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November 23, 2025

Dare County Schools
Ian Adams
3020 S. Wrightsville Avenue
Nags Head, NC

Re: Limited Indoor Air Quality Sampling with Airborne Fungal Sampling at First Flight High School, 100 Veterans Drive, Kill Devil Hills, NC
LRC Project – 25-2451

At your request, on November 10, 2025, LRC Indoor Testing & Research, Inc. (LRC) performed a limited environmental fungal Indoor Air Quality (IAQ) sampling that included airborne fungal sampling at the property listed above.

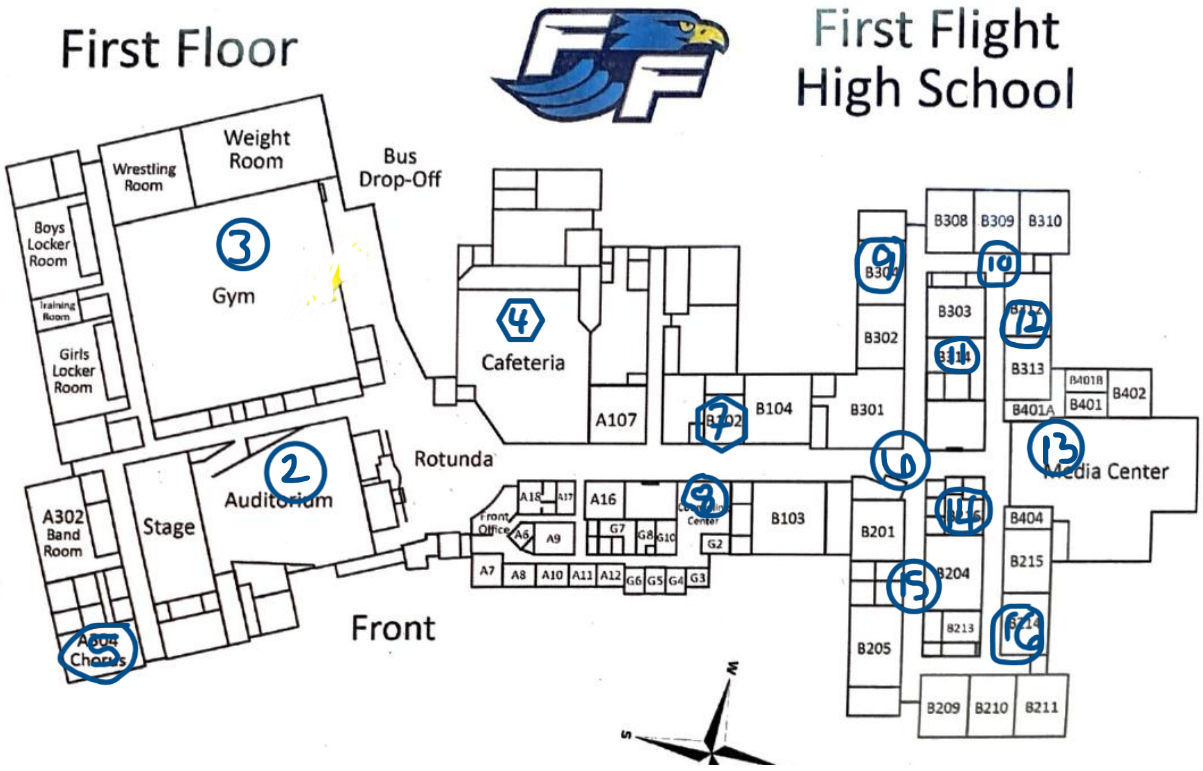
LRC performs all water-damage and fungal investigations with sampling and recommendations in accordance with guidelines published in Bioaerosols: Assessment and Control, by the American Conference of Governmental Industrial Hygienists (ACGIH), in Mold Remediation in Schools and Commercial Buildings by the United States Environmental Protection Agency (USEPA), and in the currently recognized and accepted industry standards including the ANSI/IICRC S500 Standard and Reference Guide for Professional Water Damage Restoration, Fifth Edition (S500) and the ANSI/IICRC S520 Standard and Reference Guide for Professional Mold Remediation, Fourth Edition (S520).

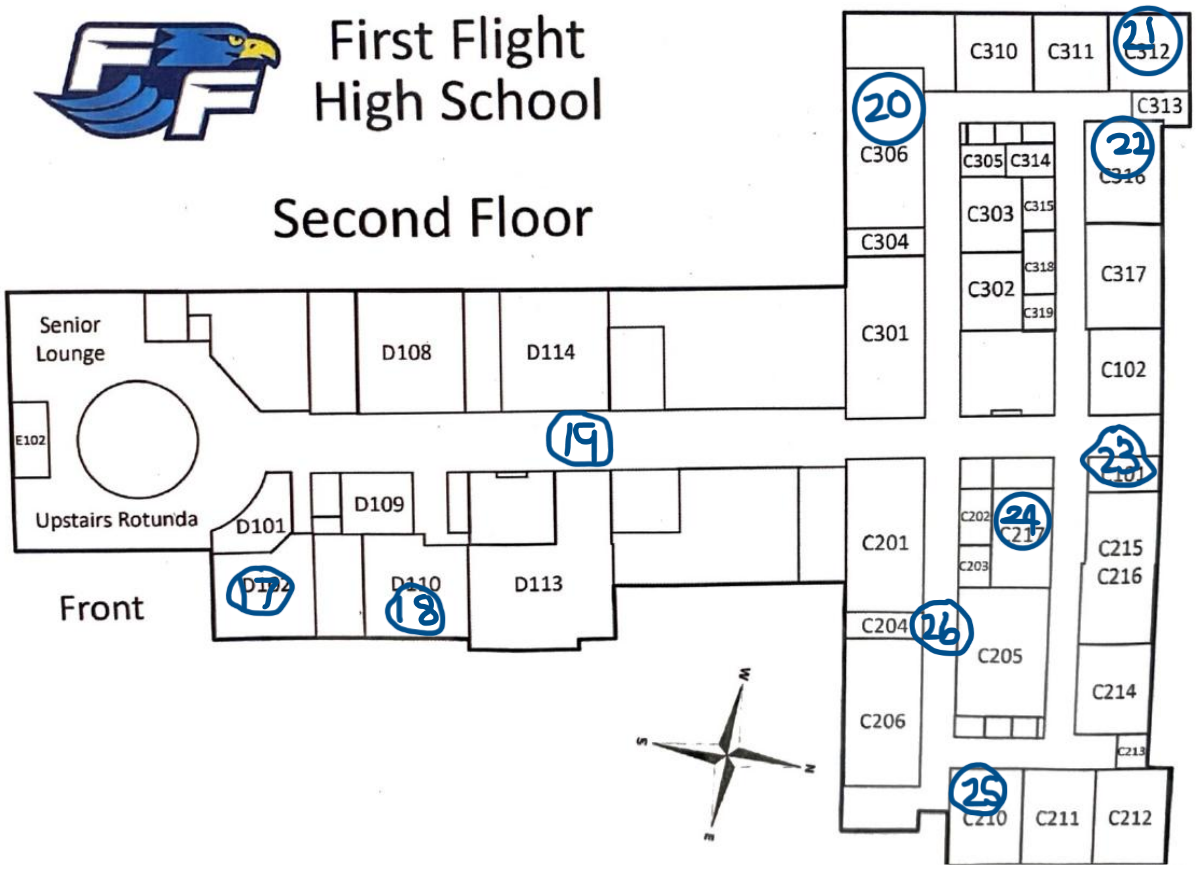
Our inspection included the following:
1. Measure temperature and relative humidity indoors and outdoors.
2. Collect representative non-viable spore trap air samples indoors and one outdoors for comparison.
3. Collect representative Particle Counts, Carbon Dioxide and Carbon Monoxide counts at locations where air samples are collected.
4. Provide a written report describing the survey results and comparing those results to accepted guidelines and directives. This report includes a summary of data and Certificates of Laboratory Analysis.

BACKGROUND

This inspection was limited to non-viable spore trap air samples, particle counts, CO and CO^2 measurements that were collected from representative locations selected throughout the building. Descriptions in this report are based on looking at the structure from the main Office entrance. Moisture measurements and visual inspections were not conducted on this day.

Sampling Locations



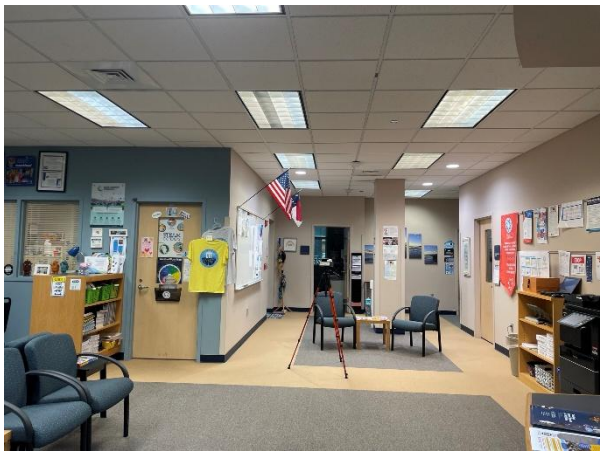


Representative Photographs and Sampling Locations 11/10/2025

First Flight High School- Front Exterior

Cafeteria

Admin at Workroom



Counseling Center

Hall at B309

Hall at C312

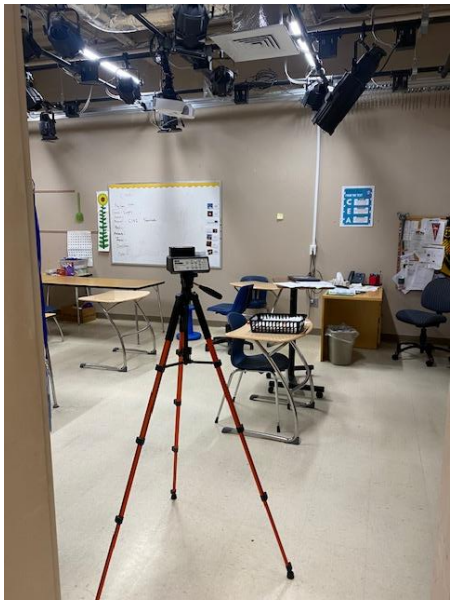
Classroom C210

Room C101

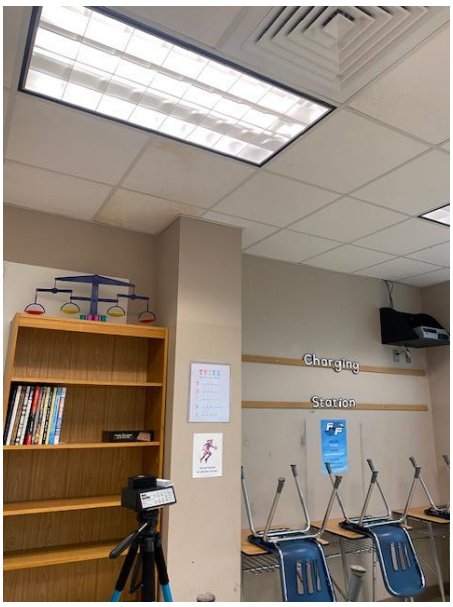
Classroom A304

Classroom B102

Hall at A201



Classroom B314



CR C316

CR C316 Stained ceiling tile

AIR SAMPLING METHODOLOGY

Currently there are no regulations regarding acceptable airborne fungal levels. Airborne fungal spores are ubiquitous in the outdoor and indoor environment. The guidelines followed in this report for the assessment and/or remediation of airborne and surface fungi are published in *Bioaerosols: Assessment and Control,* by the American Conference of Governmental Industrial Hygienists (ACGIH), in *Mold Remediation in Schools and Commercial Buildings* by the United States Environmental Protection Agency (USEPA), in *Recognition, Evaluation, and Control of Indoor Mold* by the American Industrial Hygiene Association (AIHA), and in the ANSI/IICRC S520 *Standard and Reference Guide for Professional Mold Remediation,* Fourth Edition (S520). Airborne fungal assessments are performed by comparing results from volumetric samples taken indoors to samples taken outdoors. Airborne fungi levels in non-problem indoor environments generally are less than or approximately the same as that outdoors and also show a similar composition and/or taxonomic predominance. Problems are usually implicated in the indoor air when one or more fungal genera or species are present in a much greater concentration indoors compared to outdoors. Sampling results are shown in the Certificates of Laboratory Analysis attached to this report. Results are discussed below.

TEMPERATURE & RELATIVE HUMIDITY METHODOLOGY

Temperature and relative humidity readings were recorded by the Lighthouse Handheld 3016 Particle Counter. The temperature and relative humidity are summarized in Table A below.

The American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 55 for thermal comfort suggests that the indoor temperature should be between 73°F to 79°F in the summer and 68°F to 75°F in the winter.

ASHRAE recommends a relative humidity of 30-60% in habitable spaces. The Environmental Protection Agency (EPA) recommends that indoor relative humidity (RH) be kept below 60%-ideally between 30% and 50%.

AIR SAMPLING AND TEMPERATURE & RELATIVE HUMIDITY RESULTS

Representative samples were taken for total airborne fungal spores with a calibrated Buck spore trap. Total airborne fungal spore sample volumes were 75-liters. The outdoor total fungal spore level (Sample 27) was measured at 1,840 Spores/m^3 and was comprised of Basidiospores (92%), *Cladosporium* (4%), Ascospores (3%), and 1% or less of various other fungal spores. The air sample results are summarized below in Table A.

Table A – Air Sampling Results

Sample #	Location	Total Airborne Spore Count (Spores/m^3)	*Non-Fungal Background Particulate Level	Temperature (°F)	Relative Humidity (%)
01	Admin at Workroom	80	Moderate	69.8	45.7
02	Auditorium	107	Moderate	69.3	55.1
03	Gym	27	Low-Moderate	69.8	56.9
04	Cafeteria	13	Low-Moderate	67.8	58.6
05	CR A304 - Chorus	53	Low	71.3	42.8
06	Hall at A201	40	Low-Moderate	72.5	43.8
07	CR B102	27	Low-Moderate	72.9	43.5
08	Counseling Center	53	Moderate	73.3	42.2
09	CR B304	40	Low-Moderate	72.7	43.9
10	Hall at B309	173	Moderate	73.2	42.7
11	CR B314	40	Low-Moderate	73.1	42.1
12	CR B312	53	Low-Moderate	73.1	43.9
13	Media Center	53	Low-Moderate	73.8	41.8
14	Workroom B216	293	Low-Moderate	73.8	43.0
15	Hall at B204	27	Low-Moderate	73.8	42.6
16	CR B214	67	Low	73.3	43.5
17	CR D102	40	Low-Moderate	72.2	44.2
18	CR D110	40	Low	72.3	43.7
19	Hall at D113	27	Low-Moderate	71.9	45.7
20	CR C306	27	Low	73.3	43.1
21	Hall at C312	40	Low	73.5	42.7
22	CR C316	40	Low	73.2	43.1
23	CR C101	147	Moderate	73.6	42.1
24	CR C217	40	Low	73.7	42.3
25	CR C210	27	Low	72.3	45.1
26	Hall at C204/205	120	Low-Moderate	72.5	45.2

Sample #	Location	Total Airborne Spore Count (Spores/m^3)	*Non-Fungal Background Particulate Level	Temperature (°F)	Relative Humidity (%)
27	Outdoor Air	1,840	Low-Moderate	58.6	59.5

*The Background Particulate Level refers to non-fungal debris seen in the air sample; such as skin cells, hair, fibers, dust, dirt, etc. The debris rating is detailed in the certificates of laboratory analysis.

The total fungal spore counts in the areas sampled indoors were lower than that found in the outdoor air. The types of fungal spores found in the indoor air samples were all common outdoor-type fungi present in low concentrations with a fungal composition similar to the outdoor showing a 'normal fungal ecology'.

The non-fungal background particulate in the indoor air samples was in the Low to Moderate range. The particulate that we see in the microscope at the magnification used is usually called 'course particulate' and consists of many things and can include the following: dirt, dust, pollen, fiber, hair, skin cells, dust mites and other insects. Fine particulates (to include VOC's – volatile organic compounds) are not seen with the magnification used for these samples.

The relative humidity met the current ASHRAE and EPA standards to maintain indoor relative humidity below 60%.

PARTICLE COUNT METHODOLOGY

A Lighthouse Handheld 3016 Particle Counter was used to measure the levels of airborne particulates. Airborne particles are solids suspended in the air. In a commercial setting, particle levels should be less than outside readings due to better filtration. Particle counts can vary in a school building due to occupant activity, including ingress/egress from outside. For this project, the particle count results are used to compare those results to locations where the air sample results suggest an altered environment.

PARTICLE COUNT RESULTS

Table B below summarizes the minimum, maximum, and average particle count in the building in each size category during the sampling period. Each time one liter of air was drawn into the Particle Counter, and the Particle Counter calculated all particles that are greater than or equal to the particle size indicated in the size categories.

Table B – Indoor Particle Count Sampling Results

	0.3 micron	0.5 micron	1.0 micron	2.5 micron	5.0 micron	10.0 micron
Minimum	3,714	132	15	2	0	0
Maximum	14,071	2,602	379	60	27	6
Average	7,641	448	74	19	6	2

Table C below summarizes the average particle count in the outdoor air at the time of sampling. Each time one liter of air was drawn into the Particle Counter, and the Particle Counter calculated all particles that are greater than or equal to the particle size indicated in the size categories.

Table C – Outdoor Particle Count Sampling Results

	0.3 micron	0.5 micron	1.0 micron	2.5 micron	5.0 micron	10.0 micron
Outdoor Air Average	9,218	1,144	486	161	23	3

On average, the indoor particle counts in the areas sampled were lower than that found in the outdoor air in all size categories. Particle counts in the Auditorium, Gym, Cafeteria, and Media Center exceeded those of the outdoor air in the 0.3 micron category, however, air samples in these locations all suggested a 'normal indoor fungal ecology' in the areas sampled.

CARBON MONOXIDE AND CARBON DIOXIDE METHODOLOGY

A handheld Toptes (CT-300) carbon monoxide detector and a handheld AZ Instruments (AZ77535) CO2 meter were used to measure the concentrations of CO and CO2. CO is a dangerous gas caused by incomplete combustion. The level of CO in an indoor environment should be low (none detected to 4 parts per million [ppm] depending on fuel sources used indoors) or same as outdoors. CO2 is commonly used as an indicator of ventilation adequacy. Elevated levels of CO2 may serve as an indicator of insufficient intake of fresh air into a building or an insufficient number of air changes in the work environment. Levels will typically increase over the course of a normal day as human exhalation builds up. Industry guidelines suggest that steady-state CO2 concentration in a space be no greater than about 700 ppm above outdoor air levels and below 1,000 ppm. OSHA currently sets 5,000 ppm as their Permissible Exposure Limit (PEL) for occupational exposure.

CARBON MONOXIDE AND CARBON DIOXIDE RESULTS

Table D – CO_2 and CO Sampling Results

	CO_2 (ppm) Indoors	CO_2 (ppm) Outdoors	CO (ppm) Indoors	CO (ppm) Outdoors
Minimum	375	333	0	0
Maximum	506		0	
Average	426		0	

The average CO_2 concentration indoors was within the recommended range.

In addition, the indoor CO concentrations were measured at zero in all locations. Therefore, the results suggested that the indoor CO concentrations were within normal ranges.

CONCLUSIONS

Results as reported by LRC apply only to the day of this inspection. LRC cannot and does not warranty that other parts of the structure were completely free or that the structure will remain free in the future from hidden sources of moisture or fungal contamination.

This inspection was limited to indoor air quality parameters. The indoor air samples did not show a fungal amplification or an altered indoor fungal ecology. Temperature and Relative Humidity readings were within the recommended ranges. Carbon Dioxide levels were within the normal recommended range. Carbon Monoxide levels were zero.

This report was prepared for the sole use of Dare County School System and written authorization from them is required to share contents.

If you have any questions or concerns, please do not hesitate to contact us.

Sincerely,

Amber Campbell, REHS
LRC Indoor Testing & Research

Karolina Fedurek, B.S.
LRC Indoor Testing & Research