Dutchess BOCES
SAFETY AND RISK

HEALTH, SAFETY & RISK MANAGEMENT
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Environmental Hygiene Report

Submitted to: John Willabay

Director of Facilities
Poughkeepsie City School District
Prepared by: Brian Colandrea

Location(s)	PACE Academy
Project No.	032-1718
Site Visit(s)	February 23, 2018
Report Date	March 26, 2018
Investigator(s)	Brian Colandrea

Dutchess County BOCES *Health, Safety &Risk Management* does not assert that all potential health or safety hazards at this site were evaluated during this survey. This survey is strictly limited to that which is identified in the Project Scope of the report.

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Authors's Note: Parenthetical numerals at the end of a sentence reference the work with the corresponding notation in the **References** section. *Please read this report in its entirety, including any attached appendices, to full understand this investigation*.

Executive Summary

On February 21, 2018 the Facilities Department for the Poughkeepsie City School District (PCSD) requested that our office perform an indoor air quality (IAQ) investigation in Room 4 of the PACE Academy. On February 23, 2018 we performed a visual inspection of the Room 4 and we also recorded background IAQ data during that day. The visual inspection found nothing of concern. The IAQ data (see **Results Summary**) recorded showed that relative humidity (%RH) levels are below what is considered adequate for human comfort.

Project Scope

Perform a visual inspection of the Room 4 in the PACE Academy of the PCSD. Collect background IAQ data. Review the data and prepare a written report for the PCSD.

Materials & Methods

Background IAQ parameters were collected using a GrayWolf Sensing Solutions, Indoor Air Quality Probe (IQ-604). Results were then transferred to a computer in our office located at the Dutchess BOCES Salt Point Center.

Results Summary

All sample results and other data were reported to the administration of the local educational agency (LEA) via phone, fax, or e-mail as they became available to our department.

***For Full Sampling Results See Appendix**

Parameters:	TVOC ppb	CO_2 ppm	H_2S ppm	CO ppm	Temp. ^oF	%RH	Dew Pt. ^oF
Averages:	36	569	0.07	2.9	72.6	23.6	33.4

Discussion

The National Institute for Occupational Safety & Health (NIOSH), a division of the Center for Disease Control, uses the term Indoor Environmental Quality (IEQ) to describe the perception of the indoor environment by occupants of non-industrial facilities like offices and schools. Occupants of these facilities frequently report a variety of physical symptoms (e.g. headache, fatigue, eye & skin irritation) that they attribute to poor indoor air. If air is the culprit, there may be a number of causes, including chemical, physical, and biological contamination. These contaminants can create odors, cause occupant discomfort, and, occasionally, create a health hazard. Frequently the cause of poor indoor air quality is inadequate or poorly modulated ventilation. This can result in uneven heating and cooling (which can affect the comfort of building occupants) and the provision of inadequate outside air.

Bioaerosols, airborne particles that are living or originate from living organisms, are ubiquitous in nature and may be modified by human activities. ***(1)*** They become an occupational hygiene concern when, as a result of indoor sources, the kinds and levels of microorganisms inside a building or facility are different than those in the surrounding outdoor environment. Microbiological growth inside building is normally the result of water intrusion (e.g. from roof leaks), standing water, or high humidity and dew point. Bioaerosols of concern include fungi, bacteria, viruses, allergens, and other metabolic by-products. Locating sources of bioaerosols inside buildings is heavily dependent upon good investigative techniques. Such techniques include, but are not wholly dependent upon, sampling. Sampling for bioaerosols

Includes air sampling and source (e.g. bulk, swab, tape-lift) sampling.

Comments & Recommendations

On February 21, 2018 the Facilities Department for the Poughkeepsie City School District (PCSD) requested that our office perform an indoor air quality (IAQ) investigation in Room 4 of the PACE Academy. On February 23, 2018 we performed a visual inspection of the Room 4 and we also recorded background IAQ data during that day. The visual inspection found nothing of concern. The IAQ data (see **Results Summary**) recorded showed that relative humidity (%RH) levels are below what is considered adequate for human comfort. According to the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), the ideal humidity range for humans is between 45 to 55 percent relative humidity. Dry or itchy skin conditions are aggravated by low humidity, which tends to dry out the skin. ***(2)***

References

1. **University of Minnesota:** *Fungal Glossary*. Minneapolis, MN: University of Minnesota, Department of Environmental health & Safety, 2004

2. "Best Indoors Humidity Range for Humans, Books, and Electronic Devices." *Brighthub Engineering*, 15 Nov. 2011, www.brighthubengineering.com/hvac/81719-best-indoor-humidity-range-for-people-books-and-electronics/.

Appendix

IAQ Data

Pace Academy Room 4

Date/Time	TVOC ppb	CO_2 ppm	H_2S ppm	CO ppm	Temp ^0F	%RH	Dew Pt. ^0F
23-Feb-18 09:40:47 AM	65	523	0.05	2.1	73.0	23.9	34.0
23-Feb-18 09:50:47 AM	56	490	0.05	1.9	72.8	23.3	33.2
23-Feb-18 10:00:47 AM	50	480	0.04	1.6	73.0	22.4	32.4
23-Feb-18 10:10:47 AM	46	478	0.04	1.5	73.2	21.5	31.5
23-Feb-18 10:20:47 AM	44	508	0.05	1.5	73.2	21.3	31.3
23-Feb-18 10:30:47 AM	42	542	0.05	1.4	73.1	21.6	31.6
23-Feb-18 10:40:47 AM	39	540	0.06	1.3	72.7	22.0	31.7
23-Feb-18 10:50:47 AM	36	534	0.06	1.2	72.4	22.2	31.7
23-Feb-18 11:00:47 AM	36	537	0.06	1.4	72.3	22.3	31.7
23-Feb-18 11:10:47 AM	35	546	0.06	1.5	72.3	22.6	32.0
23-Feb-18 11:20:47 AM	35	581	0.06	1.5	72.1	22.7	32.0
23-Feb-18 11:30:47 AM	35	616	0.07	1.9	72.1	23.3	32.6
23-Feb-18 11:40:47 AM	34	607	0.07	2.3	71.9	23.2	32.4
23-Feb-18 11:50:47 AM	32	597	0.07	2.3	71.9	23.2	32.3
23-Feb-18 12:00:47 PM	33	609	0.07	2.1	71.5	23.9	32.7
23-Feb-18 12:10:47 PM	33	637	0.07	2.4	71.9	23.5	32.7
23-Feb-18 12:20:47 PM	34	642	0.07	2.8	72.1	23.7	33.0
23-Feb-18 12:30:47 PM	38	627	0.07	2.6	72.2	23.7	33.2
23-Feb-18 12:40:47 PM	42	611	0.07	2.7	72.4	23.6	33.2
23-Feb-18 12:50:47 PM	42	592	0.07	2.6	72.5	24.1	33.8
23-Feb-18 01:00:47 PM	39	567	0.07	3.4	72.7	24.3	34.1
23-Feb-18 01:10:47 PM	36	543	0.08	3.6	72.6	24.5	34.3
23-Feb-18 01:20:47 PM	34	550	0.08	4.0	72.5	24.7	34.4
23-Feb-18 01:30:47 PM	34	580	0.08	3.8	72.6	24.7	34.5
23-Feb-18 01:40:47 PM	36	610	0.08	3.6	72.8	25.3	35.4
23-Feb-18 01:50:47 PM	36	623	0.09	4.6	73.1	26.5	36.8
23-Feb-18 02:00:47 PM	35	583	0.09	5.1	73.4	26.0	36.4
23-Feb-18 02:10:47 PM	34	576	0.09	6.4	73.4	25.5	36.0
23-Feb-18 02:20:47 PM	34	573	0.09	8.1	73.7	24.6	35.4
23-Feb-18 02:30:47 PM	33	561	0.09	7.7	73.7	24.3	35.1
Averages:	**36**	**569**	**0.07**	**2.9**	**72.6**	**23.6**	**33.4**