Environmental Safety Management Corporation
AIR QUALITY, MOLD TESTING, ERGONOMICS, OSHA

21 SCOTT STREET
RIVERSIDE, NJ 08075
TEL: (856) 764-3557
FAX: (856) 764-3558
WWW.ESMCORP.COM

November 12, 2021

Ms. Sarah Bell
Business Administrator/Board Secretary
Kingsway Regional &
South Harrison Twp. Elem. School Districts
213 Kings Highway
Woolwich Twp., NJ 08085

Dear. Ms. Bell,

This report summarizes the results of the November 8 – 9, 2021 air monitoring of the South Harrison Elementary School Gym. This assessment was conducted by Mr. Richard A. Lynch, MBA, CIEC. The objectives of this assessment were to determine airborne concentration of mercury in the gym and in surrounding areas during normal daytime, evening and nighttime unoccupied periods.

Executive Summary of Findings

Airborne mercury levels within the South Harrison Elementary School gym averaged approximately 0.18 to 0.20 µg/m3 during daytime hours, and approximately 0.35 ug/m3 during the evening unoccupied period; all well below the NJ Department of Health Guideline of 0.8 ug/m^3. Airborne mercury in hallways and classrooms surrounding the gym on November 9, 2021, were lower, ranging between 0.00 - 0.11 µg/m^3.

I. Methods

The following methods were observed during our November 8 – November 9 monitoring period.

- Continuous air monitoring was conducted within the gym over an approximate 24-hour period between approximately 9:40AM on November 8, 2021 and 10:20AM on November 9, 2021.
- Temperature and humidity were monitored over the same period using a TSI Q-Trak 7575 IAQ monitor.
- Spot air monitoring was conducted at two feet and at four feet within the gym and in surrounding areas on November 9, 2021.
- All mercury air monitoring was conducted using a calibrated Jerome J505 Mercury Vapor Analyzer with a reported detection limit of 0.05 µg/m^3 which reads as low as 0.00 µg/m^3 with a resolution of 0.01.

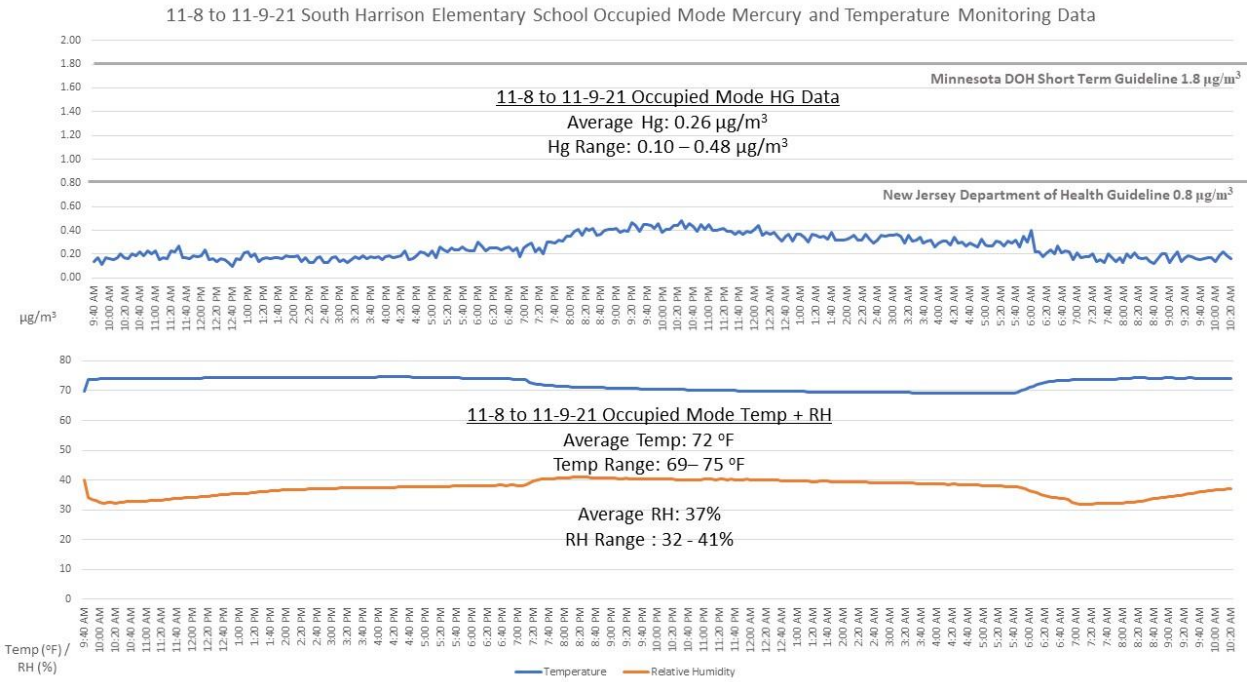
II. Observations and Mercury Air Monitoring Findings

Findings revealed the following:

- Outdoor airborne mercury was at approximately 0.01 micrograms per cubic meter ($\mu g/m^3$). Outdoor temperature ranged from 45 to 71 ^oF during the duration of the monitoring period.
- Daytime (6:30 AM to 8:00 PM) average mercury level on November 8, 2021 averaged 0.20 ug/m^3. Airborne mercury during the evening unoccupied period (8:00 PM to 6:30 AM) averaged 0.35 ug/m^3. Airborne mercury levels between 6:30 – 10:40 AM on November 9, 2021 averaged 0.18 ug/m^3.
- The overall average mercury level over the 24-hour monitoring period (9:40AM on November 8, 2021 to 10:20AM on November 9, 2021) averaged, 0.26 $\mu g/m^3$ (range 0.10 - 0.48 $\mu g/m^3$); well below the NJDOH Guideline of 0.8 $\mu g/m^3$.
- Gym temperature averaged 72^oF and ranged from 69 - 75 ^oF during this monitoring period and relative humidity averaged 37% and ranged from 32-41%
- Spot Measurements in the gym measured on November 9, 2021, two and four feet above the floor averaged 0.17 $\mu g/m^3$ (range 0.08 - 0.26 $\mu g/m^3$)
- Spot Measurements in the areas surrounding the gym on November 9, 2021, between two to four feet above the floor ranged between 0.00 - 0.11 $\mu g/m^3$.

Mercury monitoring findings over the November 8 – November 9, 2021 monitoring period and the spot measurements are shown in the Figures below:

Monitoring ID	Monitoring Locati	11/9/2021 Mercury 2 feet (µg/m3)	11/9/2021 Mercury 4 feet (µg/m3)	Monitoring ID	Monitoring Location	11/9/2021 Mercury 2 feet (µg/m3)	11/9/2021 Mercury 4 feet (µg/m3)
Gym	center	0.24	0.22	Adjacent Room	main office	0.03	0
Gym	North Side	0.15	0.11	Adjacent Room	B104	0.02	0
Gym	North East Corner	0.14	0.17	Adjacent Room	B107	0.03	0
Gym	East Side	0.23	0.15	Adjacent Hall	B	0.04	0.03
Gym	South East Corner	0.17	0.23	Adjacent Room	A159 Isolation	0.02	0
Gym	South Side	0.17	0.15	Adjacent Room	A163	0	0.02
Gym	South West Corner	0.16	0.24	Adjacent Room	A191	0.08	0.11
Gym	West Side	0.24	0.19	Adjacent Room	A111	0	0
Gym	North West Corner	0.26	0.17		Average Adjacent Spot Readings	0.03	0.02
Stage	West	0.19	0.15		Min Adjacent Spot Readings	0.00	0.00
Stage	Center	0.1	0.13		Max Adjacent Spot Readings	0.08	0.11
Stage	East	0.17	0.16				
Gym Storage	NE corner	0.12	0.13				
Gym Storage	SE Corner	0.22	0.21				
Gym Storage	S Side	0.11	0.1				
Gym Office	S Side	0.08	0.15				
	Average Gym Spot Readings	0.17	0.17				
	Min Gym Spot Readings	0.08	0.10				
	Max Gym Spot Readings	0.26	0.24				



IV. Conclusions and Recommendations

Airborne mercury levels within the South Harrison Elementary School gym averaged approximately 0.18 to 0.20 µg/m3 during daytime hours, and approximately 0.35 ug/m3 during the evening unoccupied period; all well below the NJ Department of Health Guideline of 0.8 ug/m3. Airborne mercury in hallways and classrooms surrounding the gym on November 9, 2021, were lower, ranging between 0.00 - 0.11 µg/m3.

Based upon these findings, the following recommendations should be considered:

1. Continue to operate the HVAC in its current schedule.
2. Schedule routine non-abrasive cleaning of gym floors and other surfaces to reduce dust accumulation.

Our next monitoring will be scheduled for December 2021. Thank you for the opportunity to assist you with the evaluation. Please contact me with any questions.

Sincerely,
Richard A. Lynch
Richard A. Lynch, MBA, CIEC
Industrial Hygienist
NJ Licensed Indoor Environmental Consultant
www.esmcorp.com

Reviewed and Authorized:
Richard M. Lynch
Richard M. Lynch, Ph.D., CIH, CMC, CMRS, CHFM
NJ Licensed Indoor Environmental Consultant
President, ESMCorp
rlynch@esmcorp.com

3375 N. Delaware Street, Chandler, AZ 85225
800.528.7411 | (f) 602.281.1745 | azic.com

Certification of Instrument Calibration

Environmental Safety Management Corp
21 E. Scott Street
Riverside, NJ 08075

RMA # 2796776

This is to certify that the Jerome **J505-0005** Atomic Fluorescence Mercury Analyzer, Serial Number **50500325**, was calibrated with standard units traceable to NIST.

Calibration Status as Received: **Out of Calibration**

	Actual	Calibration Gas	Allowable Range
Incoming:	28.21 µg/m3 Hg 0.74 % RSD	25.00 µg/m3 Hg	22.50 - 27.50 µg/m3 Hg <5%
Outgoing:	24.77 µg/m3 Hg 0.65 % RSD	25.00 µg/m3 Hg	23.75 - 26.25 µg/m3 Hg <3%
Calibration Verification:	µg/m3 Hg % RSD	0.300 µg/m3 Hg	0.255 - 0.345 µg/m3 Hg <15%

Calibration Status as Left: **In Calibration**

Estimated Uncertainty of Calibration System: 3.5%

Calibration Date: 22-Jan-2021 Recalibration Date: 21-Jan-2022

Temperature °F: 71.10 % Relative Humidity: 42.00

Approved By: Cheryl Hradek Date Approved: 10-Feb-2021
Title: Cheryl Hradek - Quality Control

Equipment Used:

Permeation Tube: S89-56804 **NIST#:** ISO13265: 072958
Calibration Date: 21-May-2020 **Calibration Date Due:** 21-May-2021

DynaCalibrator: M-1878 **NIST#:** 19-2985
Calibration Date: 30-Sep-2020 **Calibration Date Due:** 30-Sep-2021

Digital Multimeter: 66961028 **NIST#:** 7003135
Calibration Date: 24-Feb-2020 **Calibration Date Due:** 24-Feb-2021

Mass Flow Controller: 63665 **NIST#:**227080
Calibration Date:27-Mar-20 **Calibration Date Due:** 27-Mar-21

Calibration Procedure Used: 730-0165

AMETEK Brookfield certifies that the above listed instrument meets or exceeds all published specifications and has been calibrated using standards whose accuracy is traceable to the NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY within the limitations of the Institute's calibration services, or have been derived from accepted values of natural physical constants, or have been derived by the ratio type of self-calibration techniques.
Disclaimer: Any unauthorized adjustments, removal or breaking of QC seals, or other customer modifications on your Jerome Analyzer WILL VOID this factory calibration, because any of the above acts could affect the calibration and readings of the instrument. Further, AMETEK Brookfield WILL NOT be responsible for any liabilities created as a result of using the instrument after such adjustments, seal removal, or modifications.

5