Indoor Environmental Investigation and Remediation Plan

Peary Court
Key West

(This report reflects facts found during a mold assessment of one unit at Peary Court, Key West, FL)

This review was conducted to evaluate the potential for microbial contamination within the subject residence.

A visual inspection of the home was conducted and supplemented with microbial sampling, infrared imaging and moisture readings. The home was occupied and clean. The central A/C was turned on and set to 77 degrees. Relative humidity inside was high at over 70%. The air felt moist and smelled of mold. The air conditioner was not de-humidifying the air as it should. The recommended relative humidity level inside a home on a hot day, while the AC is working is 50 - 55 %.

The condensate line from the A/C air handler appeared to be clogged as condensate was not draining properly, thereby adding moisture to the air passing through the air handler

The condensate line from the air handler was poorly designed, as it travels below the cement slab and then up onto the ground outside, thereby encouraging blockage due to a lengthy pipe always filled with water and algae growth. These types of condensate lines are rarely used because they require monthly cleaning with vinegar to keep algae growth and potential for blockage minimal.

Outside at the condensate line termination point some water was getting through but it was then flowing down the vertical pipe and back towards the residence, instead of draining away from the building. The condensate line was protected by a wider drain pipe, which appears to channel rain water and condensate back towards the residence to be absorbed by the cement slab.

According to the moisture meters, the floor tiles in the kitchen and dinning area were moist, especially those closest to the exterior condensate line termination point. This will further the humidity in the air and mold growth. Moisture meters were needed to detect moisture in the flooring.

The coils/fins in the air handler were coated in dust and mold.

The mold spore air test sent to the lab indicated that mold spores were elevated at the time of the test. Aspergillius/Penicillium-like spores per square meter inside were 520. The outside count per square meter was 160. This suggests that mold is growing inside the home. Hyphai fragments per square meter were also higher inside at 120 inside and 40 outside.

Air quality appears to be poor and there is a health concern for occupants.

RECOMMENDATIONS

The A/C condensate line should be corrected so that condensate drains easily away from the air handler and concrete slab without constant upkeep.

The air handler should be cleaned and serviced.

A Mold Remediator should be hired to remove wet sheetrock, dehumidify and clean all surfaces. Microscopic mold spores are likely to be growing on damp wall, ceiling, and floor surfaces.

After remediation and before any new building material is brought into the residence, a new mold spore clearance air test should be performed by an independent licensed Mold Assessor (at arms length from the Remediator) to make sure that all interior sources of mold have been corrected.

If spore levels are not elevated and a clearance letter is issued, reconstruction may begin.

The remediation of this home should be handled using the following Level 11 guidelines.

Medium-Sized Isolated Areas (10 – 100 square feet)
(a) Remediation can be conducted by trained building maintenance staff. Such persons should receive training on proper cleaning methods, personal protection, and potential health hazards associated with mold exposure. This training can be performed as part of a program to comply with the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200).
(b) Respiratory protection (e.g., N-95 disposable respirator), in accordance with the OSHA respiratory protection standard (29 CFR 1910.134), is recommended. Gloves and eye protection should also be worn.
(c) The work area should be unoccupied.
(d) Cover the floor, egress pathways, and items left in the work area with plastic sheeting and seal with tape before remediation.
(e) Seal ventilation ducts/grills and other openings in the work area with plastic sheeting. The HVAC system servicing this area may need to be shut down to properly seal vents.
(f) Efforts should be made to reduce dust generation. Dust suppression methods particularly during any cutting or resurfacing of materials are highly recommended. Methods to consider include: cleaning or gently misting surfaces with a dilute soap or detergent solution prior to removal; the use of High-Efficiency Particulate Air (HEPA) vacuum-shrouded tools; or using a vacuum equipped with a HEPA filter at the point of dust generation. Work practices that create excessive dust should be avoided.
(g) Moldy materials that can be cleaned should be cleaned using a soap or detergent

solution. Materials that cannot be cleaned should be removed from the building in sealed plastic bags. Plastic sheeting should be discarded after use. There are no special requirements for disposal of moldy materials.
(h) The work area and areas used by workers for egress should be HEPA-vacuumed and cleaned with a damp cloth and/or mop and a soap or detergent solution.
(i) All areas should be left dry and visibly free from mold, dust, and debris.

General Mold Remediation Guidelines

In all situations, the underlying cause of water accumulation must be rectified or fungal growth will recur.

Any initial water infiltration should be stopped and cleaned immediately. An immediate response (within 24 to 48 hours) and thorough clean up, drying, and/or removal of water damaged materials will prevent or limit mold growth. If the source of water is elevated humidity, relative humidity should be maintained at levels below 60% to inhibit mold growth. Emphasis should be on ensuring proper repairs of the building infrastructure, so that water damage and moisture buildup does not recur.

The size of the area impacted by fungal contamination primarily determines the type of remediation. The sizing levels below are based on professional judgment and practicality; currently there is not adequate data to relate the extent of contamination to frequency or severity of health effects.

The goal of remediation is to remove or clean contaminated materials in a way that prevents the emission of fungi and dust contaminated with fungi from leaving a work area and entering an occupied or non-abatement area, while protecting the health of workers performing the abatement.

The listed remediation methods were designed to achieve this goal, however, due to the general nature of these methods it is the responsibility of the people conducting remediation to ensure the methods enacted are adequate. The listed remediation methods are not meant to exclude other similarly effective methods. Any changes to the remediation methods listed in these guidelines, however, should be carefully considered prior to implementation.

Non-porous (e.g., metals, glass, and hard plastics) and semi-porous (e.g., wood, and concrete) materials that are structurally sound and are visibly moldy can be cleaned and reused. Cleaning should be done using a detergent solution.

Porous materials such as ceiling tiles and insulation, and wallboards with more than a small area of contamination should be removed and discarded. Porous materials (e.g., wallboard and fabrics) that can be cleaned, can be reused, but should be discarded if possible. A professional restoration consultant should be contacted when restoring porous materials with more than a small area of fungal contamination. All materials to be reused should be dry and visibly free from mold. Routine inspections should be conducted to confirm the effectiveness of remediation work.

The use of gaseous, vapor-phase, or aerosolized biocides for remedial purposes is not recommended. The use of biocides in this manner can pose health concerns for people in occupied spaces of the building and for people returning to the treated space if used improperly. Furthermore, the effectiveness of these treatments is unproven and does not address the possible health concerns from the presence of the remaining non-viable mold.

SAMPLING METHODOLOGY

Following sampling protocols from ACGIH publication, “Bioaerosol Assessment and Control”, the following sampling techniques were employed:

Air samples were collected for airborne particles using a high-volume air sampling pump and the appropriate collection media and attachments per manufactures specifications. Air sample flow rate, time and volume were the same for all samples, both inside and outside.

EXPOSURE GUIDELINES

Currently, in the United States, no federal agency has clear authority to regulate exposure to biological agents associated with Building Related Illness (BRI). Countable bioaerosols have no established Permissible Exposure Limits (PELs) or Threshold Limit Values (TLVs) for the following reasons: the cultural and /or countable bioaerosols have no single entry; the human response range varies greatly from one individuals to another: it is not possible to collect and evaluate all bioaerosol components using a single sampling method; and the information relating to bioaerosol concentrations to health effects is generally insufficient to describe exposure response.

Due to the wide variety of microorganisms found across different regions of the United States and the influence of normal humidity and temperature conditions, the concentrations of bioaerosols vary significantly from area to area. With the absence of exposure limits, the common accepted industry practice, as supported by the American Conference of Governmental Industrial Hygienists (ACGIH), the American Industrial

Hygiene Association and the Environmental Protection Agency (EPA) guidelines, is to compare outside bioaerosol concentrations and species to inside bioaerosol concentrations and species. Generally speaking, the indoor air flora should be quantitatively lower than, but qualitatively similar (genus or species) to that of outdoor air. As a general rule of thumb the genus of fungi collected from indoor air should match the outdoor air and be present at same or lower levels as outdoors. Levels of similar genera higher than outdoors may indicate indoor microbial growth. Lower or higher levels of fungi indoors of different genera from outdoors can indicate contamination of interior substrates.

CONDITIONS AND LIMITATIONS

Air sampling results are limited in that they represent airborne concentrations at the time of sample collection only.
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