
BioMax Environmental

Environmental Consulting and Industrial Hygiene Services

February 15th, 2008

Mr. Doug Button
Deputy Director
Real Estate Services Division
707 Third Street - 8th Floor
West Sacramento, CA 95605

Post Mitigation Clearance Assessment Protocols
Department of General Services Board of Equalization Building
450 N. Street
Sacramento, California

Dear Mr. Button,

As per your request, BioMax Environmental, LLC (BioMax) is pleased to provide you with the following recommendations pertaining to proposed post mitigation microbial clearance assessment protocols pertaining to the 450 N. Street, Sacramento, California (subject building). BioMax understands that these procedures have been requested at the specific direction of the Department of General Services, in an effort to establish the necessary inspection and clearance assessment criteria following the completion of the ongoing microbial mitigative measures currently being performed within multiple areas within the subject building.

As such, these recommended post mitigation and clearance assessment procedures are intended as a means of establishing clearance criteria goals so as to verify the successful completion of the recommended area-specific mitigative efforts performed within the subject building prior to forthcoming reconstructive activities. Please note that these protocols do NOT provide for, nor attempt to establish, acceptable tenant reoccupancy criteria for this or any other DGS building as part of this proposed activity. Hence, these procedures have been developed by Mr. Michael A. Polkabila, CIH, REA of BioMax Environmental, LLC. Mr. Polkabila is a Vice President, Principal with BioMax and has been certified in the Comprehensive Practice of Industrial Hygiene by the American Board of Industrial Hygiene and holds the right to the designation "Certified Industrial Hygienist" (CIH) under certification number CP 7104. Mr. Polkabila is also certified by the California Environmental Protection Agency (Cal/EPA) as a Class I Registered Environmental Assessor (REA) under Cal/EPA certification number 05011.

Pursuant to an ongoing agreement between the BOE and DGS, it is anticipated that these recommended procedures will be reviewed, commented upon, ~~and~~ approved by BOE's representative Industrial Hygienist consultant, Hygientech, prior to implementation. Any revisions to these recommended procedures following such review and comment shall only be

performed with the approval of the Project CIH and DGS with appropriate notification provided to BOE representatives, as necessary.

Therefore, based on your request, BioMax is pleased to provide the following proposed post mitigation clearance assessment protocols for review, consideration, and appropriate implementation at the direction and approval of the Department of General Services:

1. **Post Mitigation Containment Maintenance** – Upon completion of mitigation efforts performed by the selected microbial abatement contractor, all negative pressure systems and containment shall remain in place and operational unless otherwise noted in these procedures. Interior air scrubbing units not associated with the maintenance of negative containment pressure shall also remain in place and operational for a minimum period of 24 hours prior to the performance of any clearance sampling assessment activities as noted below. Due to the current occupancy of the subject building all negative pressure containment systems shall be maintain at approximately 0.02 inches water or lower during all clearance inspection and sampling assessment activities and will remain as such until acceptable clearance criteria has been met.
2. **Clearance Inspection** – Following the requisite post mitigation air scrubbing period noted above, BioMax recommends the performance of a detailed visual physical inspection conducted the Project CIH to visually verify that all prescribed mitigative efforts and measures have been appropriately achieved in accordance with the recommended mitigation protocols developed for the delineated work area. This visual physical inspection shall specifically focus on the potential identification of any remaining residual mold related staining and/or moisture related indicators present within accessible materials and areas following the completion of mitigative activities. The inspection will conclude when (based on the professional judgment of the Project CIH) the absence of significant residual mold related staining and/or moisture indicators has been verified within the remaining physical structures. Additional “punch-list” action items may be provided to the mitigation contractor, as necessary, during the performance of this site clearance inspection if it has been determined by the Project CIH that the mitigative measures employed have not reached an appropriate or acceptable level.
3. **Clearance Assessment Sampling** - Once successful inspection verification has been achieved, the Project CIH shall collect a series of airborne microbial “clearance” samples as a means to additionally verify that all affected interior areas have been appropriately decontaminated to “acceptable” airborne levels. All clearance assessment sampling shall be performed by and/or overseen by the Project CIH. The specific sampling methodologies and clearance criteria parameters utilized shall include the following:
 - **Airborne Sampling** - The collection of clearance assessment samples, within areas deemed to be greater than one office room, shall utilize airborne Spore Trap Air-O-Cell microbial collection media manufactured and distributed by Zefon International. Utilization of collection media from the same manufacturing lot specifications within the use life prescribed by the manufacturer’s recommendations will be required for each specific sampling area evaluated. All clearance samples associated with a

delineated area will be collected during a single day period. A minimum total of seven (7) airborne Spore Trap samples will be collected within and surrounding each unique containment area subjected for clearance review as follows:

1. A minimum of two (2) air samples collected within containment system area.
 2. A minimum of two (2) air samples collected adjacent to the containment system area(s) on the same interior floor level.
 3. A minimum of two (2) ambient outside air samples collected before and after the collection of the interior samples at accessible locations identified by the Project CIH.
 4. A minimum of one additional field control method blank sample which is submitted “blind” to the analytical laboratory for parallel analysis. In general, it will be anticipated that one field control method blank sample shall be submitted for every ten (10) analytical samples submitted for evaluation. In the event that significant particulate and/or microbial contamination is identified and reported present on the submitted field control method blank, the Project CIH shall make a professional determination as to whether the sampling activities must be invalidated and/or reproduced.
 5. Based on site conditions and physical area delineation, additional samples may be collected and analyzed at the professional judgment of the Project CIH, as necessary. The total number of airborne samples collected within any mitigated area which is smaller than (or equal to) one interior office room size shall be determined by the Project CIH on a case-by-case basis.
- **Sampling Methods and Equipment** - It is anticipated that all samples shall be collected at a height of approximately four feet above ground level using a tripod mounted Quick Take 15 air sampling pump manufactured by SKC unless physical barriers preclude such locational sampling. Samples will be collected at a calibrated flow rate of 15 liters per minute for a total of five minutes per sample. Resulting total sample volumes, therefore, will corresponded with 75 liters collected for each sample. Field calibration of the SKC air sampling pump will be conducted and recorded prior to and following sampling activities using a hand held calibration rotometer which is verified with a primary standard flow meter (DC-Lite) manufactured by Bios International. All spore trap air sampling and analytical procedures will be performed in accordance with prescribed manufacturer guidelines as well as applicable professional certified industrial hygiene indoor air quality microbial investigation procedures and certified industrial hygiene practices.

4. **Chain of Custody Documentation** – At the conclusion of sampling activities, preparation and shipping of the collected samples will be accomplished in accordance with standard industrial hygiene Chain of Custody (COC) documentation procedures and quality assurance/quality control practices. Once collected, labeled, and recorded, all samples will be sealed within airtight plastic Ziploc shipping containers and transported via Federal Express Priority Mail to Environmental Microbial Labs P&K (EMLabs) of San Bruno, California for analysis. EMLabs holds current analytical accreditation and specializes in

microbial analytical procedures. Sampling and chain of custody records shall be maintained for further reference.

5. **Spore Trap Analysis** - Laboratory analytical methods for the identification and enumeration of microbial (mold) taxa and relative quantification of particulate debris will be conducted in accordance with prescribed analytical procedures and quality control/assurance measures. Analytical mold spore findings will be reported in both raw counts and concentration units of counts per cubic meter of air (Cts/m³). Particulate debris levels will be presented by the analytical laboratory on a relative measure of comparative scale from 0-4 (with 0 being the lowest and 4 the highest).

Post Mitigation (Area-Specific) Clearance Criteria:

Although there are currently no regulatory standards or limits pertaining to allowable airborne fungal concentrations (for any mold taxa) present in indoor living and/or working environments, there is a general consensus among indoor air quality experts that microbial contamination found within “typical healthy” occupied spaces are generally similar in kind and present at levels which are below those found in the corresponding native outside environment. Hence, the following analytical clearance criteria are intended to provide a means to appropriately quantify these generally acceptable industry standard clearance levels by supplementing inspection findings/observations with analytical sampling data.

These clearance criteria are intended to be site-specific and building-specific in applicability and are based on the current and historical information site data gathered to date. As with all similar assessment evaluations, any professional opinions regarding these proposed procedures are subject to change and/or modification in the event that additional information or analytical findings are provided.

BioMax proposes the following Post Mitigation Clearance Criteria for the BOE Building as follows:

Inside VS Outside - Airborne spore concentrations in the remediated space (inside containment barriers) shall be no higher than the median or average value of the collected outside background samples. Based on historical data in California, provided by Environmental Analytical Associates (EAA), and a detailed review of the typical and historical average concentrations found outside of the BOE building has indicated that a clearance concentration of < 2,000 cts/m³ for total spores, with no individual commonly occurring or “**unique**” fungal category or genera existing at levels higher than 1,000 cts/m³ may be utilized. Because of seasonal variation, the outside background concentrations within the make-up air supply, the identification of Ascospores, Basidiospores, and Cladosporium (the most common outdoor spores in this climate region) within collected samples shall be considered in determining if successful clearance criteria has been achieved. In the event that such conditions are present, the Project CIH shall note the presence of such conditions and shall render a professional opinion regarding such findings which may (or may not) indicate that the containment “fails” to meet acceptable clearance criteria.

Verification of Absence of Significant Levels of Moisture Damage Indicator Molds -

Common moisture indicating mold taxa such as *Aspergillus*/*Penicillium* and/or other genus-specific molds (as previously identified within historical surface and/or bulk findings) collected from interior containment airborne samples shall NOT exceed 500 ct/m³ in any single interior containment air sample. Levels which exceed these noted levels within the containment area shall constitute a failure in reaching acceptable clearance criteria at that time. Post mitigation airborne concentrations of the mold genus, *Stachybotrys* which are detected (at any level) in two or more interior samples, which exceed levels greater than two (2) raw counts, and/or which exceed 100 ct/m³ in any interior containment sample shall similarly constitute a failure in reaching acceptable clearance criteria at that time. Such building-specific clearance criteria has been based on a detailed data review of the typical and historical average concentrations found within and outside of the noted BOE building as provided by Environmental Analytical Associates (EAA).

Assessment of Rank Order Distribution – A detailed assessment and review of the clearance sampling data performed by the Project CIH shall include an evaluation of rank order distribution pertaining to the mold genera identified. This evaluation shall culminate with the development of a professional opinion pertaining such findings and may be based on the statistical analysis and review of the noted data as presented within the original analytical report documents.

All airborne sampling data collected as part of the post mitigative evaluation process shall be thoroughly reviewed by the Project CIH wherein the comparative clearance criteria established above shall be utilized. Following such review, the Project CIH shall render a professional opinion regarding his/her evaluation of the current site conditions and associated analytical findings so as to assure that the conditions within the containment area meet acceptable clearance criteria and that the previously affected area is deemed “acceptable” for forthcoming reconstruction.

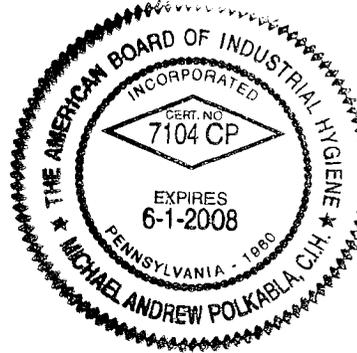
It is anticipated that BOE consultant representatives will also be provided with the data associated with the above clearance assessment activities (in a timely manner) for appropriate review and comment. As part of this “clearance” verification process, the provision of appropriate access for parallel inspection and review of sampling data shall also be offered to BOE and their consultants upon request. Hence, reasonable time shall also be afforded to BOE and their industrial hygiene consultants for their appropriate inspection, review of analytical findings, and performance of any supplemental sampling activities (at BOE’s option) prior to initiation of reconstruction activities.

BioMax believes that the proposed recommended procedures outlined above are consistent with standard industry microbial mitigative practices and prudent industrial hygiene hazard control methods. Please do not hesitate to contact our offices directly at (510) 724-3100 if you have any additional questions, comments about these recommendations, or require further assistance regarding this important matter.

Sincerely,



Michael A. Polkabila, CIH, REA
Vice President, Principal



LIMITATIONS

Please note that the professional opinions presented in this review are intended for the sole use of the California State Department of General Services (DGS) and their designated beneficiaries. No other party should rely on the information contained herein without the prior written consent of BioMax Environmental and DGS. The professional opinions provided herein are based on BioMax's review and understanding of current site information and observed site conditions present within the areas inspected at the time these services were performed. Professional recommendations provided as part of this limited scope of work are intended for client consideration only and are not intended as a professional or regulatory mandate. Implementation of any of the above measures or recommendations does not, in any way, warrant the day-to-day health and/or safety of building occupants, residents, site workers, nor regulatory or building code compliance status during normal and changing environmental conditions. As microbial contamination, by nature, may change over time due to additional moisture intrusion, favorable growth conditions, and changing environments, the recommendations presented within this document are subject to change in the event that such conditions and/or environments arise. Also, the professional opinions expressed here are subject to revision in the event that new or previously unavailable information is obtained or uncovered.

The information contained in this and any other applicable communication is for consideration purposes only. It is not intended, nor should it be construed as providing legal advice or warranting any level of safety or regulatory compliance. The sole purpose of such information is to assist with the anticipation, identification, evaluation and control of elevated and/or unnecessary health or physical hazards. Any action taken based on this information, including but not limited to opinions, suggestions and recommendations, whether implied or expressed, is the sole responsibility of the individual taking the action. The management of acceptable health and safety is criteria dependent and situation specific in nature, therefore requiring extensive knowledge and prudent value assessments so as to be properly determined and maintained.

These services were performed by BioMax in accordance with generally accepted professional industrial hygiene principals, practices, and standards of care. Under the existing Industrial Hygiene Definition and Registration Act, all reports, opinions or official documents prepared by a Certified Industrial Hygienist (CIH) constitutes an expression of professional opinion regarding those facts or findings which are subject of a certification and does not constitute a warranty or guarantee, either expressed or implied.