# FUNGI AIR TESTING REPORT

for

# SPRINGFIELD TOWNSHIP ELEMENTARY SCHOOL
# 2146 JACKSONVILLE-JOBSTOWN ROAD
# JOBSTOWN, NEW JERSEY

| | |
|---|---|
| Report No.: | 02002-15 |
| Date of Report: | May 2, 2018 |
| Prepared For: | Springfield Township School District<br>2146 Jacksonville-Jobstown Road<br>Jobstown, NJ 08041 |
| Prepared By: | Horizon Environmental Group, Inc.<br>P. O. Box 316<br>Thorofare, NJ 08086 |

# SECTION I: SUMMARY

Pursuant to the request of officials at the Springfield Township School District, personnel from HORIZON ENVIRONMENTAL GROUP, INC. performed indoor air quality testing services at the Springfield Township Elementary School facility in Springfield Township (Burlington County), New Jersey.

According to recent research, some molds may produce adverse medical effects in some individuals. While fungi, including molds, are naturally occurring and always found in normal indoor environments where they cannot be totally eliminated, the owner should be proactive in dealing with any situations regarding mold which may occur in the building. This includes quick responses to any complaints about odors or discomfort by occupants or visitors, quickly cleaning up water leaks, immediately removing water damaged ceiling tiles, carpets or building materials, restricting the presence of plants in the building, monitoring the humidity in the building and not allowing food to be left out. Research has shown that all of these factors can aid in promoting the growth of mold in indoor environments. In addition, because of the inherent dampness, it is recommended that carpeting not be installed on below-grade concrete slab floors.

All tests are a depiction of the conditions at the site at the time of the collection of the samples. Exterior samples are especially sensitive to the conditions (temperature, humidity, wind, urban/rural setting, etc.) present at the time the sample is collected. Therefore, it is not uncommon to find a particular type of fungus on an indoor sample and not find the same type of fungus on the outdoor control sample collected as part of the sampling protocols, even though that particular type of fungus may be common in exterior environments.

The district should maintain a proactive approach to mitigating fungi growth and the factors involved in fungi growth. The district should regularly clean and replace the filters in HVAC fixtures and equipment, including the unit ventilators. In addition, carpets should be cleaned regularly and food should not be eaten in carpeted areas. When mopping tile floors adjacent to carpeted areas, the staff should ensure that the carpets do not get wet. Mop heads and other cleaning equipment should be maintained in a clean state or replaced as needed. Trash, especially cardboard or other paper-based materials, should not be left in crawlspace areas. When ceiling tiles are replaced, the old tiles should be removed and disposed of, not left in the area above suspended ceiling.

Horizon Environmental Group, Inc. makes no assertions as to the medical effects of any airborne material which may be found inside or outside the facility. It is strongly recommended that medical and/or toxicological professionals be consulted when considering the data described herein.

# SECTION II: TESTING PROCEDURES AND RESULTS

**Air-O-Cell Air Sampling Procedures - April 27, 2018**

Air-o-cell air samples were collected at three (3) indoor locations and one outside location at the Springfield Township Elementary School facility in Springfield Township, New Jersey. The samples were collected on April 27, 2018, using a high volume air sampling pump and air-o-cell cassettes provided by the analytical laboratory. The sampling media on the cassettes were then analyzed for fungal spores using optical microscopy (EMSL Method M001) by EMSL Analytical, Inc. of Cinnaminson, New Jersey. Levels of fungi are reported in count per cubic meter (Count/$m^3$).

| Sample Number | Sample Location | Volume (Liters) | Spore Types | Count per Cubic Meter (C/$m^3$) |
|---|---|---|---|---|
| 180427-AOC001 | Room 32 | 150 | Ascospores | 70 |
| | | | Aspergillus/Penicillium | 70 |
| | | | Basidiospores | 200 |
| | | | Cladosporium | 40 |
| | | | Curvularia | 20 |
| | | | Myxomycetes | 7 |
| | | | **TOTAL FUNGI** | **407** |

In addition to the fungi found on the sample, hyphal fragments (20 C/$m^3$) and pollen (7 C/$m^3$) also were found on the sample.

It should be noted the levels of fungi reported on the sample were significantly less than those reported on the exterior control sample. In addition, with the exception of the low levels of *curvularia* and *myxomycetes*, the types of fungi found on the sample were the same as those found on the exterior sample.

*Basidiospores, curvularia* and *myxomycetes* are not usually found growing indoors and were most likely brought in from the outside environment. *Cladosporium* is a very common fungus found both indoors and outdoors and is generally associated with decaying plant material. While the presence of *aspergillus/penicillium* in indoor environment can be an indicator of water intrusion, it should be noted that *aspergillus/penicillium* was detected on the outdoor sample collected at the facility on April 27. At the time of the site visit on April 27, 2018, no odors or visible mold growth were observed in the room. However, a stained ceiling tile and some water damage over the windows was observed. The ceiling tile should be replaced immediately and the cause of the water damage over the window should be identified and repaired as soon as possible.

| Sample Number | Sample Location | Volume (Liters) | Spore Types | Count per Cubic Meter (C/$m^3$) |
|---|---|---|---|---|
| 180427-AOC002 | Room 38 | 150 | Ascospores | 20 |
| | | | Aspergillus/Penicillium | 40 |
| | | | Basidiospores | 570 |
| | | | Cladosporium | 70 |
| | | | Myxomycetes | 7 |
| | | | **TOTAL FUNGI** | **707** |

It should be noted the levels of fungi reported on the sample were significantly less than those reported on the exterior control sample. In addition, with the exception of the low level of *myxomycetes*, the types of fungi found on the sample were the same as those found on the exterior sample.

*Basidiospores* and *myxomycetes* are not usually found growing indoors and were most likely brought in from the outside environment. *Cladosporium* is a very common fungus found both indoors and outdoors and is generally associated with decaying plant material. While the presence of *aspergillus/penicillium* in indoor environment can be an indicator of water intrusion, it should be noted that *aspergillus/penicillium* was detected on the outdoor sample collected at the facility on April 27. At the time of the site visit on April 27, 2018, no odors or visible mold growth were observed in the room. However, some water damage over the windows was observed. The cause of the water damage over the window should be identified and repaired as soon as possible.

| Sample Number | Sample Location | Volume (Liters) | Spore Types | Count per Cubic Meter ($C/m^3$) |
|---|---|---|---|---|
| 180427-AOC003 | Library | 150 | Ascospores | 20 |
| | | | Basidiospores | 100 |
| | (Interior Control Sample) | | Myxomycetes | 7 |
| | | | Unidentifiable Spores | 40 |
| | | | **TOTAL FUNGI** | **167** |

In addition to the fungi found on the sample, hyphal fragments (40 $C/m^3$) and pollen (7 $C/m^3$) also were found on the sample.

It should be noted the levels of fungi reported on the sample were significantly less than those reported on the exterior control sample. In addition, with the exception of the low level of *myxomycetes* and unidentifiable spores, the types of fungi found on the sample were the same as those found on the exterior sample.

*Basidiospores* and *myxomycetes* are not usually found growing indoors and were most likely brought in from the outside environment. At the time of the site visit on April 27, 2018, no odors or visible mold growth were observed in the room. However, a stained ceiling tile was observed and should be replaced immediately.

| Sample Number | Sample Location | Volume (Liters) | Spore Types | Count per Cubic Meter ($C/m^3$) |
|---|---|---|---|---|
| 180427-AOC004 | Exterior - Back Courtyard | 165 | Ascospores | 1700 |
| | | | Aspergillus/Penicillium | 20 |
| | (Exterior Control Sample) | | Basidiospores | 6880 |
| | | | Cladosporium | 460 |
| | | | Botrytis | 60 |
| | | | **TOTAL FUNGI** | **9120** |

In addition to the fungi found on the sample, pollen (40 $C/m^3$) also were found on the sample. The weather in the area on April 27 was unseasonably chilly and it had rained some during the morning.

# EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-0262
http://www.EMSL.com / cinnmicrolab@emsl.com

| | |
|---|---|
| Order ID: | 371807155 |
| Customer ID: | MDS50 |
| Customer PO: | |
| Project ID: | |

**Attn:** David Flanigan
Horizon Environmental Group, Inc.
PO Box 316
Thorofare, NJ 08086

| | |
|---|---|
| Phone: | (856) 848-0800 |
| Fax: | (856) 848-0838 |
| Collected: | 04/27/2018 |
| Received: | 04/27/2018 |
| Analyzed: | 04/27/2018 |

**Proj:** 02002-15 / Springfield Township Elementary School

**Spore Trap ASSESSMENTReport™ Air-O-Cell(™) Analysis of Fungal Spores & Particulates (Methods MICRO-SOP-201, ASTM D7391)**

| | Particle Identification | Raw Count | (Count/m³) | % of Total | Interpretation Guideline |
|---|---|---|---|---|---|
| 371807155-0001 | Alternaria (Ulocladium) | - | - | - | |
| - | Ascospores | 3 | 70 | 17.2 | Acceptable |
| **Client Sample ID** | Aspergillus/Penicillium | 3 | 70 | 17.2 | Slightly Elevated |
| 180427-AOC001 | Basidiospores | 8 | 200 | 49.1 | Acceptable |
| | Bipolaris++ | - | - | - | |
| | Chaetomium | - | - | - | |
| **Location** | Cladosporium | 2 | 40 | 9.8 | Acceptable |
| Room 32 | Curvularia | 1 | 20 | 4.9 | Slightly Elevated |
| | Epicoccum | - | - | - | |
| **Sample Volume (L)** | Fusarium | - | - | - | |
| | Ganoderma | - | - | - | |
| 150 | Myxomycetes++ | 1* | 7* | 1.7 | Slightly Elevated |
| | Pithomyces++ | - | - | - | |
| **Sample Type** | Rust | - | - | - | |
| | Scopulariopsis/Microascus | - | - | - | |
| Inside | Stachybotrys/Memnoniella | - | - | - | |
| **Comments** | Unidentifiable Spores | - | - | - | |
| | Zygomycetes | - | - | - | |
| | Botrytis | - | - | - | |
| | **Total Fungi** | **18** | **407** | **100** | Acceptable |
| | Hyphal Fragment | 1 | 20 | - | Slightly Elevated |
| | Insect Fragment | - | - | - | |
| | Pollen | 1* | 7* | - | Acceptable |

Analytical Sensitivity 600x: **22** counts/cubic meter
Analytical Sensitivity 300x *: **7*** counts/cubic meter

Skin Fragments: **2** 1 to 4 (low to high)
Fibrous Particulate: **1** 1 to 4 (low to high)
Background: **2** 1 to 4 (low to high); 5 (overloaded)

Acceptable — Concentration at or below background
Slightly Elevated — Concentration above background
ELEVATED — Concentration 10X or more above background

Not commonly found growing indoors, spores likely come from outside.
Spores reported to be able to cause allergies in individuals.
Potential for mycotoxin production exists with these fungi.
These fungi are considered water damage indicators.

Bipolaris++ = Bipolaris / Drechslera / Exserohilum
Myxomycetes++ = Myxomycetes / Smut /

Initial report from: 04/27/2018 16:37:53

Vincent Iuzzolino

Vincent Iuzzolino, M.S., Laboratory Director
or Other Approved Signatory



For Information on the fungi listed in this report please visit the Resources section at www.emsl.com

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**Proj:** 02002-15 / Springfield Township Elementary School

**Spore Trap ASSESSMENTReport™ Air-O-Cell(™) Analysis of Fungal Spores & Particulates (Methods MICRO-SOP-201, ASTM D7391)**

| | Particle Identification | Raw Count | (Count/m³) | % of Total | Interpretation Guideline |
|---|---|---|---|---|---|
| 371807155-0002 | Alternaria (Ulocladium) | - | - | - | |
| | Ascospores | 1 | 20 | 2.8 | Acceptable |
| **Client Sample ID** | Aspergillus/Penicillium | 2 | 40 | 5.7 | Slightly Elevated |
| 180427-AOC002 | Basidiospores | 26 | 570 | 80.6 | Acceptable |
| | Bipolaris++ | - | - | - | |
| | Chaetomium | - | - | - | |
| **Location** | Cladosporium | 3 | 70 | 9.9 | Acceptable |
| Room 38 | Curvularia | - | - | - | |
| | Epicoccum | - | - | - | |
| **Sample Volume (L)** | Fusarium | - | - | - | |
| | Ganoderma | - | - | - | |
| 150 | Myxomycetes++ | 1* | 7* | 1 | Slightly Elevated |
| | Pithomyces++ | - | - | - | |
| **Sample Type** | Rust | - | - | - | |
| | Scopulariopsis/Microascus | - | - | - | |
| Inside | Stachybotrys/Memnoniella | - | - | - | |
| **Comments** | Unidentifiable Spores | - | - | - | |
| | Zygomycetes | - | - | - | |
| | Botrytis | - | - | - | |
| | **Total Fungi** | **33** | **707** | **100** | Acceptable |
| | Hyphal Fragment | - | - | - | |
| | Insect Fragment | - | - | - | |
| | Pollen | - | - | - | |

Analytical Sensitivity 600x: **22** counts/cubic meter
Analytical Sensitivity 300x *: **7*** counts/cubic meter

Skin Fragments: **2** 1 to 4 (low to high)
Fibrous Particulate: **1** 1 to 4 (low to high)
Background: **2** 1 to 4 (low to high); 5 (overloaded)

Acceptable — Concentration at or below background
Slightly Elevated — Concentration above background
ELEVATED — Concentration 10X or more above background

Not commonly found growing indoors, spores likely come from outside.
Spores reported to be able to cause allergies in individuals.
Potential for mycotoxin production exists with these fungi.
These fungi are considered water damage indicators.

Bipolaris++ = Bipolaris / Drechslera / Exserohilum
Myxomycetes++ = Myxomycetes / Smut /

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High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "*" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

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|---|---|---|---|---|---|
| 371807155-0003 | Alternaria (Ulocladium) | - | - | - | |
| | Ascospores | 1 | 20 | 12 | Acceptable |
| **Client Sample ID** | Aspergillus/Penicillium | - | - | - | |
| 180427-AOC003 | Basidiospores | 6 | 100 | 59.9 | Acceptable |
| | Bipolaris++ | - | - | - | |
| | Chaetomium | - | - | - | |
| **Location** | Cladosporium | - | - | - | |
| Library | Curvularia | - | - | - | |
| | Epicoccum | - | - | - | |
| **Sample Volume (L)** | Fusarium | - | - | - | |
| | Ganoderma | - | - | - | |
| 150 | Myxomycetes++ | 1* | 7* | 4.2 | Slightly Elevated |
| | Pithomyces++ | - | - | - | |
| **Sample Type** | Rust | - | - | - | |
| | Scopulariopsis/Microascus | - | - | - | |
| Inside | Stachybotrys/Memnoniella | - | - | - | |
| **Comments** | Unidentifiable Spores | 2 | 40 | 24 | Slightly Elevated |
| | Zygomycetes | - | - | - | |
| | Botrytis | - | - | - | |
| | **Total Fungi** | **10** | **167** | **100** | Acceptable |
| | Hyphal Fragment | 2 | 40 | - | Slightly Elevated |
| | Insect Fragment | - | - | - | |
| | Pollen | 1* | 7* | - | Acceptable |

Analytical Sensitivity 600x: **22** counts/cubic meter
Analytical Sensitivity 300x *: **7*** counts/cubic meter

Skin Fragments: **2** 1 to 4 (low to high)
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| | Particle Identification | Raw Count | (Count/m³) | % of Total | Interpretation Guideline |
|---|---|---|---|---|---|
| 371807155-0004 | Alternaria (Ulocladium) | - | - | - | |
| | Ascospores | 86 | 1700 | 18.6 | |
| **Client Sample ID** | Aspergillus/Penicillium | 1 | 20 | 0.2 | |
| 180427-AOC004 | Basidiospores | 347 | 6880 | 75.4 | |
| | Bipolaris++ | - | - | - | |
| | Chaetomium | - | - | - | |
| **Location** | Cladosporium | 23 | 460 | 5 | |
| Exterior- Back Courtyard | Curvularia | - | - | - | |
| | Epicoccum | - | - | - | |
| **Sample Volume (L)** | Fusarium | - | - | - | |
| | Ganoderma | - | - | - | |
| 165 | Myxomycetes++ | - | - | - | |
| | Pithomyces++ | - | - | - | |
| **Sample Type** | Rust | - | - | - | |
| | Scopulariopsis/Microascus | - | - | - | |
| Background | Stachybotrys/Memnoniella | - | - | - | |
| **Comments** | Unidentifiable Spores | - | - | - | |
| | Zygomycetes | - | - | - | |
| | Botrytis | 3 | 60 | 0.7 | |
| | **Total Fungi** | **460** | **9120** | **100** | |
| | Hyphal Fragment | - | - | - | |
| | Insect Fragment | - | - | - | |
| | Pollen | 2 | 40 | - | |

Analytical Sensitivity 600x: **20** counts/cubic meter
Analytical Sensitivity 300x *: **6*** counts/cubic meter

Skin Fragments: **1** 1 to 4 (low to high)
Fibrous Particulate: **1** 1 to 4 (low to high)
Background: **1** 1 to 4 (low to high); 5 (overloaded)

Not commonly found growing indoors, spores likely come from outside.
Spores reported to be able to cause allergies in individuals.
Potential for mycotoxin production exists with these fungi.
These fungi are considered water damage indicators.

Bipolaris++ = Bipolaris / Drechslera / Exserohilum
Myxomycetes++ = Myxomycetes / Smut /

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