

FOCUSED INDOOR AIR QUALITY ASSESSMENT REPORT

STAIRWELL S-5 FIRST FLOOR LANDING, FOYER AND GUIDANCE OFFICE
COMMUNITY CONSOLIDATED SCHOOL DISTRICT 181
HINSDALE MIDDLE SCHOOL
100 SOUTH GARFIELD AVENUE
HINSDALE, ILLINOIS
IES NO. 915-24



INTEGRITY

ENVIRONMENTAL SERVICES, INC.

1240 IROQUOIS DRIVE
SUITE 102
NAPERVILLE, IL 60563

630-718-9133
FAX 630-718-9114

June 13, 2017

C-12219

Mr. Mike Duggan
Director of Facilities
Community Consolidated School District 181
115 West 55th Street
Clarendon Hills, Illinois 60514

Dear Mr. Duggan:

Final Report
Indoor Air Quality Assessment
Community Consolidated School District 181
Hinsdale Middle School
100 South Garfield Avenue
Hinsdale, Illinois
IES No. 915-24

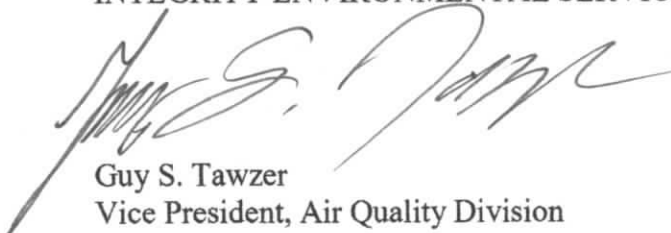
Integrity Environmental Services, Inc. has completed this final Indoor Air Quality Assessment Report for the above referenced School District facility. One (1) original and one (1) copy of the Report have been provided.

This Report has been prepared based on observations made and sample data collected during our June 1, 2017 building investigation.

Opinions made or formed, other than those expressed herein are those of the reader and in no way shall obligate Integrity Environmental Services, Inc. The findings presented in this Report are representative of the date and times that the readings were collected. The findings presented herein should not be used or relied upon to evaluate the air quality measurements obtained at significantly later dates.

If you have any questions, please feel free to contact our office at (630) 718-9133.

INTEGRITY ENVIRONMENTAL SERVICES, INC.



Guy S. Tawzer
Vice President, Air Quality Division

GST/ks

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SECTION 1

EXECUTIVE SUMMARY

FOCUSED INDOOR AIR QUALITY ASSESSMENT REPORT
STAIRWELL S-5 FIRST FLOOR LANDING, FOYER AND GUIDANCE OFFICE
COMMUNITY CONSOLIDATED SCHOOL DISTRICT 181
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IES NO. 915-24

A. INTRODUCTION:

The following paragraphs provide a narrative description of a focused air quality investigation conducted for Community Consolidated School District 181 within the above referenced school building.

At the request of the School District, Integrity Environmental Services, Inc. (IES) was present at Hinsdale Middle School on Thursday, June 1, 2017 to collect air samples for mold spore concentrations and to conduct a visual inspection for the presence of mold within the first-floor landing and foyer area associated with stairwell S-5 located on the south side of the school building, as well as the school building's guidance office, including the reception area and office 136. The inspection was conducted due to concerns raised by the faculty regarding the air quality in the guidance office and specifically within office 136. A previous inspection including airborne mold spore sample collection was performed on May 12, 2017 in stairwell S-5 and an adjacent hallway and foyer. These areas are also adjacent to the guidance office and office 136.

During this previous inspection, visible mold was not observed and the sample results showed that interior concentrations of mold spores were not excessive and that all types of mold spores identified on the on interior air samples were the same types of mold spores that were identified on the exterior air sample.

As part of this most recent investigation, one (1) air sample each was collected in the reception area of the guidance office, in office 136, within the enclosed space located beneath the guidance office, within the enclosed space beneath Stairwell S-5, on the first-floor landing within Stairwell S-5, and in the hallway by Stairwell S-5 and exterior door 903B. In addition, a visual inspection was conducted. During this inspection, the IES representative noted the condition within each of the subject spaces. IES conducted the site inspection and air sampling procedures under normal building conditions. Sample collection began at 06:15 a.m. with some staff members present, but before students arrived. The weather at the time of the sampling event was sunny, calm and warm. Doors and windows in and around the observed area of school building were closed. The building's HVAC system was operational and functioning at the time of this investigation.

B. INSPECTION SUMMARY:

Discussions with Community Consolidated School District 181 Director of Facilities, Mr. Mike Duggan prior to sampling revealed concern regarding the air quality in office 136 based upon the recent rain storm-initiated water intrusion. The concern was the possibility that the intruding water from the rain storm may have seeped behind the walls in the S-5 stairwell landing and associated hallway, and may have contributed to mold growth within various enclosed spaces. During this inspection however, no leaks, visible moisture staining, or water intrusion issues were observed within the subject interior portions of the school building.

C. SAMPLING STRATEGY:

The sampling protocols for this project were developed in conjunction with existing guidelines and recommendations presented by the American Conference of Governmental Industrial Hygienists (ACGIH), the American Industrial Hygiene Association (AIHA), and Environmental Microbiology Laboratories, Inc., a nationally recognized, AIHA proficiency-tested laboratory specializing in microbial testing.

In conjunction with our Air Quality Division, guidelines suggested by the Indoor Air Quality Association (IAQA) and Mycotech Biological, Inc. were utilized in helping determine and interpret sample data.

It should be noted that there are no current regulatory requirements governing the testing strategies and interpretation of sample data at this time. Our sampling strategy has included the incorporation of current guidelines and recommendations, as well as state-of-the-art methodologies to help define the levels of mold and related airborne bioaerosols within the subject areas of Hinsdale Middle School. IES collected representative samples within each sample location.

At each area air sample location, the IES representative collected a sample for mold spores using a particulate sampling cassette known as an "Allegro-D" disposable air monitoring cassette. The duration of each of the mold spore air samples was five (5) minutes at each sample location. A separate area sample was collected for mold spores outside the facility, on the building's west side. This sample was collected as a baseline or background sample.

Following collection, each air sample cassette was properly sealed, contained, and issued a separate and unique sample number. Each sample number and corresponding sample location was recorded on the laboratory's chain of custody form, prior to submittal to the laboratory for analysis.

Following collection, all samples were sent to STAT Analysis Corporation, located in Chicago, Illinois for analysis. The IES representative collected a total of five (5) area air samples for mold spores (including the required QA/QC blank). All sample locations are illustrated in Section 2, Exhibit A of this report.

Each of the air samples collected was analyzed for the presence, type, and quantity of fungal spores.

D. LABORATORY ANALYSIS SUMMARY:

MOLD SPORES –

Mold spores were found on all seven (7) of the air samples collected during this investigation. Results of the air sample analysis show that six (6) types of mold spores were found on the collected air samples. Two (2) types of mold spores (Ascospores and a group including Smuts and the spores from the genus *Myxomycetes sp.*) were found both inside and outside the building. Two (2) types of spores (*Alternaria sp.* and *Aspergillus/Penicillium*-type spores) were found exclusively on area air samples collected inside of the building, and two (2) types of spores (*Cladosporium sp.* and *Torula sp.*) were found on the air sample collected outside of the building.

All reported interior mold spore concentrations ranged from “low” to “moderate”. Interior concentrations of Ascospores were either equal to or only slightly higher than the corresponding exterior concentration. Interior concentrations of spores within the group that includes Smuts and spores from the genus *Myxomycetes sp.* were primarily lower than the corresponding exterior concentration. One (1) interior concentration of Smuts/*Myxomycetes*, collected from the guidance office was however slightly greater than the corresponding exterior concentration.

A concentration of spores from the genus *Alternaria sp.* was found exclusively on the air sample collected in the hall by exterior door 903B. A concentration of *Aspergillus/Penicillium*-type spores was found exclusively on the air sample collected in the first-floor landing of stairwell S5. Concentrations of these spores were not detected outside of the building during this sampling event.

All interior airborne sample concentrations of mold spores were reported to be well below the Mycotech Biological, Inc. guidelines of 650 spores per cubic meter of air (spores/m³) for individual spore concentrations, and 2,000 spores/m³ for total spore concentrations.

Although sample concentrations of these mold spores are considered to be within or below normal levels for the general population, persons who are sensitive and/or allergic to molds may still experience some discomfort

Refer to Section 2, Exhibit A for a drawing of all sample locations. Refer to Section 2, Exhibit B for Laboratory Analytical Results. Refer to Section 2, Exhibit C, Definitions, for additional information regarding the types of mold fungi and spores mentioned above.

E. CONCLUSIONS:

Based on our inspection, sample collection work, and laboratory analysis, Integrity Environmental Services, Inc. has made the following conclusions:

- Visible mold was not identified during this investigation.
- All interior area airborne mold spore sample concentrations were well below the Mycotech Biological, Inc. total spore concentration guideline of 2,000 spores/m³, as well as the individual spore concentration guideline of 650 spores/m³.

- The collected interior concentrations of mold spores are considered to be at low to moderate levels for the general population.
- Two (2) of the four (4) types of mold spores found inside of the school building were found exclusively on interior air samples, without corresponding exterior air samples. While these results may indicate an interior source, the two (2) locations of sample collection are each adjacent to exterior doors that each receive a lot of foot traffic entering and exiting the school building. The source of these two (2) interior mold concentrations could possibly be exterior.
- Results of the laboratory analysis of the collected air samples, do not conclusively indicate the existence of a mold problem within the sampled areas of school building.

F. RECOMMENDATIONS:

While laboratory results do not conclusively indicate any immediate airborne microbial air quality concern, IES recommends that the following actions be taken to minimize or eliminate any microbial presence within the Hinsdale Middle School building:

1. Continue to be pro-active with the investigation and elimination (if necessary) of any air quality concerns or reported suspect mold-like material.
2. While visible mold growth was not observed during this investigation within subject areas of the school building, any surfaces found to be water damaged or showing visible mold growth should be addressed by cleaning and disinfecting. Minimal disturbance of the contaminated surface during any cleaning or disinfecting work is necessary to prevent introduction of additional microorganisms into the air.
3. All carpeting within the school should continue to be routinely vacuumed and cleaned. The use of HEPA vacuums is recommended.
4. Continue to monitor ceiling tiles and the pipes located above them for the presence of water leaks and/or condensation. The source of water stained ceiling tiles and/or other surfaces should be investigated and the source of the water/moisture should be removed.
5. Continue to routinely clean and/or replace all HVAC filters as necessary to help maintain the levels of potential microbial and other airborne contaminants entering the building at a minimum.
6. Further investigation of spaces behind the walls within the subject areas of the school building, for evidence of moisture/water intrusion should be conducted at a time when the school building is unoccupied so that use of the subject stairway and associated vestibule will not be obstructed.

SECTION 2

EXHIBIT A
SAMPLE LOCATION DRAWING

MAOH = Blank

MAOB

MAOA

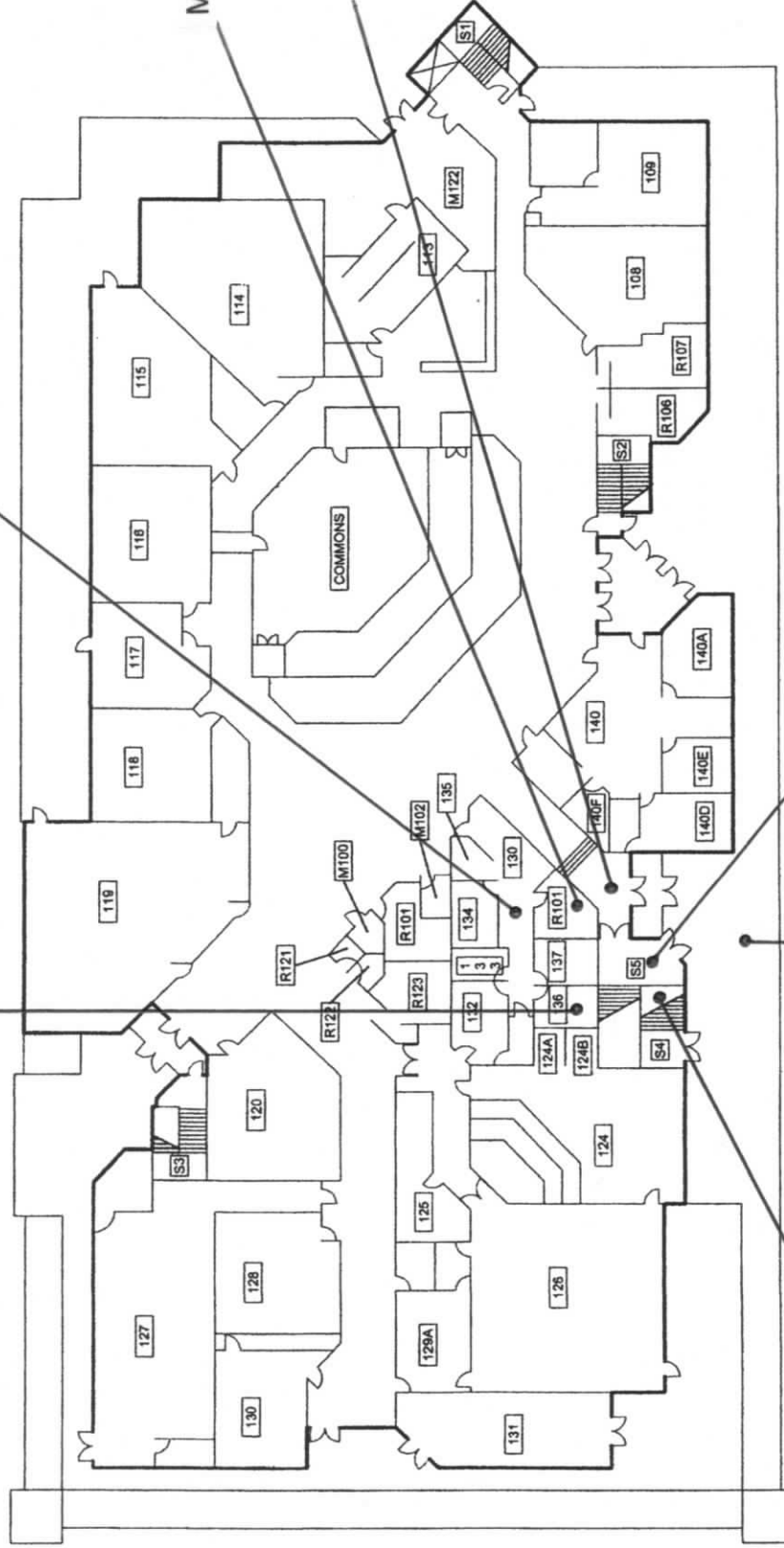
MAOC*

MAOF

MAOE

MAOG

MAOD**



*Sample collected in space beneath Guidance Office (Rm. 130)

**Sample collected in space beneath Stairway S4

INTEGRITY
ENVIRONMENTAL SERVICES, INC.

1240 IROQUOIS DRIVE, SUITE 102
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(630) 7189133
(630) 7189114 (FAX)

PROJECT: HINSDALE MIDDLE SCHOOL
100 SOUTH GARFIELD AVENUE
HINSDALE, ILLINOIS

OWNER: COMMUNITY CONSOLIDATED SCHOOL DIST. 181
6010 SOUTH ELM STREET
BURR RIDGE, ILLINOIS

DRAWN BY: GT
DATE: 06/02/17

IES NO.: 915-24

AIRBORNE MOLD SPORE
SAMPLE LOCATION
DIAGRAM



NORTH

NO SCALE

FIRST FLOOR

EXHIBIT B
LABORATORY ANALYTICAL RESULTS

STAT Analysis Corporation

2242 West Harrison St., Suite 200, Chicago, IL 60612-3766

Tel: (312) 733-0551 Fax: (312) 733-2386 STATinfo@STATAnalysis.com

Accreditations: IEPA ELAP 100445; ORELAP IL300001; AIHA-LAP, LLC 101160; NVLAP LabCode 101202-0

June 06, 2017

Integrity Environmental Services, Inc.
1240 Iroquois Drive
Naperville, IL 60563

Telephone: (630) 718-9133
Fax: (630) 718-9114

Analytical Report for STAT Work Order: 17060057 Revision 0

RE: 915-24, Hinsdale Middle School, Adjacent To Stairwell S5

Dear Guy Tawzer:

STAT Analysis received 8 samples for the referenced project on 6/2/2017 12:25:00 PM. The analytical results are presented in the following report.

Enclosed are the analytical results for the above referenced project. The samples were analyzed as per the enclosed chain of custody.

All analyses were performed in accordance with established microbiology methodology. All Quality Control criteria as specified in the methods have been met. QA/QC documentation and raw data will remain on file for future reference. Sample acceptance criteria has been met unless noted in the Case Narrative or Sample Receipt Checklist. If required, an estimate of uncertainty for the analyses can be provided.

Thank you for the opportunity to serve you and I look forward to working with you in the future. If you have any questions about the enclosed materials, please contact me at (312) 733-0551.

Sincerely,



Albio Marquez
Senior Microscopist

The information contained in this report and any attachments is confidential information intended only for the use of the individual or entities named above. The results of this report relate only to the samples tested. If you have received this report in error, please notify us immediately by phone. This report shall not be reproduced, except in its entirety, unless written approval has been obtained from the laboratory. This analytical report shall become property of the Customer upon payment in full. Otherwise, STAT will be under no obligation to support, defend or discuss the analytical report.



Analysis Corporation:

2242 West Harrison St., Suite 200, Chicago, Illinois 60612-3766

Tel: 312.733.0551; Fax: 312.733.2386; e-mail address: STATinfo@STATAnalysis.com

Analytical Report for Microbiological Analysis - Fungal Spores in Air

Client: Integrity Environmental Serv, Inc
 Project ID: 915-24 Hinsdale Middle School Adjacent to Stairwell S5
 STAT Project No.: 17060057

Date/Time Received: 6/2/17 12:25
 Date Analyzed: 6/6/2017
 Analyzed By: AM
 QC By: DM

Client Sample No.:	MAOA				MAOB 136				MAOC				MAOD			
Sample Description:	Room 30				Room 136				Below R101				Below 54			
Date Sampled:	6/1/2017				6/1/2017				6/1/2017				6/1/2017			
STAT Sample No.:	17060057-001				17060057-002				17060057-003				17060057-004			
Volume (m ³):	0.075				0.075				0.075				0.075			
	Total Count	Count/ m ³	DL	%	Total Count	Count/ m ³	DL	%	Total Count	Count/ m ³	DL	%	Total Count	Count/ m ³	DL	%
Total Fungal Spores:	15	200	13	100	7	93	13	100	10	133	13	100	6	80	13	100
<i>Alternaria</i>																
Ascospores	2	27		13.3	4	53		57.1					1	13		16.7
<i>Aspergillus/Penicillium</i>																
Basidiospores																
<i>Botrytis</i>																
<i>Cercospora</i>																
<i>Chaetomium</i>																
<i>Cladosporium</i>																
<i>Curvularia</i>																
<i>Drechslera/Bipolaris</i>																
<i>Epicoccum</i>																
<i>Fusarium</i>																
<i>Nigrospora</i>																
<i>Oidium/Erysiphe</i>																
<i>Periconia</i>																
<i>Phoma</i>																
<i>Pithomyces</i>																
<i>Pleospora</i>																
<i>Polythrincium</i>																
<i>Rhizopus/Mucor</i>																
Rusts																
Smuts/Myxomycetes	13	173		86.7	3	40		42.9	10	133		100.0	5	67		83.3
<i>Stachybotrys</i>																
<i>Stemphylium</i>																
<i>Torula</i>																
<i>Ulocladium</i>																
Unidentified Fungi																
Other																
Mycelial Fragments																
Debris Level	Moderate				Moderate				Moderate				Low			
Organic Material	Present				Present				Present				Present			

Analytical Report for Microbiological Analysis - Fungal Spores in Air

Client:	Integrity Environmental Serv, Inc	Date/Time Received:	6/2/17 12:25
Project ID:	915-24 Hinsdale Middle School Adjacent to Stairwell S5	Date Analyzed:	6/6/2017
STAT Project No.:	17060057	Analyzed By:	AM
		QC By:	DM

Client Sample No.:	MAOE				MAOF				MAOG				MAOH			
Sample Description:	S5 Landing				Hall by 903B				Bldg exterior by door 4038				Blank			
Date Sampled:	6/1/2017				6/1/2017				6/1/2017				6/1/2017			
STAT Sample No.:	17060057-005				17060057-006				17060057-007				17060057-008			
Volume (m ³):	0.075				0.075				0.075				N/A			
	Total Count	Count/ m ³	DL	%	Total Count	Count/ m ³	DL	%	Total Count	Count/ m ³	DL	%	Total Count	Count/ m ³	DL	%
Total Fungal Spores:	17	227	13	100	8	107	13	100	18	240	13	100	0			100
<i>Alternaria</i>					1	13		12.5								
Ascospores	1	13		5.9					1	13		5.6				
<i>Aspergillus/Penicillium</i>	9	120		52.9												
Basidiospores																
<i>Botrytis</i>																
<i>Cercospora</i>																
<i>Chaetomium</i>																
<i>Cladosporium</i>									5	67		27.8				
<i>Curvularia</i>																
<i>Drechslera/Bipolaris</i>																
<i>Epicoccum</i>																
<i>Fusarium</i>																
<i>Nigrospora</i>																
<i>Oidium/Erysiphe</i>																
<i>Periconia</i>																
<i>Phoma</i>																
<i>Pithomyces</i>																
<i>Pleospora</i>																
<i>Polythrincium</i>																
<i>Rhizopus/Mucor</i>																
Rusts																
Smuts/Myxomycetes	7	93		41.2	7	93		87.5	11	147		61.1				
<i>Stachybotrys</i>																
<i>Stemphylium</i>																
<i>Torula</i>									1	13		5.6				
<i>Ulocladium</i>																
Unidentified Fungi																
Other																
Mycelial Fragments																
Debris Level	Moderate				Moderate				Moderate				Absent			
Organic Material	Present				Present				Present				Absent			

STAT Analysis Corporation

2242 West Harrison Street, Suite 200, Chicago, Illinois 60612 Phone: (312) 733-0551 Fax: (312) 733-2386
e-mail address: STATInfo@STATAnalysis.com

Page: 1 of 1

MICROBIOLOGY CHAIN OF CUSTODY RECORD

Client: Integrity Environmental Serv., Inc. Street Address: 1240 Iroquois Ave., Ste. 102 City, State, Zip: Naperville, IL 60563 Phone: (630) 718-9133/Cell (708) 528-1491 Fax: (630) 718-9114 e-mail/Alt. Fax: ies2001@sbcglobal.net		Office Use Only Below: Work Order No.: 17060057 Samples Acceptable: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Analyzed By: [Signature] Date/Time: [Signature] Data File: QC By: Reported By (Initial/Date/Time): Verbal: Fax/e-mail:		Turn Around Time: <1 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> Viable: 6-10 Other TAT:		Relinquished by: [Signature] Date/Time: 6-1-17 17:50 Received by: 12-01-17 03:40 17:50 Relinquished by: [Signature] Date/Time: 6/2/17 12:25 Received by: [Signature] Date/Time: 6/2/17 12:25									
Client Sample Number/Description:	Date Taken	Time Taken	Volume (Liters)	Area Wiped (Units) ²	Laboratory Sample No.	Non-Viable	Air Cassette	Direct Exam-Tape	Direct Exam-Swab	Direct Exam-Bulk	Viable	Air Impact	Swab	Bulk	Other
MADA/Bm. 130	6/1/17	06:15	75		001		X								
MAOB/Bm. 136		06:22			002										
MAOC/Below R101		06:43			003										
MAOD/Below 54		06:55			004										
MAOE/55 Landing		07:05			005										
MAOF/Hallway		07:13			006										
MAOG/Bld. Ext.		07:21	↓		007										
MAOH/Bld. Ext.		—	0		008										

Comments:

SECTION 3

DEFINITIONS

MOLD FUNGI AND SPORES –

An estimated 100,000 species of fungi are known to exist. Fungi may be single celled or multi-cellular. Various organisms such as yeasts, mushrooms, morels, truffles, and molds are actually fungi. Fungal growth is affected by moisture, temperature, and light. All humans are exposed to fungi through inhalation and ingestion, apparently, with no ill health effects. Many fungi are used as foods and sources of drugs that help fight disease. Most fungi are saprophytic, feeding on dead and decaying organic matter. Some species of fungi, however, are known to cause infectious diseases in humans. In most cases, the fungi are unable to cause disease in persons with a healthy immune system.

Three (3) types of fungal infections exist. They are defined as:

1. Systemic Infection: Caused by the inhalation of certain fungal spores. Most of these infections produce little or no symptoms.
2. Opportunistic Infection: Limited to those with impaired immunological defenses. In this situation, infection is secondary to a primary disease. Species of *Aspergillus*, *Cladosporium*, *Mucor*, *Rhizopus* and *Cryptococcus* are common opportunistic fungi.
3. Dermatophytes: A group of fungi that infect the hair, skin and nails. Direct contact with an infected individual or the sharing of items such as grooming utensils or clothes is usually how the infection is transmitted. Transmission to humans from an environmental source is rare.

Fungi produce toxic metabolites called mycotoxins. Mycotoxins are present in both spores and viable fungi. Usually, inhalation exposure of mycotoxins occurs following the disturbance of a contaminated source.

Fungi also produce volatile organic compounds (VOCs) while growing. Some of these compounds have noticeable odors that many people find offensive. It is thought that exposure to these VOCs may be generally responsible for some building-related symptoms (BRSs).

The following is a description of each genus of fungi found within Hinsdale Middle School:

Alternaria sp.: A single spore was found on the air sample collected in the hallway adjacent to exterior door 903B. This fungus is very common, found both indoors and outdoors in soil, dead organic debris, foodstuffs, and textiles. This mold is a plant pathogen and is one of the main fungal causes of allergies.

- Ascospores:** These spores were found on air samples collected in The Guidance Office (Rm. 130), Office 136, in the space below stairwell S4, in the first-floor landing of stairwell S5, and on the air sample collected outside of the building. These spores were not positively identified. They are possibly from species of *Alternaria*, *Aspergillus*, *Cladosporium*, or *Penicillium* among others.
- Aspergillus sp.:* Spores were found on the air sample collected in the first-floor landing of stairwell S5. This fungus is associated with grains, nuts, cotton, organic debris and water damaged building materials. This is the most common group of fungi in our environment. Sixteen (16) of the over 160 species of *Aspergillus* are known to act as agents of etiological disease in humans. These diseases are fairly uncommon and do not normally occur in people with healthy immune systems. The spores produced by *Aspergillus sp.* appear very similar to the spores produced by *Pennicillium sp.*
- Cladosporium sp.:* These spores were found on the air sample collected outside of the building. This fungus is commonly found both indoors and outdoors and is often located in spaces where condensation is collected and/or where there is poor ventilation. It is commonly found on the surface of fiberglass duct lining inside supply ducts. It is a common cause of allergies and hay fever and has also been associated with various skin and eye infections acquired by immune compromised individuals.
- Myxomycetes:** Spores were found on all air samples collected both inside and outside of the building. Myxomycetes are commonly known as slime molds, but are not true molds. They are usually found outdoors on decaying plant material. They are easily dispersed by wind in their dry phase and occasionally are found in indoor environments. Under 600x microscopy, Myxomycetes are indistinguishable from smuts.
- Penicillium sp.:* Spores were found on the air sample collected in the first-floor landing of stairwell S5. A large number of organisms belong to this genus. This fungus is commonly found in soil, food, cellulose, paint, grains, compost piles, carpet, wall paper, and in interior fiberglass duct insulation. It is reported to cause allergic reactions on skin and in susceptible individuals, may cause among other infections, hypersensitivity pneumonitis or allergic alveolitis. Some species can produce various mycotoxins that are harmful to humans. The spores produced by *Penicillium sp.* appear very similar to the spores produced by *Aspergillus sp.*

Smuts: Spores were found on all air samples collected both inside and outside of the building. This allergen is a parasitic plant pathogen that needs a living host. Smuts are often found on corn, grass, weeds, flowering plants, and even other fungi. Smuts are distributed by wind. Under 600x microscopy, smuts are indistinguishable from myxomycetes.

Torula sp.: A single spore was found exclusively on the air sample collected outside of the building. Reported as an allergen, this fungus is commonly found on soil, wood, grasses, groundnuts and oats. It is also found indoors on cellulose containing materials such as jute, old sacking, wicker, straw baskets, wood, and paper.