

# POINTERS RUN ELEMENTARY SCHOOL: MOLD REMEDIATION

October 28, 2015	
<i>Prepared for:</i>	Howard County Public School System

Ed Light, CIH  
Building Dynamics, LLC  
[www.Building-Dynamics.com](http://www.Building-Dynamics.com)  
1216 Ashton Road  
Ashton MD 20861  
(240) 899-6926  
[ELight@Building-Dynamics.com](mailto:ELight@Building-Dynamics.com)

## **1.0 EXECUTIVE SUMMARY**

Localized, suspect growth was identified and remediated at Pointers Run Elementary School and no health hazards were noted. The building is safe to occupy.

On August 19, 2015, HCPSS responded to an observation of suspect growth in Room 3140. PRES custodians sanitized affected surfaces. The HCPSS Environmental Specialist assessed the site and found the condition to be localized in that room, which had not yet received a summer cleaning and where one window was left unlocked, allowing infiltration of humid outside air. On September 8, localized suspect growth was reported in other areas. HCPSS initiated inspections and sanitizing, and brought in BDL for a comprehensive evaluation and additional recommendations. BDL identified suspect growth on some furniture and had all suspect items sanitized as a precaution. BDL conducted final inspections the afternoon of September 14 and determined that all specified surfaces had been sanitized.

HCPSS recently completed installation of a new chiller, greatly improving humidity control at PRES. BDL observed two HVAC fans running after the system was supposed to shut down and these contributed to the elevated humidity. BDL recommended these be shut off at night and this was reported as completed September 11.

## 2.0 INTRODUCTION

At the request of Howard County Public School System (HCPSS) on September 8, 2015, Building Dynamics, LLC (BDL) initiated an evaluation of Pointers Run Elementary School (PRES) with respect to mold growth and humidity control. BDLs scope of work is to:

1. Identify any additional surfaces with suspect growth by a comprehensive visual inspection.
2. Recommend any additional sanitizing needed to ensure elimination of mold growth.
3. Verify that suspect growth has been eliminated on specified surfaces.
4. Evaluate HVAC design, operation and maintenance with respect to humidity control.
5. Present recommendations for improved humidity control.

This report reviews progress to date on objectives (1) –through (3). During this period, BDL has:

- September 9
  - Met with HCPSS and PRES staff
  - BDL started inspecting classrooms
  - HCPSS custodial team started furniture sanitizing, with BDL verifying
- September 10
  - BDL continued inspecting and verifying HCPSS furniture sanitizing
- September 11
  - BDL continued inspecting
- September 12
  - BDL recommended specifications for additional sanitizing by SI Restoration
- September 14
  - BDL completed school inspection
  - SI completed sanitizing, verified by BDL

## 2.0 SCHOOL HISTORY

- In the spring of 2015, HCPSS replaced chillers as a planned HVAC renovation. New equipment was specified to improve humidity control by providing chilled water for air conditioning equipment at the design set-point, which the original chillers were no longer able to do.
- In August, 2015, HCPSS finalized operation of the new chiller to consistently produce chilled water at a temperature for optimum humidity control.
- On August 19, 2015, HCPSS responded to an observation of suspect growth in Room 3140. PRES custodians sanitized affected surfaces. The HCPSS Environmental Specialist assessed the site and found the condition to be localized in that room, which had not yet received a summer cleaning and where one window was left unlocked, allowing infiltration of humid outside air.

- On September 8, localized suspect growth was reported in other areas and HCPSS initiated inspections and sanitizing.

### 3.0 BDL INSPECTION

#### 3.1 Procedure

Public Health officials recommend that building assessment be based on inspection, not mold testing.<sup>1,9</sup> Surfaces were evaluated per ASTM D7338-10, Standard Guide for Assessment of Fungal Growth in Buildings. This is based on a visual inspection documenting “suspect” surfaces with specified characteristics of biological growth. Identification of “mold growth” is a conservative process, in that discoloration which is ambiguous is classified as “suspect growth” for purposes of remediation.

Suspect growth of concern at PRES was not obvious and consisted of small white colonies visible only under a bright flashlight pointed horizontal to the surface. This type of mold growth is associated with excessive relative humidity, not water damage.

#### 3.2 Furniture Inspection

An initial spot inspection by HCPSS found suspect growth on several work tables and rocking chairs. As a precaution, these were sanitized throughout the building without further inspection. BDL’s inspection started with evaluation of other furniture and examples of suspect growth were found on some computer desks, wooden tables, non-rocking wooden chairs and cafeteria tables. Again, all of these were designated for sanitizing as a precaution, without further inspection.

#### 3.3 Comprehensive Inspection.

Following the initial furniture inspections, BDL went back through all rooms to inspect other exposed surfaces, including ceilings, above-ceilings, walls, floors, other furniture, furnishings, wall hangings, closets, books, papers and school supplies. During this inspection, approximately two dozen student’s and teacher’s desks were found to have suspect growth. These specific pieces were designated for sanitizing. Other surfaces were free of suspect growth with the following exceptions:

- Two AV carts
- A magazine rack, corkboard and projector screen in Room 3140.
- A drywall ceiling in the boys’ restroom by the 3<sup>rd</sup> grade pod.

All of these latter surfaces were sanitized and cleared by BDL. Suspect staining on the drywall was reported to be associated with a leak that has been repaired. This needs to be re-evaluated by Maintenance.

Non-suspect discoloration was also observed as follows:

- Water stained ceiling tiles (BDL will list these for replacement as a

- precaution).
- Dust inside sink cabinets.

#### **4.0 REMEDIATION**

Surface growth on hard surfaces can be eliminated by wiping with a disinfectant registered by EPA as an effective fungicide and BDL recommended that affected surfaces at PRES be sanitized by this method. The HCPSS custodial team used the product "Shockwave" and SI used Sporocidin. Both are effective fungicides and safe for use in schools. Surfaces to be sanitized were less than one square foot each and remediation was allowed to proceed without containment.

BDL re-inspected each surface specified for remediation and approved the work when it was free of visible dust and suspect growth. BDL had surfaces re-cleaned, where needed. BDL conducted final inspections the afternoon of September 14 and determined that all specified surfaces had been sanitized.

#### **4.0 HUMIDITY CONTROL**

BDL evaluated PRES on September 9, which was a hot and humid day. With the HVAC on, inside conditions were comfortable (72°F; 57% relative humidity). At that time, the building was positively pressurized, preventing infiltration of humid outside air. However, that night, with the HVAC off, the building became negatively pressurized and relative humidity rose to 78 – 84%. Two HVAC fans were observed to be running after the system was supposed to shut down, return fan-1 and the gym air handler, and these contributed to the elevated humidity. BDL recommended these be shut off at night and this was reported as completed September 11.

BDL will be conducting a more detailed, engineering evaluation of the HVAC system and make further recommendations to improve humidity control. Meanwhile, no additional humidity-related mold growth is anticipated this year as weather conditions become more favorable (lower dew-points).

#### **5.0 DISCUSSION**

There are no accepted health standards for exposure to mold. Public health officials generally consider the presence of indoor mold growth as an action level and recommend it be remediated along with moisture source elimination.<sup>2-6,9-11</sup>

The primary concern with respect to health risk is from wet or moldy surfaces in occupied space.<sup>5,6</sup> Indirect exposure to wet or moldy materials behind building structure is less significant and, in some cases, negligible.<sup>6,7</sup> While wet mold growth generates airborne spores and odors, dry mold growth does not expose occupants unless it is disturbed.<sup>1</sup>

Health effects related to dampness are generally limited to susceptible individuals. Scientific studies have addressed the following:

- Aggravation of pre-existing allergies. While ~40% of the population is atopic, only ~5% experiences allergy symptoms when exposed to indoor dampness/mold. These symptoms are temporary and generally minor, but asthmatic individuals may experience more severe reactions.<sup>1,3,4</sup>
- Common Respiratory Infections. Studies suggesting that indoor dampness/mold contribute to contagious illnesses such as colds and flu are not conclusive.<sup>2</sup> Sinus infections are generally bacterial or viral, but can be triggered by allergies.<sup>2</sup>
- Opportunistic Infections. Incidence is related to severity of the patient's immune system deficit. The most common sources of fungal infections are outdoor air and hospitals. Exposure to dampness/mold growth in building is not a major factor.<sup>3,4</sup>
- Irritation. Studies suggesting that healthy individuals may experience irritation from exposure to indoor dampness/mold are not conclusive.<sup>2</sup>
- Toxic Reactions. While toxicity effects have been established from ingestion of contaminated foods and exposure of agricultural workers, evidence does not support toxic effects from exposure to damp buildings.<sup>1-4</sup>
- Hypersensitivity Pneumonitis. Although this condition can be caused by heavy occupational exposure to mold, it is generally not of concern with respect to damp buildings.<sup>3,4</sup>

## References

1. U. S. Centers for Disease Control (2012) Facts about Stachybotrys chartarum and Other Molds. CDC. Atlanta GA.
2. Institute of Medicine (2004) Damp Indoor Spaces and Health. Washington DC.
3. Bush et al (2006) The Medical Effects of Mold Exposure. American Academy of Allergy, Asthma and Immunology. Milwaukee WI.
4. American College of Occupational and Environmental Medicine (2011) Adverse Human Health Effects Associated with Molds in the Indoor Environment. Elk Grove Village IL.
5. Light et al. 2011. "New Protocol for the Assessment and Remediation of Indoor Mold Growth." Proc. of *Indoor Air* 2011.
6. Burge, H. A. (2001) "The Fungi." Chapter in Indoor Air Quality Handbook. McGraw-Hill.
7. ASTM (2010) Guide for Building Fungal Assessment. ASTM D7338-10.
8. Morey et al. (2003) *El Nino Water Leaks: Identifying Regions with Mold Growth*. International Biodeterioration. Vol 52:197
9. U. S. EPA (2008) Mold Remediation in Schools and Large Buildings. Washington DC

Ed Light, CIH \_\_\_\_\_ Date: \_\_\_\_\_



*Ed Light, CIH, is the President of Building Dynamics, LLC, industrial hygiene and mechanical engineering consultants specializing in Indoor Environmental Quality (IEQ). He holds degrees in Environmental Science from the University of Massachusetts (B.S.) and Marshall University (M.S.), is a Senior Fellow of the American Industrial Hygiene Association (AIHA) and has authored over 40 scientific publications on assessment and control of the indoor environment. Thirty years ago, Mr. Light established the West Virginia Department of Health IAQ Program, pioneering efforts to resolve exposure issues related to formaldehyde, asbestos, and termiticides. Mr. Light has also developed widely used protocols for addressing IEQ complaints [EPA, NIOSH, International Society on Indoor Air Quality] and managing air quality in occupied buildings under construction [ANSI, SMACNA]. As a consultant, he has directed multi-disciplinary IEQ investigations of over 1000 facilities, ranging from the White House to the South Pole Station and has been admitted as a litigation expert in industrial hygiene.*