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Environmental Scientists and Engineers
"Protecting People and the Environment"

October 4, 2001

BL# 012280

Gary Martin, Director of Facilities
Westport Public Schools
110 Myrtle Avenue
Westport, CT 06880
Phone: 203-341-1271
Fax: 203-341-1277

Dear Mr. Martin:

Brooks Laboratories, Inc. conducted a limited Indoor Air Quality study on September 10, 2001, at Kings Highway School, 125 Post Road West, Westport, CT. The study consisted of measurements of airborne fungus/mold and bacteria levels in room 33 and the adjacent hallway.

A single stage Andersen sampler was used to measure bioaerosol levels. Malt Extract Agar (MEA) was used for general detection and enumeration of airborne fungi, and Trypticase Soy Agar (TSA) was used for detection and enumeration of airborne bacteria. Samples were sent to Mycotech Biological, Inc. (MBI) for incubation and analysis.

There are no regulatory standards for fungal or bacterial bioaerosols. Many professionals currently believe that fungal levels of 100-250 CFU/m³ (Colony Forming Units per cubic meter) are acceptable provided that no opportunistic fungi are identified. Canadian health officials suggest that microbial levels of 50 CFU/m³ (single species), 150 CFU/m³ (mixture), or 500 CFU/m³ (common fungi such as Cladosporium) are acceptable. The American Congress of Governmental Industrial Hygienists (ACGIH) guidelines say that indoor fungal levels should generally be less than one-third of outdoor levels and bacterial levels should be less than 500 CFU/m³ for bacillus, gram negative rods, or certain gram positive cocci. Revised guidelines indicate that strict comparison to outdoors bioaerosols should be avoided due to the drastic seasonal variations in outdoors bioaerosol concentrations.

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FUNGUS/MOLD

Common outdoor mold

AREA	CFU/m3
room 33	177
hallway	247
outdoor	388

water related mold growth

The fungal levels found were low to moderate. Outdoor fungal level was higher than indoors. The presence of Cladosporium in the Room 33 and hallway at a level higher than that of the outdoors sample and the presence of Epicoccum and Rhizopus (Room 33) and Aspergillus niger (hallway) suggest possible building related growth. The presence of Aspergillus (hallway) is usually indicative of water damage and active mold growth.

Moderate to low human associated bacteria, primarily Micrococcus and Staphylococcus, levels were found.

BACTERIA

AREA	CFU/m3
room 33	123
hallway	35
outdoor	35

For further details and comments, see the attached MBI report.

We suggest these findings be discussed with the board's medical advisor or individual's physician for health risk assessment and determination as to whether these species are of concern for any particular person.

Please feel free to call with any questions regarding this report or any other indoor air quality questions or concerns you may have. Thank you for allowing us to be of service.

Sincerely,
Mike Zubarev
Mike Zubarev
Consultant

enclosure



Indoor Air Quality Scientists

Field Data Sheet and Chain of Custody Sheet

2484 FM 39 N. Jewett, Texas 75846 - Tele: 800-272-3716 Fax: 903-626-6020

18/04/01 10:46
01-04-01 THU 10:38 AM BROOKS LAB

FAX NO. 12038530273

NO. 180 P. 03

(PLEASE PRINT CLEARLY)

Company Name: Brooks Laboratories, Inc Contact Name: Hakim Sheybani
 Address: 9 Isaac Street, Norwich, CT 06850 Phone: (203) 853-9798 Fax: (203) 853-0273
 Project Name: 012280 - Kings Highway School Sample Type: Pre Post Retest

PLEASE COMPLETE THIS CHAIN OF CUSTODY AND INCLUDE IN SHIPMENT WITH SAMPLES

Sample #	Sample Description or Location	Date	Method	Sample Time	Flow Rate	Sample Volume	Analytical Request	Comments (media)
1	Room 33	9/10/01	Andersen 2	min	0.023	0.0566	MB1-1	MEA
2	"	"	"	"	"	"	MB1-2	TSA
3	Hallway	"	"	"	"	"	MB1-1	MEA
4	"	"	"	"	"	"	MB1-2	TSA
5	Outdoors	"	"	"	"	"	MB1-1	MEA
6	"	"	"	"	"	"	MB1-2	TSA

METHOD OF PAYMENT: Visa / MC / Am Ex. Card # 0 Exp. Date: 0
 Authorized Signature: _____ P.O. # (if applicable) _____

Standard turn-around is 7 - 10 working days.
ALL SAMPLES RECEIVED AFTER 3:00 PM WILL BE PROCESSED THE NEXT BUSINESS DAY.
 Released by: Hakim Sheybani Date: 9/10/01 Received by: _____ Date: 1/1
 Mycotech Biological is not responsible for damaged samples received and/or samples with an incomplete chain of custody form.

10/04/01 10:46
001-04-01 THU 10:40 AM
Oct 02 01 02:25p

BROOKS LAB
mbi

FAX NO. 12038530273
803-626-5374

NO. 188 004
P. 04
P. 3

Project: 012280-Kings Highway School

Report No: 01-6435
Sample Date: 9/10/2001
Received Date: 9/17/2001
Report Date:
Sample Type: Pre

Client: Brooks Laboratories, Inc.
9 Isaac Street
Norwalk, CT 06850
BROOKSLA9ISA

SAMPLE	METHOD	MEDIA	OBSERVED	RESULT	COMMENT
(01) Room 33	Andersen	Malt	Cladosporium spp. 1 Epicoccum spp. Rhizopus spp.	124 35 >18	1 1 1,2,9

177 CFU / M²

(02) Room 33	Andersen	TSA	Staphylococcus spp. Micrococcus spp.	35 88	8 7
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123 CFU / M²

Project: 012280-Kings Highway School

Report No: 01-6435
Sample Date: 9/10/2001
Received Date: 9/17/2001
Report Date:
Sample Type: Pre

Client: Brooks Laboratories, Inc.
9 Isaac Street
Norwalk, CT 06850
BROOKSLA9ISA

SAMPLE	METHOD	MEDIA	OBSERVED	RESULT	COMMENT
(03) Hallway	Andersen	Malt	Cladosporium spp. 1 Aspergillus niger	106 141	1 1,2

247 CFU / M²

(04) Hallway	Andersen	TSA	Bacillus spp.	35	6
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35 CFU / M²

10/04/01 10:46
OCT 04 01 10:40 AM
OCT 02 01 02:26P

BROOKS LAB
mbs

FAX NO. 12038530273
303-228-3317

NO. 180 006
P. 06

Project: 012280-Kings Highway School

Client: Brooks Laboratories, Inc.
9 Isaac Street
Norwalk, CT 06850
BROOKSLA9ISA

Report No: 01-6435
Sample Date: 9/10/2001
Received Date: 9/17/2001
Report Date:
Sample Type: Pre

SAMPLE	METHOD	MEDIA	OBSERVED	RESULT	COMMENT
(05) Outdoors	Andersen	Malt	Cladosporium spp. 1 Penicillium spp. 1 Alternaria spp. Epicoecum spp.	88 106 141 53	1 1,2,3 1,2 1
				<hr/>	
				388 CFU / M ³	
(06) Outdoors	Andersen	TSA	Bacillus spp.	35	6
				<hr/>	
				35 CFU / M ³	

Project: 012280-Kings Highway School

Report No: 01-6435

Client: Brooks Laboratories, Inc.

General Comment Reference Page

ONLY COMMENT NUMBERS INDICATED ON REPORT ARE RELEVANT.

Mycotech Biological is not responsible for any errors resulting from improper or incorrect sampling procedures, atmospheric conditions at the time of sampling or during shipment, or from shipping conditions or methods.

1. This is a known and documented aeroallergen. It may cause an allergic reaction to hypersensitive individuals at normal airborne concentrations. Chronic exposure, at above normal airborne concentrations, may also result in the sensitization and development of allergic disease in previously unaffected individuals.
2. This fungus is an opportunistic pathogen. Many factors affect host contraction; however, this fungus will typically infect only those who are immuno-compromised. Immuno-compromization may be a function of age, sex, race, state of health, or nutrition. Individuals exposed to immunotherapy, chemotherapy, radiotherapy, immunosuppressant drugs, or who have contracted an immunological disorder, are at greater risk of infection. As with other diseases, opportunistic infections may be contracted by a variety of potential routes including injection, ingestion, skin contact, and/or respiration.
3. Various species within this Genus/Group have been documented as producing mycotoxins. Mycotoxins represent a wide variety of secondary metabolites produced by fungi that have been documented as toxic to humans. Airborne mycotoxin concentrations and their specific relationship to human health has not been established to date.
4. This fungus is believed to be an aeroallergen; however, this fungus did not produce spores in laboratory culture. Without sporulation, a formal taxa cannot be determined and are collectively termed "sterile hyphae."
5. CFU values are not given for this sampling technique.
6. A common spore-forming bacteria producing the most common types of food poisoning (in food left out too long), also common to air.
7. A common bacteria widespread in nature and found on mammalian skin, particularly on the exposed skin of the face, arms, hands, and legs; not typically airborne.
8. A common bacteria found on the skin, opportunistic pathogen, not *Staphylococcus aureus*; also common to human environments; not typically airborne.
9. The actual CFUs for this organism could not be determined due to overgrowth.

Keith W. Parlin
Laboratory Manager
Mycotech Biological, Inc.