

INSPECTRITE SERVICES INC

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Certified Mold Inspections
Mold Consultations & Remediation



LIMITED MOLD INSPECTION REPORT (SA16040404)

Report Prepared
Anthony Correctional Center
313 Anthony Center Drive
Property Inspected:
November 4, 2016
White Sulphur Sprgs, WV
Inspection and Report Analysis by:

A handwritten signature in black ink, appearing to read 'Roland S. Jones'. The signature is fluid and cursive.

Roland S. Jones, CMI, CMRC, CMIA, CIAQT
WV License # HI79710839-1006
Expiration: 10/31/2017

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DUNS #034123462; CAGE# 76JAO

@Mold Report Anthony Correction Center

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Credentials and Certification

The subject limited sampling mold inspection was conducted by Roland S. Jones, CMI, CMIA, CMRC, CIAQT, State Licensed Inspector for InspectRite Services, Inc. on November 4, 2016. We have in excess of forty years experience in the building construction industry, property, mold inspections and remediation. We are nationally certified as MICRO "Certified Mold Inspectors" "Certified Mold Remediation Contractors" and ESA "Certified Mold Inspector & Assessor." Additionally, we are members in good standing of the International Association of Certified Air Consultants. Hours of continuing education courses and research each year keeps us current with the latest techniques in mold inspection and remediation.

InspectRite Services strictly adheres to the standards set by the above organizations and practices strict moral, ethical and professional principles in our conduct of business.

Visual Inspection Process

The first step in properly evaluating a potential mold problem is the visual inspection. Throughout this phase, we are looking for three things: (1) evidence of previous moisture intrusion, (2) evidence of mold growth and (3) areas with a potential for future mold infestation.

The vacuum pump used for this air sampling is a Zefon® BioPump, Model 200 which is tested and calibrated periodically by the manufacturer. Prior to capturing any samples under this project, the BioPump was field calibrated by use of a TSI®, Model 4046 electronic calibrator flowmeter. This flowmeter has been factory calibrated at the TSI Flowmeter Calibration Facility (TSI9120254) using the procedures outlined in TSI 9010471 which maintains NIST traceability in accordance with TSI 9120254.

The numbers (test results) received from the AIHA laboratory alone do not give us enough information to accurately determine the level of contamination. Outside control samples are needed to identify the quantity of mold found in the natural environment. Indoor levels are normally found at approximately 50% of outside samples. Under certain conditions, an indoor level equal to the outdoor level (100%) may be tolerated. Any level above 100% normally indicates that these spores are being reproduced within the structure and the level is not simply a multiplication of the outdoor level.

An assessment is performed on the interior space. In the interior assessment, we are looking for mold growth and/or signs of water penetration/moisture intrusion that may eventually lead to mold growth. The results of these visual inspections will determine the extent of the testing that we undertake

Background Information

An order for a mold inspection on Buildings A & B was received and accordingly

was scheduled for a limited mold inspection on November 4, 2016. The inspector was met at the reception desk of the institution by very knowledgeable members of the maintenance department and given an extensive tour of the cited buildings.

Surface Sampling

Surface sampling is used to identify a mold type at a specific location. This technique is useful also in ruling out possible discolorations or staining that sometimes exhibit mold-like characteristics. Typically a cotton swab or bio-tab is used to collect a small quantity of material. In turn, this is analyzed with a fungi screen, culture analysis or microscopic examination. *SanAir Technologies Laboratory*, an AIHA-accredited environmental microbiology laboratory, performs requisite testing procedures and returns the results to InspectRite for interpretation in conjunction with the on-site inspection.

Air Sampling Procedure

Air sampling is the most effective method for determining whether a mold infestation is potentially creating an unsafe living/working environment. Our testing procedure incorporates the Air-O-Cell® cassette. Air quality is tested by drawing 15 liters of air per minute and impacting the airborne particles over a glass substrate. Typically, the process runs for 5 minutes producing a sample size of 75 liters. Next, the cassette is sent to an AIHA-accredited laboratory where the spores are microscopically identified and counted.

Importance of Inspector's Observations and Investigations

One cannot discount the benefit of the tools available for mold inspections such as bio-tape collectors and air sampling cassettes. However, years of experience in the field of mold inspection has taught us that no tool compares to the senses of the knowledgeable Certified Mold Inspector. Repeatedly, we have observed the conclusions drawn from the on-site inspector being far superior to the results obtained from sampling. Whereas, the results of the air and direct-contact sampling identify the genus of mold and the levels of each type of mold in the specimens gathered, these results should only be used in conjunction with the careful observations of the on-site inspector.

There are laboratories who claim that they can render final conclusions as to the condition of a structure from the results of the mold sampling. We never use these laboratories. Our request to our labs is quite simple. Identify the genus of mold present and quantify the levels of each. The responsibility of arriving at a conclusion as to the mold contamination in any structure is that of a qualified mold inspector who can explain in easy to understand terms how the findings of the laboratory analysis relate to the conditions which he/she has observed on site. From this combination the final report is prepared. Frequently, the most minute piece of evidence found at the property causes the inspector to conduct additional investigation, the result of which is a conclusion which could not have been supported solely by the report of the specimens collected.

Subject-Property Location

The subject property is located at 313 Anthony Center Drive in White Sulphur Springs, West Virginia .

“Limited Mold Inspection” Defined

A limited mold inspection is used solely to determine whether or not a mold contamination problem exists in a given structure. It is not intended to locate the source(s) of any contamination if such is found on the property. The cost of sampling to determine the source(s) of mold contamination should not be expended until a limited sampling has determined whether or not a problem exists. Only then are additional inspection costs to find sources of the problem justified.

Site Observations

Building A is a metal-shelled/masonry building with a metal roof. Building B is of masonry construction with an asphalt-shingled roof.

It appears that in an attempt to reduce condensation forming on the underside of the metal roof in Building A, a spray-on application of unidentified insulating material had been applied to the underside of the metal roof in the past. Much of this material has separated from the metal roof and fallen on the ceiling once again exposing the underside of the metal roof to the formation of condensation when the dew point is reached. In other areas, the metal HVAC ductwork appears to be producing condensation on the surface as a result of the conflicting temperatures between the inside and outside of the metal duct. The condensation produced from both of these sources is collected on the ceiling material providing an atmosphere conducive to mold growth.

On the described tour of Buildings A & B, numerous water stains on ceiling tiles were observed, some of which had been painted over with a latex-type paint. Other stains which had been coated with paint had blistered through the paint exposing what appeared to be heavy fungi growth. Some of these ceiling tiles still contained moisture and were damp to the touch.

Interpreting Your Laboratory Results

Toxic molds have received increasing attention as the evidence increases as to their interaction with the human body. Through an inspection we were seeking out mold count levels which were elevated beyond that found in the natural environment. Likewise, we were looking for the underlying cause of the moisture problem(s) which permits mold spores to flourish.

Below is a brief description of the terms commonly found in your report:

- ▲ Volume (m) Volume is provided in cubic meters. 5 minutes at 15 liter per minute yields a 75 liter sample. At the discretion of the inspector 10 minutes operation at 15 liter per minute yielding 150 liters may be utilized.
- ▲ "Raw Count" This count represents the actual total number of mold spores counted by the laboratory technician microscopically.
- ▲ "Spores/m³" This number is determined by multiplying the total spores by a conversion factor representing the volume of air samples.
- ▲ Please refer to your *SanAir Technologies Laboratory* report which is attached for a detailed explanation of other terms.

Analysis of Laboratory Results

Bldg. A, Dorm #6:

Cladosporium in this specimen was found to be **67** spores/m³ as compared to an average of **40** spores/m³ in the outdoor specimens. At **168%** of the outdoor (baseline) level for this spore, this is a moderately high level of mold contamination. Other mold species were at acceptable levels or were not present in this specimen.

Bldg. A, Dorm #5:

Mold spores found in this specimen were within acceptable ranges; however, **Ascospores** were present in this specimen but not in the outdoor specimens which normally indicates that these spores are reproducing and growing within the area.

Bldg. A, Dorm #4:

Mold spores found in this specimen were within acceptable ranges; however, **Curvularia** and **Pithomyces** mold spores were found in this specimen but not in the outdoor specimens. This normally indicates that these spores are reproducing and growing within the structure and the levels are not simply an amplification of outdoor levels. This is further confirmed by the presence of **Hyphae** in this specimen.

Bldg. A, B Hallway:

Only **Basidiospores** within a normal range were captured in the air sampling in this area. However, these spores contained **Hyphae** indicating expansion and growth.

Bldg. A, C Hallway:

Polythrincium mold spores in this specimen were found to be **100%** of the average in the outdoor specimens, which is **a moderately high level of mold contamination**. **Curvularia** was found in this specimen but not in the outdoor specimen, indicating that this specie is growing within the structure. All other mold spores were at acceptable levels or were not present in this specimen. **Hyphae** was present indicating growth within the area.

Bldg. A, Dorm #1:

Aspergillus/Penicillium mold spores were found in this specimen but not in the outdoor (baseline) specimens. Other mold species were at acceptable levels.

Bldg. A, Dorm #3:

All mold spores present in this specimen were within normal ranges.

Bldg. B, Dorm #7:

All mold spores present in this specimen were within normal ranges

Bldg. B, Dorm #8:

All mold spores present were at acceptable levels.

DIRECT-CONTACT SAMPLING

Direct-contact samples are used to determine whether suspected stains are actually mold growth or simply stains that resemble mold growth. Direct-contact specimens are collected to identify mold spores that do not normally appear in air sampling and in other instances to confirm the results of air sampling.

Building A, Hallway B Ceiling:

This contact specimen confirms the presence of a heavy concentration of **Stachybotrys** mold spores. The presence of **Stachybotrys** warrants special precautions as this mold is adverse to human health whether ingested, inhaled or in contact with the skin. Please refer to Pages 12 & 13 of this report for more information.

Building A, Unit Sally Port Ceiling:

This contact specimen confirms the presence of **Cladosporium** and **Stachybotrys** in the ceiling tile. Again, the presence of **Stachybotrys** warrants special considerations and caution.

Building A, Hallway A Ceiling:

This specimen confirms the heavy concentration of **Stachybotrys** in the ceiling tiles. The presence of any level of **Stachybotrys** warrants special consideration and extreme caution when in the presence of humans.

Mold Spores Identification and Their Potential Health Affects

Penicillium/Aspergillus is commonly found in soil and house dust. It grows in water damaged buildings on wallpaper, wallpaper glue, decaying fabrics, carpeting and most chipboards and behind paint. Found in 200 species, **Penicillium/Aspergillus** spores are routinely found where water intrusion has occurred at some point in time. These spores have been associated with Type I allergies & Type III hypersensitivities, allergic bronchopulmonary aspergillosis, aspergillus sinusitis, and advanced aspergillosis.

Chaetomium mold spores are normally found indoors in paper, sheetrock and wallpaper. It has the potential for Type I allergies, as exhibited in asthma and hay fever symptoms. Potential toxins produced: Chaetomin, Chaetoglobosins A, B, D & F.

Cladosporium spores are found in more than 30 species and are causative agents for skin lesions, keratitis, onychomycosis, sinusitis and pulmonary infections. Found indoors in fiberglass ductboard, paint, textiles. Commonly found in water-damaged structures. Potential toxins: Cladosporin, Emodin.

Nigrospora is commonly found outdoors on grass, seeds and soil. Potential for Type I allergies.

Pithomyces are commonly found on paper. High moisture levels are required for germination. Potential toxins: Cyclopeptide, Sporidesmin, Sporidesmolides.

(continued on following page)

Stachybotrys is normally found indoors in ceiling tiles, gypsum board, insulation backing, sheetrock and wall paper. It possesses the potential for Type I allergies such as hayfever and asthma. This spore is historically considered a threat to human health in that it produces mycotoxins which can cause adverse effects to a human by inhalation, ingestion or skin exposure. Potential toxins: Cyclosporins, Macrocyclic trichothecenes, stachybotryolactone.

Torula mold spores are found on cellulose containing materials such as jute, old sacking, wicker, straw baskets, wood and paper. Potential for Type I allergies.

Spegazzinia mold spores are known to exist in at least 6 species. It routinely travels as a dry spore on the wind or air currents. This spore is rarely ever found on indoor environmental surfaces. Natural habitat: plants & soil.

Ascospores are found everywhere in the outdoor environment and are the results of sexual reproduction and are found in a sac-like structure. Members of the Phylum Ascomycota family.

Basidiospores are commonly found on wood products and travel on wind currents. Potential for Type I allergies and Type III hypersensitivity pneumonitis. Belonging to the family which includes mushrooms, shelf fungi, rusts and smuts.

Coprinus natural habitat includes wood, dung, leaf litter and soil. Potential toxin includes Coprine.

Curvularia mold spores are commonly found indoors on paper and wood products. Potential for Type I allergies and a common cause of allergic fungal sinusitis. Potential toxins produced: Cytochalasin B.

Symptoms of Mold Exposure Most Commonly Reported

Common Symptoms of Mold Exposure— Short Term:

- ▲ Sneezing
- ▲ Itching Skin
- ▲ Redness and Skin Irritation
- ▲ Watery Eyes
- ▲ Itching Eyes
- ▲ Headache

Advanced Symptoms of Mold Exposure - Extended Period:

- ▲ Constant Headaches
- ▲ Nose Bleeds
- ▲ Feelings of Constant Fatigue
- ▲ Breathing Disorders
- ▲ Coughing up Blood or Black looking Debris
- ▲ Nausea
- ▲ Diarrhea
- ▲ Vomiting
- ▲ Loss of Appetite
- ▲ Weight Loss
- ▲ Hair Loss
- ▲ Skin Rashes
- ▲ Open Sores on the Skin
- ▲ Memory Loss—Short Term
- ▲ Neurological & Nervous Disorders
- ▲ Sexual Dysfunction
- ▲ Swollen Glands in the Neck Area and Armpits
- ▲ Sudden Asthma Attacks or Breathing Disorders
- ▲ Ear Infections and Pain
- ▲ Chronic Sinus Infections
- ▲ Chronic Bronchitis
- ▲ Pain in Joints and Muscles

Late Symptoms of Mold Exposure—High levels:

- ▲ Blindness
- ▲ Brain Damage
- ▲ Long Term Memory Loss
- ▲ Bleeding Lungs
- ▲ Cancer
- ▲ Death

DISCLAIMER:

The above information is not intended to be interpreted as health advice or specifications since mold spores cause different reactions from person to person. Many substances and factors, including but not limited to the following, may complicate matters even more: level of dust mite and roach allergens, volatile organic compounds, gram negative bacteria, individual sensitivity to allergens, emotional stress and general health. If you feel ill, consult your doctor.

Conclusions

Building A dorm areas contain **Aspergillus/Penicillium, Cladosporium, Ascospores, Curvularia** and **Pithomyces**. The level of **Cladosporium** is moderately high. **Ascospores, Curvularie** and **Pithomyces** are not found outdoors in either of the specimens taken, therefore, no numerical comparison level can be determined. However, the very presence of these mold spores within the structure with **Hyphae** is indicative of interior mold growth.

In the air specimens from the hallways of Building A, **Polythrincium** can be measured and is found at a moderately high level. Others had no outdoor presence and must be assumed to have growth patterns (colonization) within the structure.

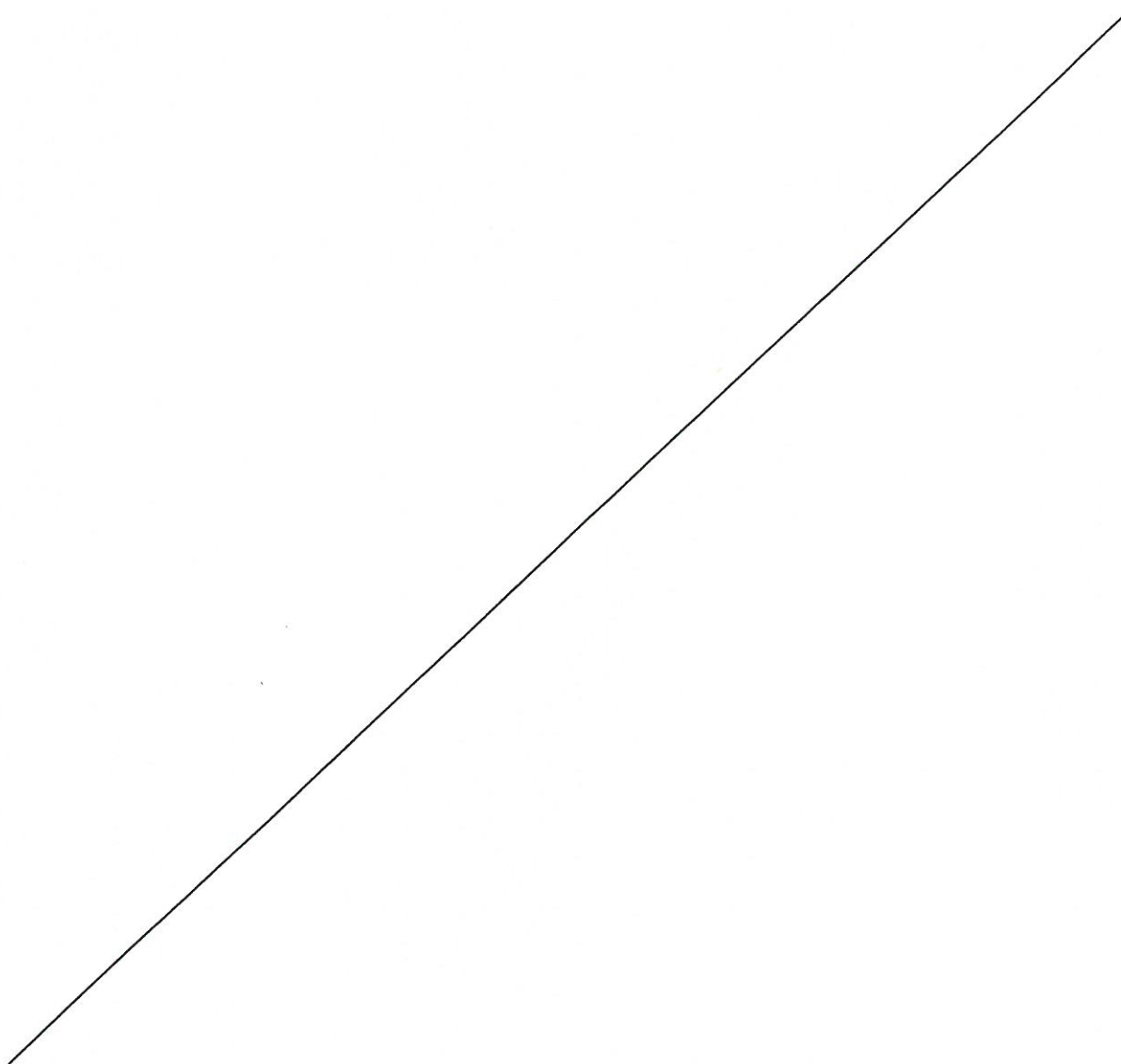
The air sampling data notwithstanding, the direct-contact specimens reveal more relevant information. The hallways in this building have been subjected to heavy water intrusion over a long period of time. The presence of **Stachybotrys** indicates

that it has satisfactorily competed with **Apergillus/Penicillium** mold spores which is commonly found in water intrusion areas and become dominant in the area. **Stachybotrys** is a heavy, sticky mold that is not normally captured in air sampling. It does not travel well on interior air currents. Accordingly, none of the air samples captured in the hallway of Building A contained **Stachybotrys** although the direct-contact specimen verify heavy concentrations at the tested locations. Frequently, property maintenance will discard ceiling material containing **Stachybotrys** only to find it promptly establishing a growth pattern on a nearby tile. The fallacy of this corrective action is that the air in the area above the ceiling is laden with mold spores. Subsequently, they settle on another area of the ceiling and begin to grow and expand. Without extracting the mold-filled air in contaminated areas, nothing constructive has been accomplished.

The painting over what appears to be mold is not effective and can be counter productive. Neither Kilz® or any type of paint has the capacity to abate mold growth. Kilz is a sealant for water stains which enables paint to be applied without the stain showing through the paint. The application of latex paint (which has a water-base) only adds fuel (water) to the mold growth cycle.

Quite frequently, we have found that the removal of contaminated ceiling material only serves to spread the mold contamination over an even larger area. Any brushing of the area or even movement of the material upon which it is growing can release thousands of mold spores into the air to create growth in other areas.

All sources of water infiltration into Building A must be abated if it is ever to be rendered mold free. If, in fact, all of the water problem flows from the roof condensation then measures must be taken to reduce the humidity level that generates that condensation. Obviously, if roof leaks are present this water intrusion must be completely abated. Mold can only reproduce and grow in areas where high humidity is present, consequently, removal of the moisture is the initial key to mold abatement.



Recommendations

Once the water intrusion problem is corrected, full mold remediation of Building A will be necessary in accordance with national standards IICRC S520

It is imperative that triple-filtering air scrubbers of at least 2,000 cfm capacity be operated continually in the areas being remediated.

Containment curtains must be installed around areas of remediation to prevent further or cross contamination with negative pressure maintained in the work areas.

The loose insulating material must be extracted from above the ceiling areas and discarded. All ceiling material exhibiting signs of present or prior moisture intrusion must be removed, bagged, sealed and discarded.

If yet-to-be-conducted investigations indicate the feasibility of reducing and maintaining a satisfactory relative humidity in the attic space, compact commercial dehumidifiers should be installed in the attic space.

All areas below the ceiling (living areas), including ceilings, sidewalls, floors must be HEPA vacuumed to remove viable mold spores, treated with fungicide, hand wiped and re-vacuumed to remove non-viable mold spores.

The HVAC system must be cleaned and treated with fungicide to abate the spread of mold spores through the heating/air conditioning system.

IMPORTANT NOTE: The presence of the *Stachybotrys* mold specie requires extraordinary caution in the remediation process. National protocol for mold remediation requires that although the reduction of every specie of mold to a level no greater than the outdoor level recorded at the same time is acceptable, such is not applicable where **Stachybotrys** is present. It is imperative that no single microscopic spore be present in any area where humans reside. at the conclusion of remediation. Obviously, this speaks to the possible health hazards associated with contamination by **Stachybotrys**

Included by Reference

All laboratory reports by SanAir Technologies Laboratory, Inc. are made a part of this report whether or not reference is made to a specific report or part therefore. The narrative herein, plus all laboratory reports and photographs (if any) make up the complete report as submitted by InspectRite Services, Inc. and must be considered as a whole..

Included by Reference

As with all similar inspections, this limited sampling mold inspection is a capture of conditions on the subject property on the date of the inspection. Accordingly, conditions and results from those conditions may change at any time. Therefore, this report may not accurately reflect environmental conditions on this property at any future date.

In the event you wish to have InspectRite provide further investigation as to corrective moisture measures or wish a certified mold remediation quote on the described work, please contact the undersigned.

. We carry E & O and liability insurance in the amount of \$2,000,000

InspectRite Services, Inc. are nationally certified Mold Inspectors and Mold Remediation Contractors.

Should there be questions or issues, please do not hesitate to contact the undersigned inspector. We greatly appreciate the opportunity to be of service. and trust that this report will be helpful in your decision-making process.

Sincerely,

InspectRite Services, Inc.



Roland S. Jones, CMI, CMIA, CMRC, CIAQT

November 10, 2016



SanAir Technologies Laboratory

Analysis Report

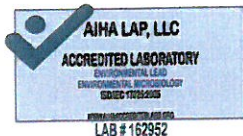
prepared for

InspectRite Services, Inc.

Report Date: 11/7/2016
Project Name: Anthony Correctional
SanAir ID#: 16040404



NVLAP LAB CODE 200870-0



Certification # 652931



License # LAB0166



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Name: InspectRite Services, Inc.
Address: 306 Ellison Ave
 Beckley, WV 25801

Project Number:
P.O. Number:
Project Name: Anthony Correctional

Collected Date: 11/4/2016
Received Date: 11/7/2016 9:10:00 AM
Report Date: 11/7/2016 1:41:10 PM
Analyst: Tucker, Crystal

Air Cassette Analysis

SanAir ID Number	16040404-001	16040404-002	16040404-003	16040404-004
Analysis Using STL:	105C	105C	105C	105C
Sample Number	23560147	23558435	23560157	23558637
Sample Identification	Outdoors - Front	Dorm. #7, Bldg B	Dorm. #6, Bldg A	Dorm. #5, Bldg A
Sample Type	Air Cassette - Air-O-Cell	Air Cassette - Air-O-Cell	Air Cassette - Air-O-Cell	Air Cassette - Air-O-Cell
Volume	75 Liters	75 Liters	75 Liters	75 Liters
Analytical Sensitivity	13 Count/M ³	13 Count/M ³	13 Count/M ³	13 Count/M ³
Background Density	1+	1+	1+	2+
Other				
Mycelial Fragments				
Fungal Identification				
Alternaria species	Raw Count: 1	Raw Count: 15	Raw Count: 20	Raw Count: 4
Ascospores	63	2	5	19
Aspergillus/Penicillium				
Basidiospores	259	88	80	19
Cladosporium species	3	12	20	2
Curvularia species				
Epicoccum species	1			
Nigrospora species				
Pithomyces species				
Polythrincium species	1			
Rusts				
Smuts/Myxomycetes				
Total	328	17	25	28
				373
				373
				11
				14
				68
				7

ND = None Detected. Blank spaces indicate no spores detected.

Signature: *Crystal Tucker* Date: 11/7/2016
 Reviewed: *S. Claire Macdonald* Date: 11/7/2016

Air Cassette Analysis

SanAir ID Number	16040404-005	16040404-006	16040404-007	16040404-008
Analysis Using STL:	105C	105C	105C	105C
Sample Number	23560170	23560165	23560154	23557541
Sample Identification	Dorm. #4, Bldg A	C Hallway, Bldg A	B Hallway, Bldg A	Dorm #8, Bldg B
Sample Type	Air Cassette - Air-O-Cell	Air Cassette - Air-O-Cell	Air Cassette - Air-O-Cell	Air Cassette - Air-O-Cell
Volume	75 Liters	75 Liters	75 Liters	75 Liters
Analytical Sensitivity	13 Count/M ³	13 Count/M ³	13 Count/M ³	13 Count/M ³
Background Density	2+	2+	2	2
Other				
Mycelial Fragments	Raw Count: 3	Raw Count: 1	Raw Count: 1	Raw Count: %
	Count/M ³ : 40	Count/M ³ : 13	Count/M ³ : 13	Count/M ³ : %
	%: n/a	%: n/a	%: n/a	%: n/a
Fungal Identification				
Alternaria species	Raw Count: 2	Raw Count: 4	Raw Count: 5	Raw Count: 3
Ascospores	Count/M ³ : 27	Count/M ³ : 53	Count/M ³ : 67	Count/M ³ : 40
Aspergillus/Penicillium	%: 15	%: 20	%: 50	%: 12
Basidiospores	Raw Count: 6	Raw Count: 12	Raw Count: 5	Raw Count: 18
Cladosporium species	Count/M ³ : 80	Count/M ³ : 160	Count/M ³ : 67	Count/M ³ : 240
Curvularia species	%: 46	%: 60	%: 50	%: 75
Epicoccum species	Raw Count: 2	Raw Count: 1	Raw Count: 5	Raw Count: 18
Nigrospora species	Count/M ³ : 27	Count/M ³ : 13	Count/M ³ : 13	Count/M ³ : 240
Pithomyces species	%: 15	%: 5	%: 5	%: 75
Polythrincium species	Raw Count: 1	Raw Count: 1	Raw Count: 13	Raw Count: 3
Rusts	Count/M ³ : 13	Count/M ³ : 13	Count/M ³ : 27	Count/M ³ : 40
Smuts/Myxomycetes	%: 8	%: 10	%: 10	%: 12
Total	Raw Count: 13	Raw Count: 20	Raw Count: 10	Raw Count: 24
	Count/M ³ : 173	Count/M ³ : 267	Count/M ³ : 133	Count/M ³ : 320

ND = None Detected. Blank spaces indicate no spores detected.

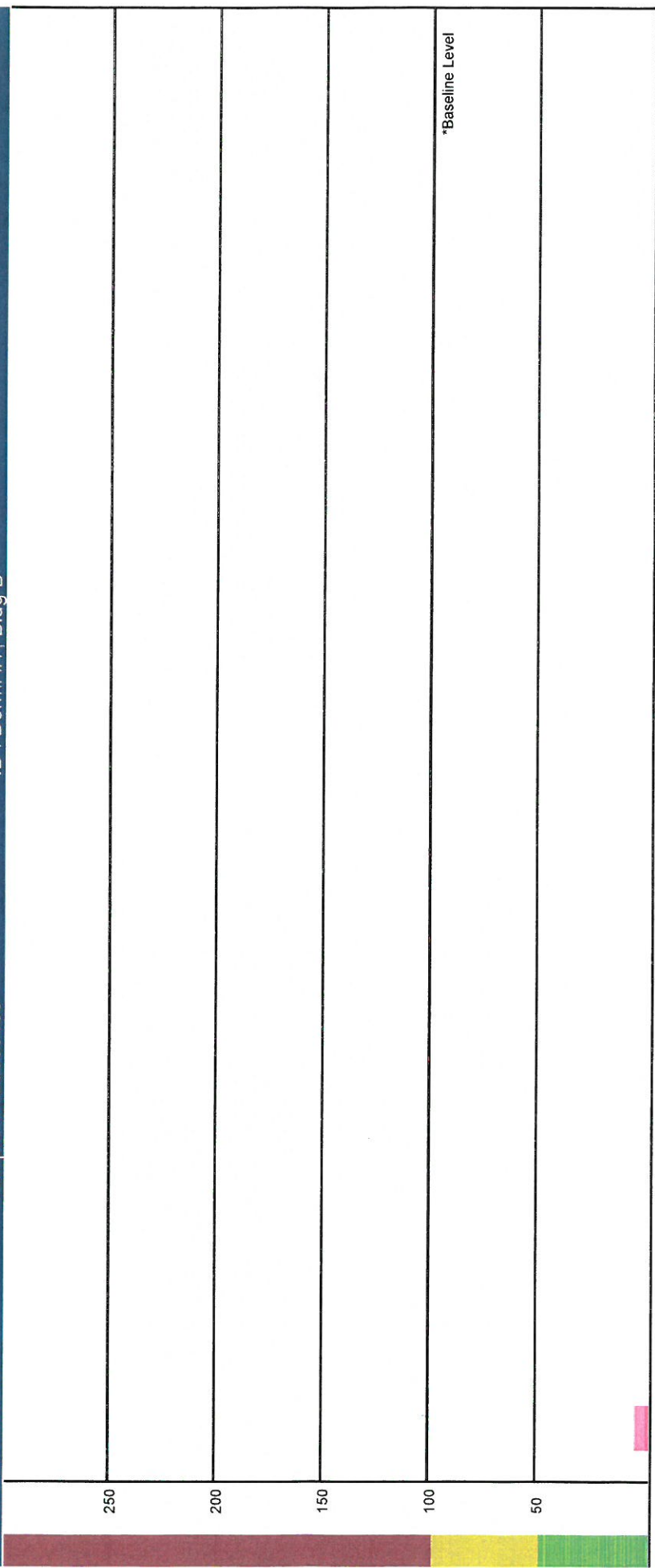
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 Analyst: Tucker, Crystal

Air Cassette Analysis - Spores % of Outside Air

SanAir ID : 16040404-2 Sample # : 23558435 ID : Dorm. #7, Bldg B



5%
A

- Probable mold amplification
- Possible mold amplification
- No evidence of mold amplification

A Basidiospores

*The Baseline Level (100%) represents the average baseline sample counts. Counts above the baseline may indicate higher than expected levels of a given result.

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Name: InspectRite Services, Inc.
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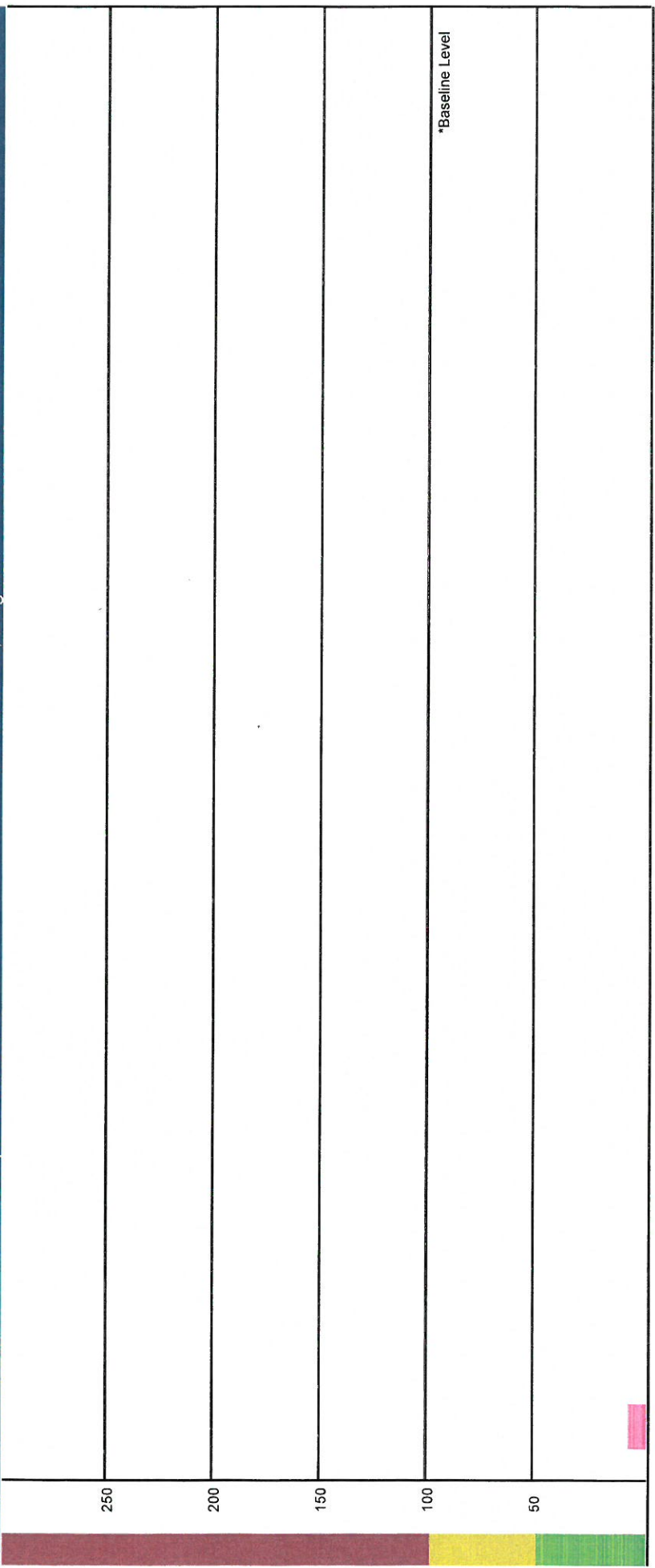
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16040404
 FINAL REPORT

Air Cassette Analysis - Spores % of Outside Air

SanAir ID : 16040404-3 Sample # : 23560157 ID : Dorm. #6, Bldg A



7% A

- Probable mold amplification
- Possible mold amplification
- No evidence of mold amplification

A Basidiospores

*The Baseline Level (100%) represents the average baseline sample counts. Counts above the baseline may indicate higher than expected levels of a given result.

Name: InspectRite Services, Inc.
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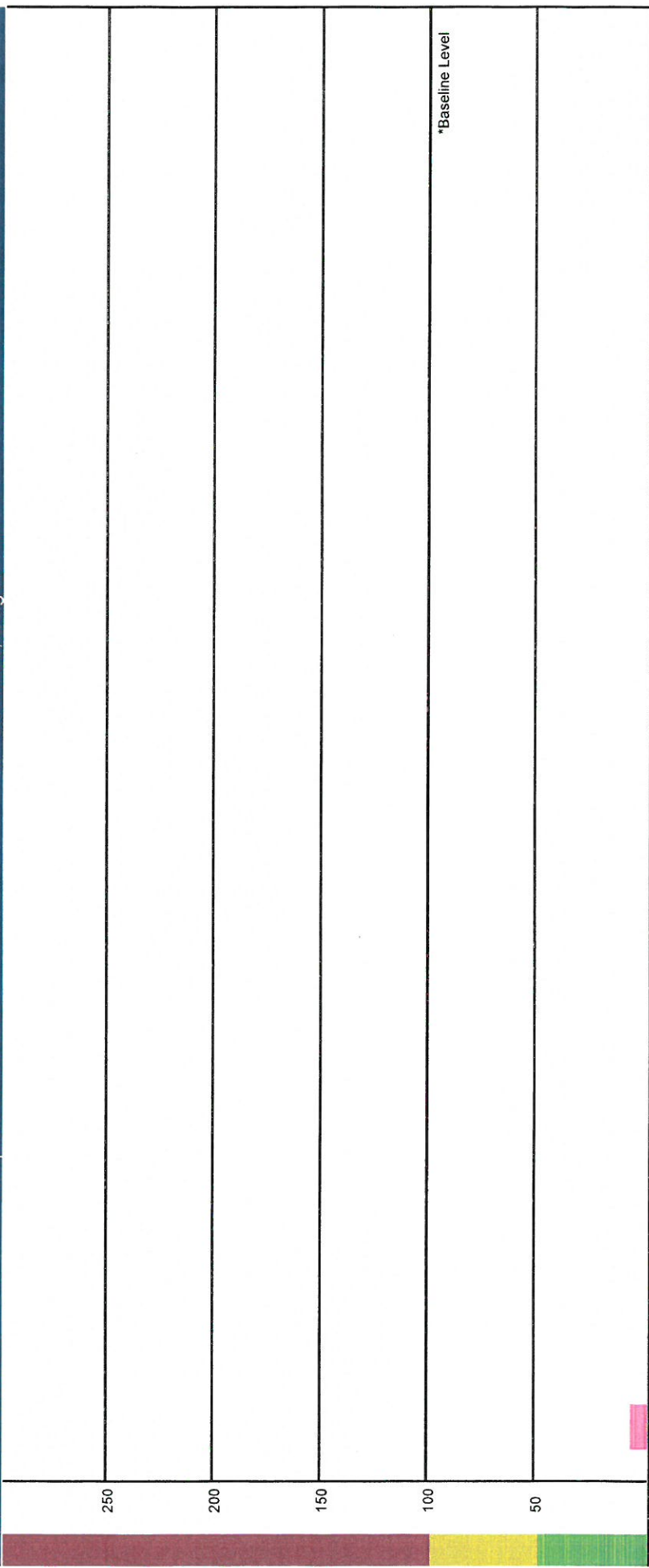
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 FINAL REPORT

Air Cassette Analysis - Spores % of Outside Air

SanAir ID : 16040404-4 Sample # : 23558637 ID : Dorm. #5, Bldg A



7%
A

Probable mold amplification
 Possible mold amplification
 No evidence of mold amplification

A Basidiospores

*The Baseline Level (100%) represents the average baseline sample counts. Counts above the baseline may indicate higher than expected levels of a given result.

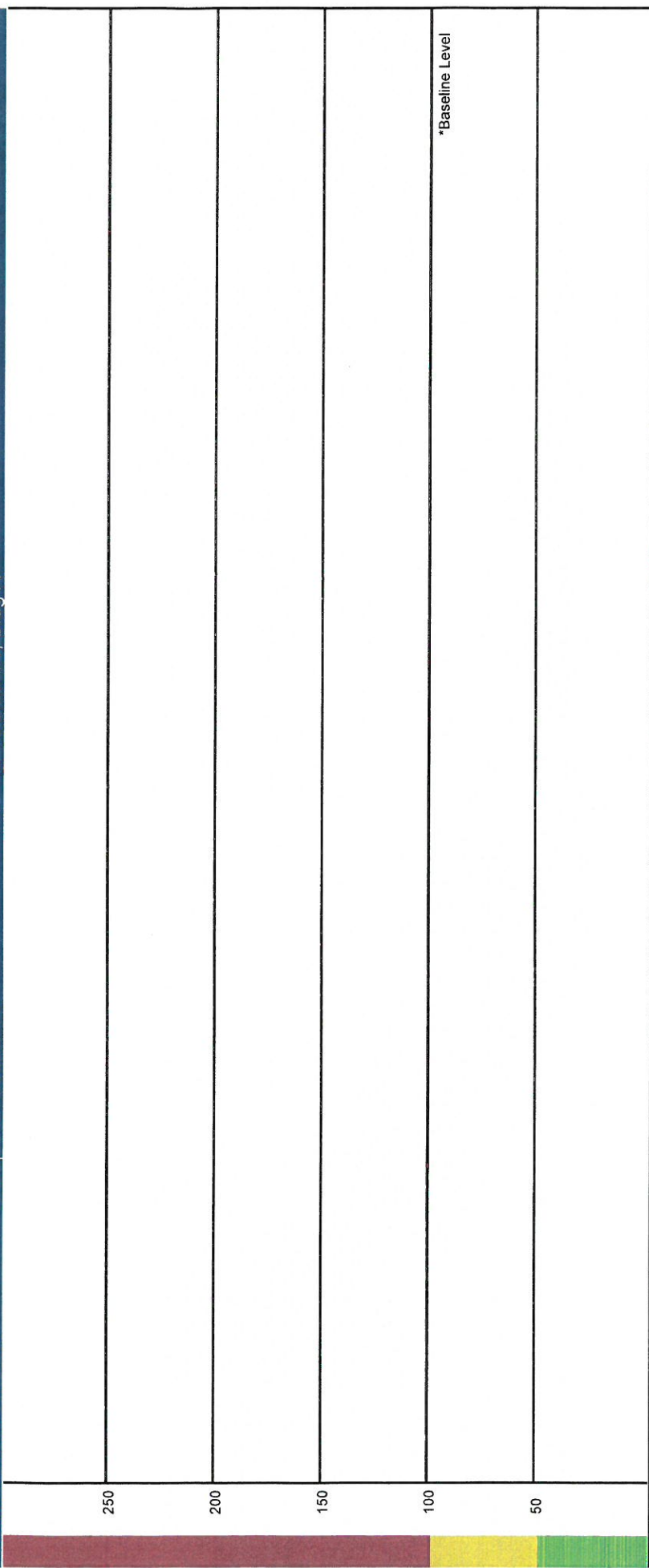
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Address: 306 Ellison Ave
 Beckley, WV 25801

Project Number:
P.O. Number:
Project Name: Anthony Correctional

Collected Date: 11/4/2016
Received Date: 11/7/2016 9:10:00 AM
Report Date: 11/7/2016 1:41:10 PM
Analyst: Tucker, Crystal

Air Cassette Analysis - Spores % of Outside Air

SanAir ID : 16040404-5 Sample #: 23560170 ID : Dorm. #4, Bldg A



*Baseline Level

Probable mold amplification
 Possible mold amplification
 No evidence of mold amplification

No organisms to graph. Normalized organism counts may not have exceeded the organism thresholds, or there were no organism counts for this sample. Please refer to the analysis report.

*The Baseline Level (100%) represents the average baseline sample counts. Counts above the baseline may indicate higher than expected levels of a given result.

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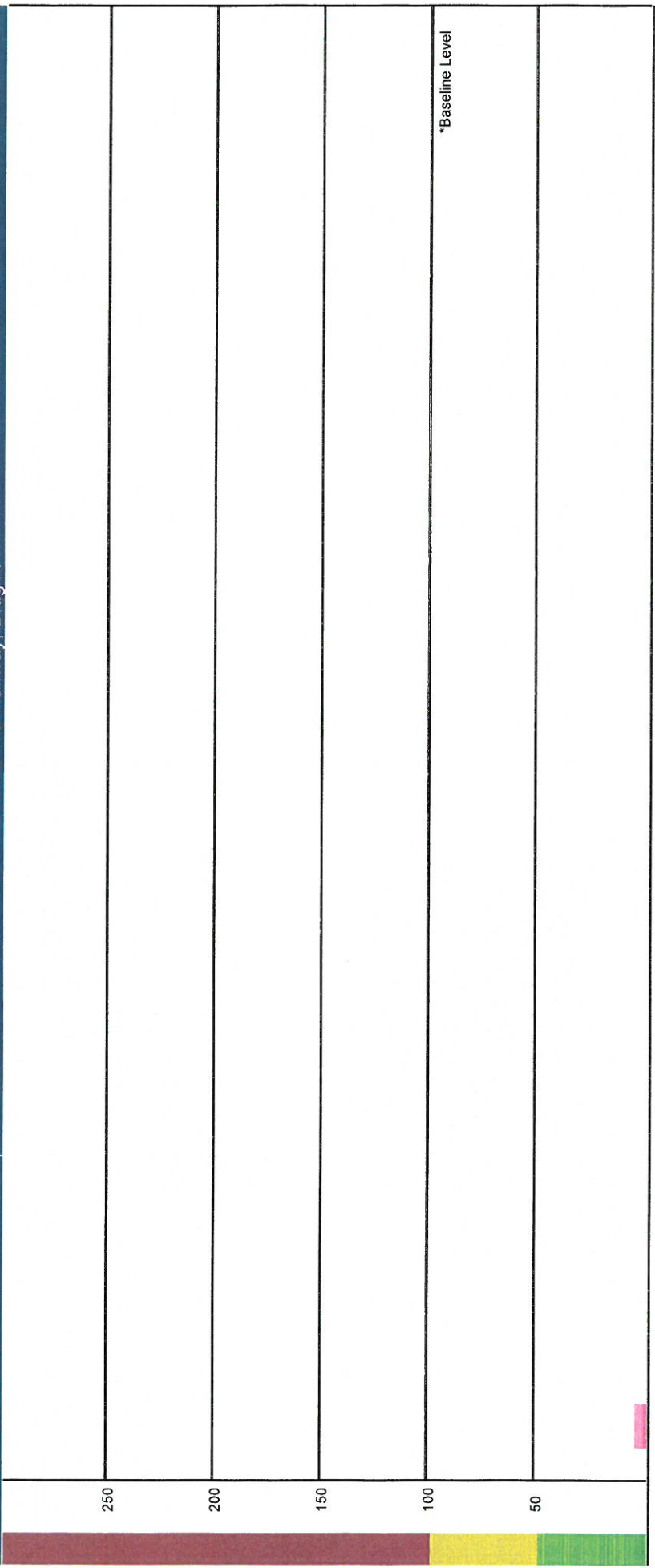
Project Number:
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Analyst: Tucker, Crystal

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Air Cassette Analysis - Spores % of Outside Air

SanAir ID : 16040404-6 Sample # : 23560165 ID : C Hallway, Bldg A



Probable mold amplification

Possible mold amplification

No evidence of mold amplification

A Basidiospores

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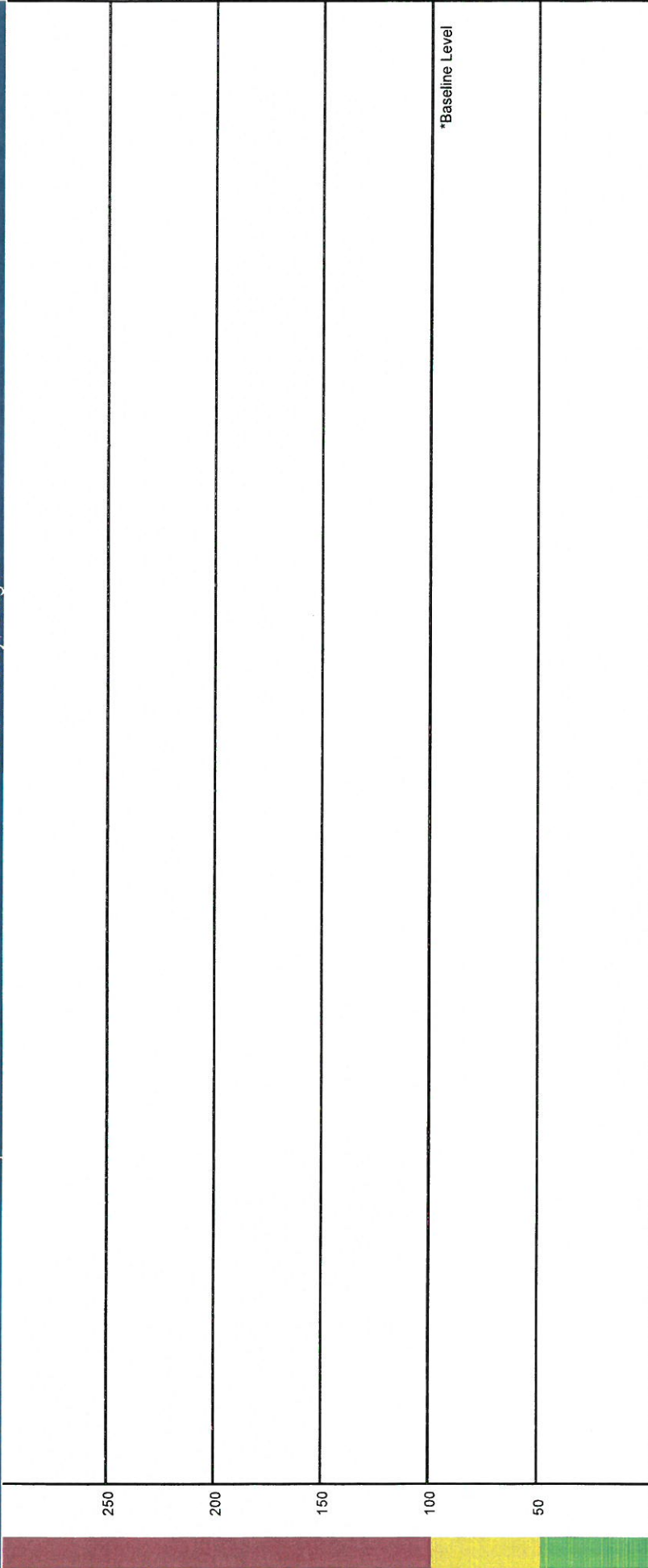
Project Number:
P.O. Number:
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Report Date: 11/7/2016 1:41:10 PM
Analyst: Tucker, Crystal

Air Cassette Analysis - Spores % of Outside Air

SanAir ID : 16040404-7 Sample #: 23560154

ID : B Hallway, Bldg A



Probable mold amplification
 Possible mold amplification
 No evidence of mold amplification

No organisms to graph. Normalized organism counts may not have exceeded the organism thresholds, or there were no organism counts for this sample. Please refer to the analysis report.

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 Analyst: Tucker, Crystal

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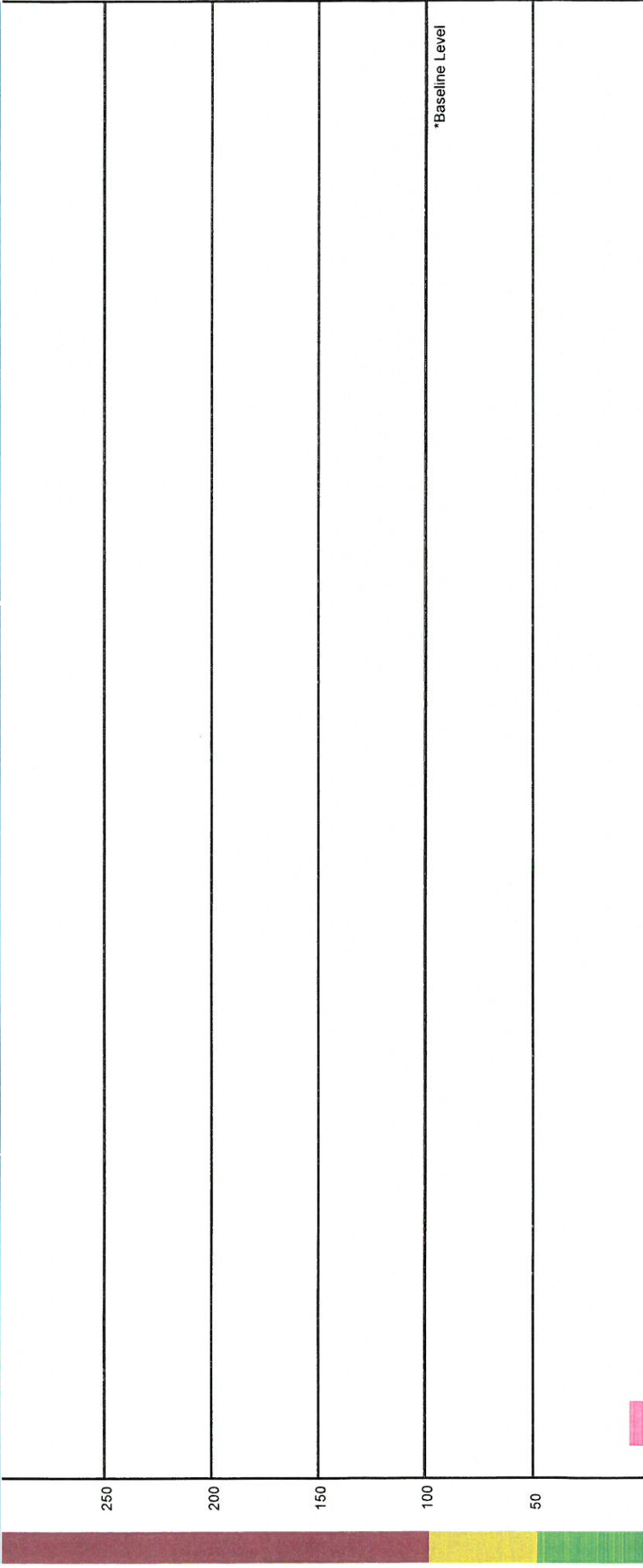
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Air Cassette Analysis - Spores % of Outside Air

SanAir ID : 16040404-8 Sample # : 23557541 ID : Dorm #8, Bldg B



7%
A

Legend:

- Probable mold amplification
- Possible mold amplification
- No evidence of mold amplification

Legend:

- Basidiospores

*The Baseline Level (100%) represents the average baseline sample counts. Counts above the baseline may indicate higher than expected levels of a given result.

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Analyst: Tucker, Crystal

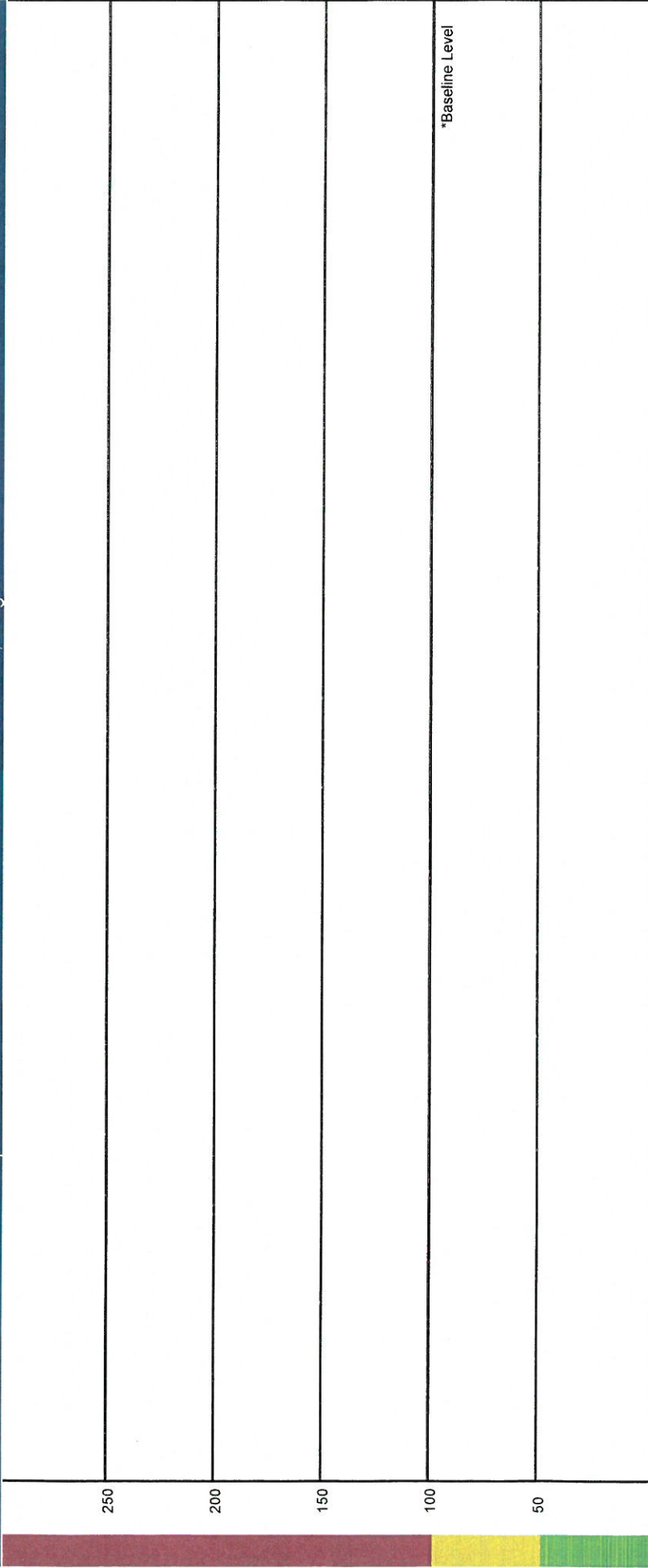
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Air Cassette Analysis - Spores % of Outside Air

SanAir ID : 16040404-9 Sample # : 23560173

ID : Dorm #1, Bldg A



Probable mold amplification
 Possible mold amplification
 No evidence of mold amplification

No organisms to graph. Normalized organism counts may not have exceeded the organism thresholds, or there were no organism counts for this sample. Please refer to the analysis report.

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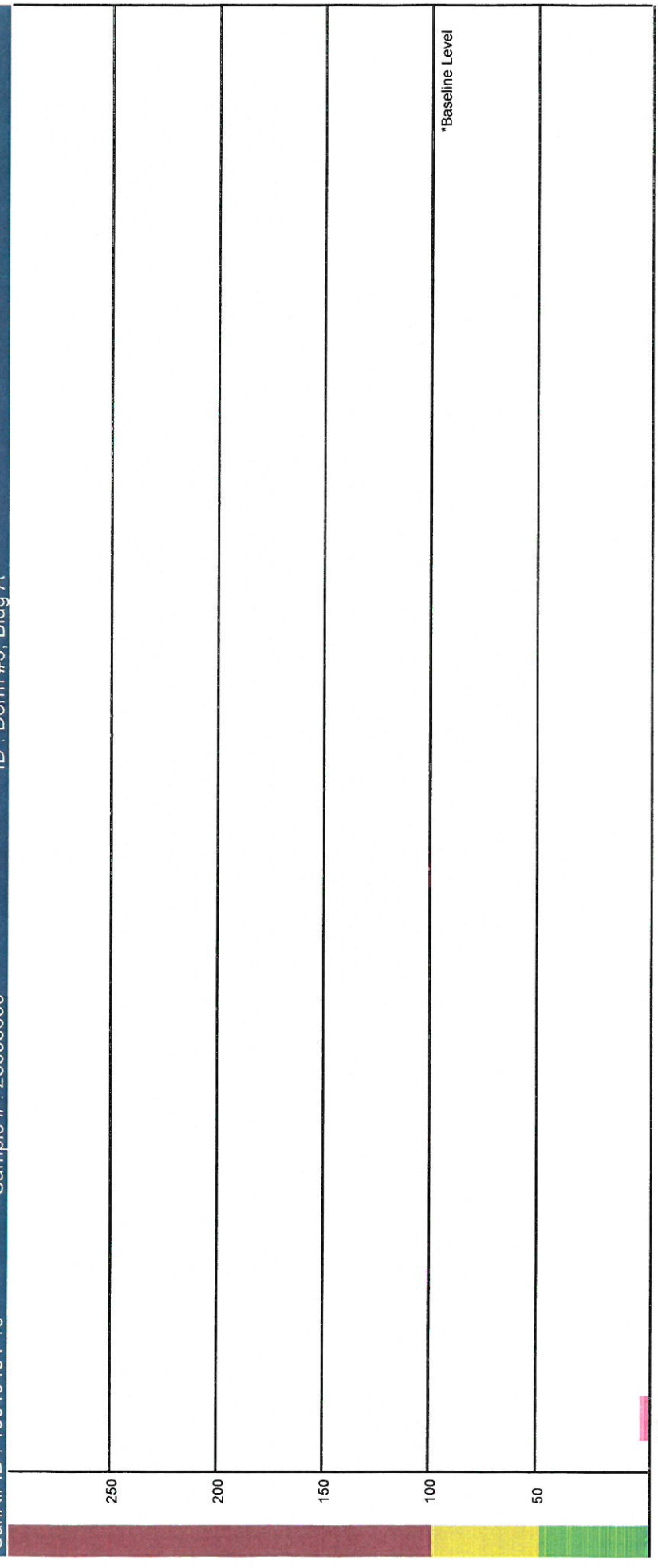
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Analyst: Tucker, Crystal

Air Cassette Analysis - Spores % of Outside Air

SanAir ID : 16040404-10 Sample # : 23558650 ID : Dorm #3, Bldg A



Legend:

- Probable mold amplification
- Possible mold amplification
- No evidence of mold amplification

Basidiospores

*The Baseline Level (100%) represents the average baseline sample counts. Counts above the baseline may indicate higher than expected levels of a given result.

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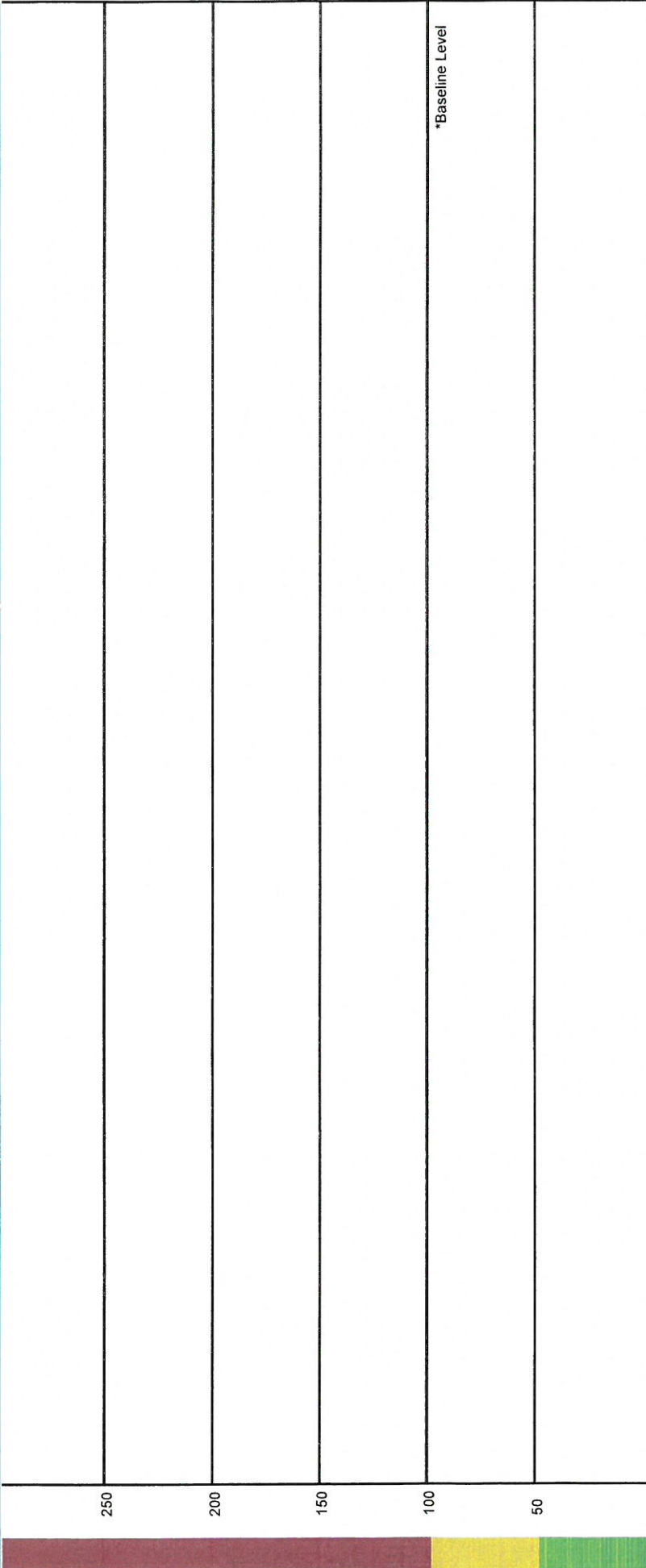
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Analyst: Tucker, Crystal

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Air Cassette Analysis - Spores % of Outside Air

SanAir ID : 16040404-11 Sample #: 23560156 ID : Dorm #3, Bldg A



*Baseline Level

Probable mold amplification
 Possible mold amplification
 No evidence of mold amplification

No organisms to graph. Normalized organism counts may not have exceeded the organism thresholds, or there were no organism counts for this sample. Please refer to the analysis report.

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Analyst: Acharya, Uttam

Direct Identification Analysis

SanAir ID: 16040404-013 Sample #: B1315234 ID: Building A B Hallway Ceiling

D1-Direct ID Analysis on Bio-Tape using STL 104
Direct ID of Mold

Fungi	Estimated Amount
Stachybotrys species	Heavy

SanAir ID: 16040404-014 Sample #: B1271816 ID: Unit Salley Port Building A

D1-Direct ID Analysis on Bio-Tape using STL 104
Direct ID of Mold

Fungi	Estimated Amount
Cladosporium species	Heavy
Stachybotrys species	Rare

SanAir ID: 16040404-015 Sample #: B1320004 ID: Dorm #5, Bldg A Ceiling

D1-Direct ID Analysis on Bio-Tape using STL 104
Direct ID of Mold

Fungi	Estimated Amount
No Fungi Detected	

SanAir ID: 16040404-016 Sample #: B1337620 ID: Dorm #4, Bldg A Ceiling

D1-Direct ID Analysis on Bio-Tape using STL 104
Direct ID of Mold

Fungi	Estimated Amount
No Fungi Detected	

Tape was slightly covered with debris which might have occluded fungi.

Estimated Amount	Indication of Growth	Evidence of Mycelial Fragments/Condiophores
Rare	Not Likely	None
Light	Possible	Some, 10 to 25% of Tape Covered
Moderate	Probable	Abundant, 25 to 50% of Tape Covered
Heavy	Significant	Throughout, 50 to 100% of Tape Covered

*Refer to additional information page for further details

Certification

Signature: 
Date: 11/7/2016

Reviewed: 
Date: 11/7/2016



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Analyst: Acharya, Uttam

Direct Identification Analysis

SanAir ID: 16040404-017 Sample #: B1298551 ID: Building A Hallway

D1-Direct ID Analysis on Bio-Tape using STL 104
Direct ID of Mold

Fungi	Estimated Amount
Stachybotrys species	Heavy

Estimated Amount	Indication of Growth	Evidence of Mycelial Fragments/Condiophores
Rare	Not Likely	None
Light	Possible	Some, 10 to 25% of Tape Covered
Moderate	Probable	Abundant, 25 to 50% of Tape Covered
Heavy	Significant	Throughout, 50 to 100% of Tape Covered

*Refer to additional information page for further details

Certification

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Macdonald, Claire

ORGANISM DESCRIPTIONS

The descriptions of the organisms presented are derived from various reference materials. The laboratory report is based on the data derived from the samples submitted and no interpretation of the data, as to potential, or actual, health effects resulting from exposure to the numbers of organisms found, can be made by laboratory personnel. Any interpretation of the potential health effects of the presence of this organism must be made by qualified professional personnel with first hand knowledge of the sample site, and the problems associated with that site.

MYCELIAL FRAGMENTS - A mycelium (plural = mycelia) is the "body" of a fungus. It is a collective term for hyphae (singular = hypha), which are the tubular units of the mycelium usually composed of chitin. The terms hyphae and mycelial fragments are used interchangeably. [This information was referenced from the mycology text "The Fifth Kingdom"] In some cases a fungal identification cannot be obtained due to lack of sporulation. Only the mycelial fragments are present, and cannot be identified without the distinguishing characteristics of the spores or the structures they grow from. *Health Effects:* Allergic reactions may occur in the presence of spores (conidia) or mycelial/hyphal fragments.

ALTERNARIA SPECIES - This genus comprises a large number of saprobes and plant pathogens. It is one of the predominate airborne fungal spores indoor and outdoor. Outdoors it may be isolated from samples of soil, seeds, and plants. It is one of the more common fungi found in nature, extremely widespread and ubiquitous. Conidia are easily carried by the wind, with peak concentrations in the summer and early fall. It is commonly found in outdoor samples. It is often found in indoor environments, on drywall, ceiling tiles, in house dust, carpets, textiles, and on horizontal surfaces in building interiors. Often found on window frames. *Health Effects:* In humans, it is recognized to cause type I and III allergic responses. Because of the large size of the spores, it can be deposited in the nose, mouth and upper respiratory tract, causing nasal septum infections. It has been known to cause Baker's asthma, farmer's lung, and hay fever. It has been associated with hypersensitivity pneumonitis, sinusitis, dermatomycosis, onychomycosis, subcutaneous phaeohyphomycosis, and invasive infection. Common cause of extrinsic asthma (immediate-type hypersensitivity: type I). Acute symptoms include edema and bronchospasms, chronic cases may develop pulmonary emphysema. *References:* Flannigan, Brian, Robert A. Samson, and J. David Miller, eds. Microorganisms in Home and Indoor Work Environments: Diversity, Health Impacts, Investigation, and Control. London and New York: Taylor & Francis, 2001.

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 disperse 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 non-viable 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 genera 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 dependant 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.

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



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with a velvety olive green layer. **Health Effects:** It is a common allergen. It can cause mycosis. Common cause of extrinsic asthma (immediate-type hypersensitivity: type I). Acute symptoms include edema and bronchospasms, chronic cases may develop pulmonary emphysema. Illnesses caused by this genus can include phaeohyphomycosis, chromoblastomycosis, hay fever and common allergies.

References: Flannigan, Brian, Robert A. Samson, and J. David Miller, eds. Microorganisms in Home and Indoor Work Environments: Diversity, Health Impacts, Investigation, and Control. London and New York: Taylor & Francis, 2001.

CURVULARIA SPECIES - Curvularia is found on plant material and is considered a saprobe. It has also been isolated from dust samples and from wallpaper. **Health Effects:** It has been reported to cause type I hypersensitivity and to be a cause of allergic fungal sinusitis. It may cause corneal infections, mycetoma and infections in immune compromised hosts.

References: De Hoog, G.S., J. Guarro, J. Gene, and M.J. Figueras. Atlas of Clinical Fungi, 2nd Edition. The Netherlands: CBS, 2000.

EPICOCCUM SPECIES - It is found in plants, soil, grains, textiles, and paper products. Frequently isolated from air and occasionally occurs in house dust. Is a saprophyte and considered a weakly parasitic secondary invader of plants, moldy paper and textiles. Epicoccum is usually isolated with either Cladosporium species or Aureobasidium species. **Health Effects:** A common allergen. It also has the potential to produce type I fungal hypersensitivity reactions.

References: Flannigan, Brian, Robert A. Samson, and J. David Miller, eds. Microorganisms in Home and Indoor Work Environments: Diversity, Health Impacts, Investigation, and Control. London and New York: Taylor & Francis, 2001.

NIGROSPORA SPECIES - Has been isolated from air and soil samples. Usually found in plant material as a saprobe. **Health Effects:** It has been associated with type I allergic responses. No reported cases of infection.

References: St-Germain, Guy and Richard Summerbell. Identifying Filamentous Fungi: A Clinical Laboratory Handbook. California: Star Publishing Company., 1996.

PITHOMYCES SPECIES - Grows on dead grass in pastures and decaying plant material. **Health Effects:** Causes facial eczema in ruminants.

References: St-Germain, Guy, and Richard Summerbell. Identifying Filamentous Fungi: A Clinical Laboratory Handbook. California: Star Publishing Co., 1996.

POLYTHRINCIUM SPECIES - This fungus is often associated with leaves and other plant material. There are no reports of any clinical significance or allergenic properties.

References: Ellis, Martin B., Ellis, Pamela, Microfungi on Land Plants: An Identification Handbook. England, The Richmond Publishing Co. Ltd., 1997.

RUSTS - From the group Uredinales, called Rusts due to the color of the spores, which are known for causing disease in plants.

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:** Can produce type I fungal hypersensitivity reactions.

References: Martin, G.W., C.J. Alexopoulos, and M.L. Farr. The Genera of Myxomycetes. Iowa City, Iowa: University of Iowa Press, 1983.

STACHYBOTRYS SPECIES - This organism is rarely found in outdoor samples. It is usually difficult to find in indoor air samples unless it is physically disturbed because the spores are in a gelatinous mass. Grows well on wet media, preferably containing cellulose. It proliferates in the indoor environment with long term water damage, growing on wallpaper, gypsum board, and textiles. As a general rule, air cultures for Stachybotrys yields unpredictable results, mainly due to the fact that this fungus is usually accompanied by other fungi such as Aspergillus and Penicillium that normally are better aerosolized than Stachybotrys. This is a slow growing fungus on media. It does not compete well with other rapidly growing fungi. The



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black fungi grow on building material with high cellulose content and low nitrogen content. Appropriate media for the growth of this organism will have high cellulose content and low nitrogen content. *Health Effects:* It has worldwide distribution and has been reported to cause dermatitis, cough, rhinitis, and headache, although no definitive reports of human infections have been verified. It has the ability to cause type I hypersensitivity. It is a documented mycotoxin producer.

References: Flannigan, Brian, Robert A. Samson, and J. David Miller, eds. Microorganisms in Home and Indoor Work Environments: Diversity, Health Impacts, Investigation, and Control. London and New York: Taylor & Francis, 2001.

Additional Information

Air Cassette Analyses

Air cassette reports indicate the genus and concentration of viable (living) and non-viable mold spores detected on the slide (A2 Analysis). Whether or not these spores are viable cannot be determined using this type of analysis. However, keep in mind that spores can remain allergenic even after cellular death. Other possible allergens include dander, pollen and fibers which are included in air cassette reports for the A1 Analysis. A1 and A2 analyses are performed on several types of air cassettes. Light microscopy at a 400 to 1000x magnification is used for air cassette sample analysis. SanAir always analyzes 100% of the impacted slide.

Explanation of Background Densities

The background density of an air cassette aids in the overall interpretation of results as it indicates the level of background debris present (e.g. dander, pollen, fibers, insect parts, soot, fly ash, etc.). Excessive background debris may mask the presence of fungal spores thereby reducing the accuracy of the count. It may also serve as an alert that the volume of air pulled was too high or too low. The following table explains background densities.

Air Cassette Density	Amount of Particulate on Slide	Explanation
1	Insignificant	Should not skew any counts
1+	Low	Should not skew any counts
2	Low to Moderate	Should not skew any counts
2+	Moderate to High	May cause occlusion of small spores
3	High	May cause occlusion of small to medium spores
3+	Very High	Will cause occlusion of spores
4	Overloaded	Level of particulate too high to perform analysis

A Note About the Fungal Spores

In some instances certain groups of fungi cannot be identified due to a lack of distinguishing characteristics. These fungi will be categorized as "unknown spores" on the final report.

The genera *Aspergillus* and *Penicillium* are typically composed of small, round spores that are difficult to distinguish from each other; therefore, they are grouped into the category *Aspergillus / Penicillium*. Other fungi that produce spores of similar characteristics may also be placed into this category, including *Paecilomyces*, *Gliocladium*, and *Trichoderma*, among others.

Stachybotrys and *Memnoniella* spores are coated with a sticky "slime" layer that may inhibit aerosolization.

Any genus of fungi detected on an air cassette with a high raw count (i.e. exceeding 500 spores) may be estimated. Any estimate higher than 12,000 spores will be reported as >12,000.

Understanding the Air Cassette Report

Each sample has 3 columns of information provided. The left is the raw count which is the number of spores for that fungal type detected on the trace. The middle column is the count per cubic meter (Count/m³) which is the raw count converted based on the total volume pulled for that sample. It represents the number of spores that should be expected in a cubic meter of air from the location in question *if* the spores were distributed evenly throughout the air. This column is helpful for interpreting results when the samples were pulled at different total volumes. In other words, the raw count of a cassette pulled at 75 liters should not be compared to the raw count of a cassette pulled at 150 liters because there may be higher counts associated with the higher volume. By comparing the "Count/m³" columns the difference in volumes are accounted for.

The limit of detection is the lowest spore count detectable with reasonable certainty, and it is calculated this way using a raw count of one. Keep in mind there are 1,000 liters in a cubic meter.

$$1 \times (1,000 / \text{Total Volume in Liters})$$

How to calculate the count per cubic meter:

$$\text{Raw Count} \times (1,000 / \text{Total Volume in Liters})$$

The last column on the right shows the percentage for which each spore type comprised the total spore count.

Understanding the Air Cassette Graph (If included in the final report)

The graph is a visual representation of the baseline sample (usually the outdoor air sample) compared individually against each indoor sample. Each spore type found on the indoor sample is compared to what was found outdoors per cubic meter.

The graph shows the percentile representation of each indoor spore count derived by dividing the indoor Count/m³ by the outdoor Count/m³. If the percentage is below 50% of the outside count, then the bar is below 50 on the chart, which corresponds to "No evidence of mold amplification." If the percentage is between 50 and 100%, then the bar on the chart will stop between 50 and 100, which corresponds to "Possible mold amplification." If the percentage is greater than 100%, then the bar will be above 100 on the chart, which corresponds to "Probable mold amplification."

Each organism is given a threshold level for the Count/m³. If this threshold level is not met in an inside sample, then the organism will not be graphed on the chart. This is used to prevent the graph from showing every spore type that is commonly found outside and doesn't typically indicate a possible moisture problem inside. For example, most common outdoor spores (e.g. ascospores, basidiospores, and *Cladosporium*) have a threshold level of 100. Therefore, in order to show up on the chart, the inside Count/m³ must be above 100. On the other hand, fungi that may indicate water damage (e.g. *Stachybotrys*, *Ulocladium*, *Chaetomium*, *Memnoniella*, etc.) are given lower threshold levels. These fungi have a higher water activity value and therefore require more moisture to grow. *Stachybotrys* and *Chaetomium* have threshold values of 14 and 30, respectively, as even a low count of those types of spores may indicate an issue with excess moisture.

Keep in mind that this graph is to be used only as a tool in the inspection of a building. Visual examination and knowledge of water damage, past remediation, and weather conditions, among other elements, is essential in the decision regarding the indoor air quality of a building.

Assistance with Remediation Projects

more information pertaining to interpretation of results is available on our website www.sanair.com

For assistance in a remediation project you may consult the Institute of Inspection, Cleaning and Restoration Certification's (IICRC) S500 and S520 protocols. The S500 is a reference guide for water-damage restoration and the S520 pertains specifically to mold remediation. Other standards and guidelines regarding Indoor Air Quality that may assist in remediation projects:

- AIHA (Recognition, Evaluation, and Control of Indoor Mold)
- AIHA (The Facts About Mold)
- NADCA (ACR 2006)
- IESO (Standards of Practice for the Assessment of Indoor Air Quality)
- EPA (Mold Remediation in Schools and Commercial Buildings)
- New York City Department of Health and Mental Hygiene (Guidelines on Assessment and Remediation of Fungi in Indoor Environments)

Disclaimer

SanAir Technologies Laboratory does not make contamination corrections to reports based upon analysis of laboratory and/or field blanks.

This report is the sole property of the client named on the SanAir Technologies Laboratory chain-of-custody. Neither results nor reports will be discussed with or released to any third party without our client's written permission. The information provided in this report applies only to the samples submitted and is relevant only for the date, time and location of sampling. SanAir assumes no responsibility for the method of sample procurement. Evaluation reports are based solely on the sample(s) in the condition in which they arrived at the laboratory and on the information provided by the client on the COC. SanAir will not provide any opinion on the safety of a building as visual inspection and knowledge of water damage, past remediation and weather conditions during sampling, among other elements, is essential in this decision. All samples are disposed of after 90 days unless otherwise requested by the client. SanAir is accredited by AIHA-LAP, LLC in the EMLAP program for Direct Examination of air samples.

This report does not constitute endorsement by AIHA-LAP/NVLAP and/or any other U.S. governmental agencies; and may not be certified by every local, state and federal regulatory agency.

Additional Information

Direct Identification Analyses

Direct identification analyses can be performed on tape, bulk, dust and swab samples. Direct identification reports indicate the evidence of possible active growth for each genus of fungi present. Whether or not these spores are viable or nonviable cannot be determined using this type of analysis; the sample would have to be cultured in order to determine viability. Keep in mind that this report can only be inferred for the exact spot in which the sample was taken. Light microscopy at a 400 to 1000x magnification is used for direct identification analysis.

It is encouraged to include a blank tape sample in order to check for contamination during sampling or shipment. Be sure to check the expiration date of any tape. It is recommended not to use expired tapes as the gel on the slide deteriorates thereby losing the tackiness necessary to retain fungi.

The genera *Aspergillus* and *Penicillium* are typically composed of small, round spores that are difficult to distinguish from each other without the presence of intact conidiophores (structures from which spores are formed and released). In this case, they are grouped into the category *Aspergillus / Penicillium*. Other fungi that produce spores of similar characteristics to *Aspergillus* and *Penicillium* may also be placed into this combined category in the absence of intact conidiophores (e.g. *Paecilomyces*, *Gliocladium*, *Trichoderma*, etc.).

D1 Analysis: Fungal Identification with "Evidence of Growth" Description

Results for the direct identification analysis describe the amount of evidence indicating possible fungal growth. The presence of associated mycelial fragments and conidiophores help the analyst to determine which description to use: rare, light, moderate, or heavy. Please refer to the following table for interpretation of direct identification results.

Estimated Amount	Indication of Growth	Evidence of Mycelial Fragments / Conidiophores
Rare	Not Likely	None
Light	Possible	Some, 10 to 25% of Tape Covered
Moderate	Probable	Abundant, 25 to 50% of Tape Covered
Heavy	Significant	Throughout, 50 to 100% of Tape Covered

NOTE: Swabs are not the best media to use for direct analyses as all organisms may not be recovered intact, if at all, when analyzed.

NOTE: Tapes should not be overloaded with debris as that may occlude fungi.

Disclaimer

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This report does not constitute endorsement by AIHA/NVLAP and/or any other U.S. governmental agencies; and may not be certified by every local, state and federal regulatory agencies.

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