INDOOR AIR QUALITY SURVEY REPORT
FOR NON-VIABLE MOLD SPORE TRAP SAMPLES

PROJECT LOCATION:
Southern Huntingdon County High School
Room #205 Retest Project
10339 Pogue Road
Three Springs, Pennsylvania

PROJECT DATE:
August 30, 2022

PREPARED FOR:
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CALI PROJECT NUMBER:
22-1049-005

REPORT DATE:
September 1, 2022

SURVEY PERFORMED BY:

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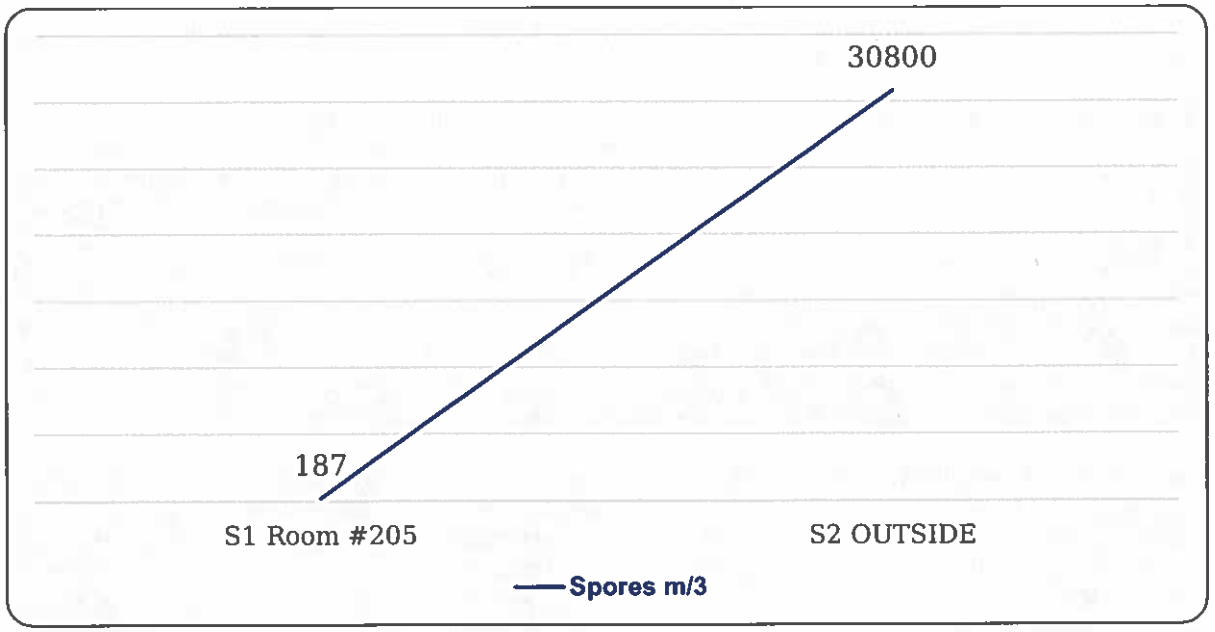
Scope of Work for Airborne Fungal Contaminants (Mold Sampling):

In August of 2022, Cumberland Analytical Laboratories, Inc. (CALI) was contracted by the Southern Huntingdon County School District to perform an Indoor Air Quality Survey of the Southern Huntingdon County High School Room #205 Retest Project. This survey consisted of the collection of Air Samples for Airborne Fungal Contaminants.

Mold Survey Results:

The results table listed below showed that **NO** unusual mold condition exists in Room #205 Retest Project. Please refer to the Non-Viable Mold Spore Trap Sample Results Table for more detailed information regarding these individual samples.

Non-Viable Mold Spore Trap Samples IAQ Chart:



Mold Recommendations:

No further recommendations are warranted at this time.

Non-Viable Mold Spore Trap Sample Results Table:

Sampling Information	S1: Room #205		S2: OUTSIDE	
Analysis Using STL	105C		105C	
Sample Type	Air Cassette – Allergenco - D		Air Cassette – Allergenco - D	
Volume	75.00 liter		75.00 liter	
Analytical Sensitivity	13 spores/m³		13 spores/m³	
Background Density	1+		2	
Other	**Raw Count**	**Count /m³**	**Raw Count**	**Count /m³**
Dander	50	687	6	807
Fibers	2	27	1	13
Fungal Identification	**Raw Count**	**Count /m³**	**Raw Count**	**Count /m³**
Ascospores	0	0	112	1493
Aspergillus/ Penicillium	8	107	1	13
Basidiospores	4	53	2150	28667
Cercospora	0	0	2	27
Cladosporium Species	2	27	38	507
Pyricularia	0	0	4	53
Smuts/Myxomycetes	0	0	2	27
Sporidesmium	0	0	1	13
Total	14	187	2310	30800

Organism Description:

Dander - Comprised of human and/or animal skin cells. Counts may be higher in carpeted rooms and in rooms with more traffic.

Fibers - This category can include clothing, carpet, and insulation fibers.

Ascospores - From the fungal Subphylum Ascomycotina. Ascospores are ubiquitous in nature and are commonly found in the outdoor environment. This class contains the "sac fungi" and yeasts. Some ascospores can be identified by spore morphology, however; some care should be exercised with regard to specific identification. They are identified on tape lifts and non-viable analysis by the fact that they have no attachment scars and are sometimes enclosed in sheaths with or without sacs. Ascomycetes may develop both sexual and asexual stages. Rain and high humidity may help asci to release, and dispurse ascospores, which is why during these weather conditions there is a great increase in counts.
Health Effects: This group contains possible allergens.

Aspergillus/Penicillium - These spores are easily aerosolized. Only through the visualization of reproductive structures can the genera be distinguished. Also included in this group are the spores of the genera Acremonium, Phialophora, Verticillium, Paecilomyces, etc. Small, round spores of this group lack the necessary distinguishing characteristics when seen on non-viable examination.
Health Effects: Can cause a variety of symptoms including allergic reactions. Most symptoms occur if the individual is immunocompromised in some way (HIV, cancer, etc.). Both Penicillium and Aspergillus spores share similar morphology on nonviable analysis and therefore are lumped together into the same group.

Basidiospores - From the Subphylum Basidiomycotina which contains the mushrooms, shelf fungi, and a variety of other macrofungi. They are saprophytes, ectomycorrhizal fungi, or agents of wood rot, which may destroy the structure wood of buildings. It is extremely difficult to identify a specific genus of mushrooms by using standard culture plate techniques. Some basidiomycete spores can be identified by spore morphology; however, some care should be exercised with regard to specific identification. The release of basidiospores is dependent upon moisture, and they are dispersed by wind.
Health Effects: Many have the potential to produce a variety of toxins. Members of this group may trigger Type I and III fungal hypersensitivity reactions. Rarely reported as opportunistic pathogens.

Cercospora Species - Plant pathogen. Cercospora tends to grow on leaves.
Health Effects: No health effects data is available at this time.

Cladosporium Species - The most commonly identified outdoor fungus. The outdoor numbers are reduced in the winter and are often high in the summer. Often found indoors in numbers less than outdoor numbers. It is commonly found on the surface of fiberglass duct liner in the interior of supply ducts. A wide variety of plants are food sources for this fungus. It is found on dead plants, woody plants, food, straw, soil, paint, and textiles. Often found in dirty refrigerators and especially in reservoirs where condensation is collected, on moist window frames it can easily be seen covering the whole painted area with a velvety olive-green layer.
Health Effects: It is a common allergen. It can cause mycosis. Common cause of extrinsic asthma. Acute symptoms include edema and bronchiospasms, chronic cases may develop pulmonary emphysema. Illnesses caused by this genus can include phaeohyphomycosis, chromoblastomycosis, hay fever and common allergies.

Pyricularia Species - This fungus tends to grow on grasses.
Health Effects: No health effects data is available at this time.

Smuts/Myxomycetes - Smuts and Myxomycetes are parasitic plant pathogens. They are typically grouped together due to their association with plants, the outdoors and because they share similar microscopic morphology.
Health Effects: No health effects data is available at this time.

Sporidesmium – Sporidesmium species can be found on dead and living plant material including the woody parts of a variety of trees around the world. May be isolated from bulk samples of wood building materials.
Health Effects: No health effects data is available at this time.

Mold Methods and Analysis – Air Sampling:

Particle air sampling techniques were used. Air samples were collected using a calibrated high volume-sampling pump and Allergenco D Cassettes. The samples were packaged for proper shipment and delivered to SanAir Technologies Laboratory (North Chesterfield, Virginia) an American Industrial Hygiene Association (AIHA) accredited laboratory. While the results and information of this analysis are considered to be reliable, CALI assumes no responsibility for the accuracy of these results.

Standards – Bacterial/Mold:

There are no current Permissible Exposure Levels or Safe Levels established by OSHA or NIOSH. EPA has guidelines on mold remediation in schools, yet no clearance levels have been established. Molds are a major source of indoor allergens. There are no national standards for the numbers of fungal spores that may be present in the indoor environment. As a general rule and guideline that is widely accepted in the indoor air quality field, the numbers and types of spores that are present in the indoor environment should not exceed those that are present outdoors at any given time. There will always be some mold spores present in "normal" indoor environments. The purpose of sampling and counting spores is to help determine whether an abnormal condition exists within the indoor environment and if it does, to help pinpoint the area of contamination. Spore counts should not be used as the sole determining factor of mold contamination. There are many factors that can cause anomalies in the comparison of indoor and outdoor samples due to the dynamic nature of both of those environments.

Molds can also trigger asthma. Even when dead or unable to grow, mold can cause health effects such as allergic reactions. The types and severity of health effects associated with exposure to mold depend, in part, on the type of mold present and the extent of the occupants' exposure and existing sensitivities or allergies. Prompt and effective remediation of moisture problems is essential to minimize potential mold exposures and their potential health effects.

Statistically, total spore counts are always significantly correlated with counts conducted on Agar Plate samples. On average, total mold spore to culturable mold ratios are in the range of 10:1. A concentration dominated by one genus such as Penicillium or Aspergillus even at 10,000 Particles/m^3 is unacceptable. Total levels should not exceed 2,000 Particles/m^4, and each individual count should not exceed 650 Particles/m^3. For remediation, a reduction of airborne spores based upon Pre and Post sampling, compared to exterior sample results, and no evidence of mold growth present is the goal.