • Identify up to three (3) southeast stairwell Fire Sprinkler Riser Cabinets to be remediated during any one weekend work session (Friday evening after 6:00 PM and Monday morning 5:00 AM); determined during the weekly Joint DGS and BOE Construction Meeting.<br>• All stairwell access doors for building levels at or above the impacted work area levels shall be "posted" by JLS, to direct building occupants to utilize the northwest stairwell whenever possible during BOE working hours. The southeast stairwell is always available for emergency egress from the building. |
| Fire Sprinkler Riser Cabinets (FSR Cabinets) | • FSR cabinets have been historically impacted by water leaks or flooding, and show signs of water-staining and visible mold growth (VMG). |
| Results of Microbial Investigation | • Areas of water stains and visible/suspect mold growth in the FSR cabinets were sampled by LaCroix Davis LLC and analyzed by direct microscopic examination. FSR cabinets with VMG were identified and provide the inventory of FSR cabinets that require mold remediation. |
| Personnel Training and Qualifications | Only trained and qualified JLS personnel shall be allowed to enter "established" negative-pressure containments. |
| | Only trained and qualified project IH consulting personnel shall be allowed to enter "established" negative-pressure containments and must be accompanied by JLS personnel. |
| Personal Protective Equipment (PPE) for entering established containments areas | • All JLS personnel performing mold removal or cleaning shall wear a full-face air-purifying respirator with HEPA cartridge; disposable protective clothing that covers head and feet; gloves.<br>• Visiting personnel and consultant observers shall provide their own and wear, at minimum, a half-face air-purifying respirator with HEPA cartridge; disposable protective clothing that covers head and feet; gloves. |

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| | • During the collection of clearance air samples, no respiratory protection is required; disposable protective clothing and gloves are still required. |
| Occupants/Tenants | • All FSR Cabinet mold remediation activities shall be performed during weekends and other periods when the building is unoccupied by the regular tenants. |
| Work Area Preparation and/or Containment | • FSR Cabinet remediation activities shall require isolation in containments equipped with exhaust equipment to provide a minimum negative air pressure of .02 inches water gauge.<br>• Isolation requires installation of a critical barrier at the height of the top of the access door; this allows establishment of negative pressure in the lower portion of the FSR cabinet.<br>• The area above the critical barrier shall be encapsulated prior to installation of the barrier. |
| Stained Gypsum Board Walls | • Access to the lower portion of the FSR cabinet shall require penetrating the gypsum board enclosure below the access door. If this removed section of gypsum wall board shows any signs of visible mold growth, it shall be properly discarded and replaced with new wall board during repair of the wall at the completion of the cabinet remediation process. |
| Areas With Visible Mold Growth (VMG) | • Any liquid stains and/or visible mold growth (VMG) on the cabinet interior gypsum board walls shall be cleaned, inspected, and encapsulated.<br>• Except for the (front face) gypsum board wall that is removed during the process of accessing the lower section of the FSR cabinet; cabinet interior gypsum wallboard surfaces with VMG and/or staining will be limited to cleaning and encapsulation given the constraints of the allotted remediation period. |
| Work and Egress Areas | • HEPA vacuum work area and egress path.<br>• Clean areas with a damp cloth and/or mop and/or detergent solution. |
| Drying Areas | In general, work areas should be left dry and visually clear of contamination and debris. Some contamination and debris may remain during intermediate stopping points in the removal and cleaning process. |
| Air Monitoring | • During removal: no air monitoring is required unless a release episode occurs that could impact other occupied areas within the building.<br>• However, at the discretion of the project industrial hygienists, random air sampling may be periodically performed to demonstrate the efficacy of control measures and work practices. |

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| Clearance | • Work area to be cleared should be dry and visually clear of contamination and debris as determined by the project industrial hygienists.<br>• Each FSR cabinet that is cleaned shall require a minimum of 8-12 hours of air scrubbing.<br>• Two (2) outside air samples (one outside the containment, but on the same floor; one at ground level) prior to collection of inside containment samples.<br>• The number of inside air samples shall be determined by the size of the containment and at the discretion and consensus of the project industrial hygienists; as few as one (1) and no more than five (5).<br>• Two (2) outside air samples after collection of inside samples (one outside the containment, but on the same floor; one at ground level on opposite side of the building where initial outside sample was collected).<br>• Criteria for successful air sample clearance:<br>o Quantitative spore counts collected inside containment are less than those observed in outside samples.<br>o Similar in rank order and distribution<br>o Air sample does not contain specific spores of concern that were identified during initial identification of VMG. |
| Unable to Complete Work during Scheduled Work Period | • In the event the scope of work cannot be completed within the scheduled construction period, any wall penetrations and the access door shall be sealed and the negative pressure containment shall be wiped clean and free of debris before being allowed to scrub for at least 30 minutes. The containment shall remain attached to the wall, but will then need to be collapsed and secured to the wall.<br>• An air clearance sample shall be collected inside the containment (prior to collapsing the containment) and an air clearance sample collected on the same stairwell landing after the containment has been collapsed. These samples shall receive expedited analysis to ensure the area is “clear” prior to the return of normal hour personnel to the building. |
| De minimis Quantities | • Any confirmed quantity of VMG to be removed shall be done so under isolation containment. |