

April 22, 2021

Dr. Tracy Handerhan,
Superintendent
Wall Township Schools
1620 18th Ave
Wall Township, NJ 07719

Dear. Dr. Handerhan,

This report summarizes the results of our April 8-12, 2021 Mercury monitoring and sampling of the Wall Township High School South Gym. This inspection follows our most recent monitoring conducted in December 2021 where we reported that airborne mercury levels December 2-4, 2020 averaged $0.02 \mu\text{g}/\text{m}^3$ (range $0.00 - 0.10 \mu\text{g}/\text{m}^3$); substantially lower than the NJDOH Guideline of $0.8 \mu\text{g}/\text{m}^3$.

The purposes of the April 8-12, 2021 monitoring were the following:

1. Determine average airborne mercury levels over an approximate 4-day continuous monitoring period during Springtime weather conditions with the HVAC system running in it's normal operating mode.
2. Determine the change in airborne mercury levels during an approximate 3-day period when the gym's air handling system was deactivated, thus reducing dilution and removal of airborne mercury levels via mechanical ventilation (HVAC Mercury Stress Test).
3. Supplement air monitoring with air sampling and laboratory analysis for airborne mercury during HVAC Active and HVAC Deactivated periods.

Evaluation criteria are identical to those previously reported and will not be repeated herein.

Executive Summary

Findings revealed that airborne mercury levels averaged $0.01 - 0.02 \mu\text{g}/\text{m}^3$ at airborne temperature of approximately 74-80 degrees Fahrenheit via air monitoring. Laboratory analysis confirmed no airborne mercury detected within air samples collected during the initial monitoring period with the HVAC system activated, as well as when the HVAC system was deactivated below a detection limit range of 0.06 to $0.10 \mu\text{g}/\text{m}^3$. These air sampling laboratory analysis findings reinforce air monitoring results that all airborne mercury levels within the gym during the April 8-12, 2021 monitoring and HVAC Stress Test period were well below the NJ Department of Health guideline of $0.8 \mu\text{g}/\text{m}^3$.

I. Methods

The following methods were observed during this investigation:

- Spot air monitoring was conducted throughout the gym including gym center, west side bleacher area, south side, east side bleacher area and north side using a calibrated Jerome J505 Mercury Vapor Analyzer (detection limit $0.05 \mu\text{g}/\text{m}^3$ reading as low as $0.00 \mu\text{g}/\text{m}^3$ with a resolution of $0.01 \mu\text{g}/\text{m}^3$). This monitoring was conducted with the gym's air handler operating in the 24/7 occupied mode.
- Continuous air monitoring was conducted with the J505 (1 measurement every 5 minutes) in the center of the gym between approximately 9:00 AM on April 8 through 10:30 AM on April 12, 2021 at the gym center west side bleacher area.
- An HVAC Stress Test was conducted where the HVAC system for the gym was deactivated beginning at (:00 PM on April 8, 2021 and reactivated at 6:30 AM on April 12, 2021. The purpose of this stress test was to determine the extent to which airborne mercury levels increased within the gym when the air handler was deactivated, and the approximate time required upon reactivation for airborne mercury levels to return to baseline conditions.
- Air monitoring for temperature and humidity within the gym was conducted during this period using a TSI 7575 Q-Trak IAQ monitor.
- Air sampling was conducted for mercury vapors from the locations listed above (gym center, west bleacher, north side and south side in accordance with NIOSH method 6009 initially on April 8 with the HVAC system activated, and then again on April 9, 2021 with the HVAC system deactivated. Approximate sample length was 9 hours during each sampling period. Samples were hand-delivered to an AIHA-Accredited Laboratory for mercury analysis via NIOSH 6009.

II. Air Monitoring Findings

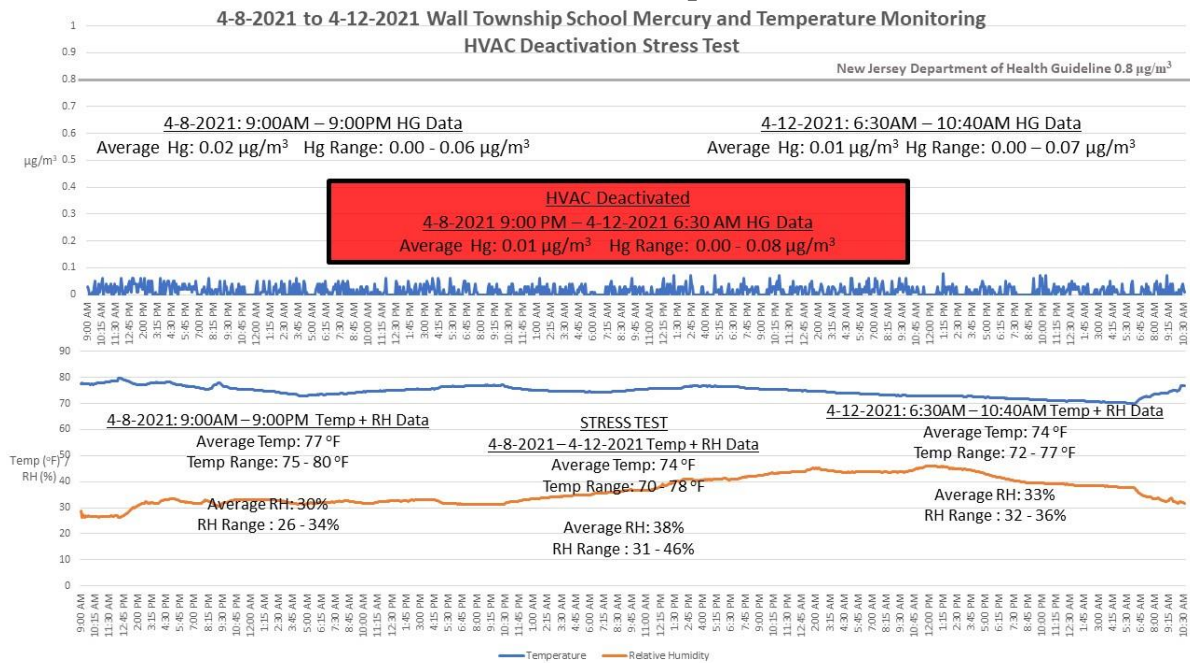
Air monitoring results revealed the following:

- Initial spot monitoring for mercury revealed that all initial gym mercury levels including gym center, west side bleachers, south end, east side bleachers and north end were approximately 0.00 to $0.06 \mu\text{g}/\text{m}^3$.
- Continuous air monitoring between approximately 9:00 AM on April 8th 2021 and 9:00PM on April 8th 2021 (HVAC System Activated) **averaged $0.02 \mu\text{g}/\text{m}^3$** (range 0.00 - $0.06 \mu\text{g}/\text{m}^3$); well below the NJDOH Guideline of $0.8 \mu\text{g}/\text{m}^3$. Gym air temperature averaged 77°F (range $75 - 80^\circ\text{F}$) at 30% relative humidity.
- Continuous air monitoring over the entire 5-day monitoring period conducted within the gym at the west side bleacher center area between approximately 9:00 AM on April 8th 2021 and 10:40 AM on April 12th 2021 **averaged $0.01 \mu\text{g}/\text{m}^3$** (range 0.00 - $0.08 \mu\text{g}/\text{m}^3$); well below the NJDOH Guideline of $0.8 \mu\text{g}/\text{m}^3$. Gym air temperature averaged 75°F (range $70 - 80^\circ\text{F}$) at average 37% relative humidity.
- Continuous air monitoring between approximately 9:00PM on April 8th, 2021 and 6:30AM on April 12th, 2021 (HVAC System Deactivated) **averaged $0.01 \mu\text{g}/\text{m}^3$** (range 0.00 - $0.08 \mu\text{g}/\text{m}^3$); well below the NJDOH Guideline of $0.8 \mu\text{g}/\text{m}^3$. Gym air temperature averaged 74°F (range $70 - 78^\circ\text{F}$) at average 38% relative humidity.

- Post-Stress Test results
- Continuous air monitoring conducted between approximately 6:30AM on April 12th 2021 and 10:30AM on April 12th 2021(after reactivation of the gym’s HVAC system) averaged **0.01 $\mu\text{g}/\text{m}^3$** (range 0.00- 0.08 $\mu\text{g}/\text{m}^3$); well below the NJDOH Guideline of 0.8 $\mu\text{g}/\text{m}^3$.

Figure #1 below displays air monitoring findings as described above.

Figure #1 – Wall Township High School South Gym Airborne Mercury monitoring with Stress Test Results – April 8-12, 2021



III. April 8th, 2021 and April 9th Air Sampling Results

Air sampling results are displayed in Table #1 below. From Table #1 it can be seen that no airborne mercury was detected in any of the samples collected at a detection limit of 0.058 to 0.10 $\mu\text{g}/\text{m}^3$.

Table#1
Wall Twp. H.S. South Gym Airborne Mercury Sampling Results April 8 & April 9, 2021

4/8/2021 Airborne Mercury (HVAC Activated)			4/9/2021 Airborne Mercury (HVAC De-Activated)	
Location	Detection Limit ($\mu\text{g}/\text{m}^3$)	Airborne Mercury ($\mu\text{g}/\text{m}^3$)	Detection Limit ($\mu\text{g}/\text{m}^3$)	Airborne Mercury ($\mu\text{g}/\text{m}^3$)
West Bleacher	0.091	Non - Detectable*	0.078	Non - Detectable*
South Side	0.083	Non - Detectable*	0.069	Non - Detectable*
Gym Center	0.061	Non - Detectable*	0.10	Non - Detectable*
North Gym on	0.058	Non - Detectable*	0.094	Non - Detectable*
* No Mercury Detected in Sample				

A copy of laboratory results is attached.

All samples collected on April 8th and April 9th were measured **below their respective detection limits**. This paired with our monitoring data averages of 0.01 and 0.02 ug/m^3 at the west bleachers with an range of 0.00 to 0.08 ug/m^3 indicates that these measured values are true.

I. Conclusions and Recommendations

Airborne mercury levels within the Wall Township High School gym during our 4-day April 8th, 2021 to April 12th, 2021 air monitoring, sampling and HVAC Stress Test revealed that airborne mercury levels averaged 0.01- 0.02 ug/m^3 at airborne temperature of approximately 74-80 degrees Fahrenheit via air monitoring. Laboratory analysis confirmed no airborne mercury detected within air samples collected during the initial monitoring period with the HVAC system activated, as well as when the HVAC system was deactivated below a detection limit range of 0.06 to 0.10 ug/m^3 . These air sampling laboratory analysis findings reinforce air monitoring results that all airborne mercury levels within the gym during the April 8-12, 2021 monitoring and HVAC Stress Test period were well below the NJ Department of Health guideline of 0.8 ug/m^3 .

Recommendations

1. Continue to operate the gym's air handling unit in the 24/7 occupied mode.
2. Periodic non-abrasive custodial cleaning of the gym should continue.
3. The next round of monitoring is suggested for June 2021.

Thank you for the opportunity to assist you with the evaluation. Please contact me with any questions at (856)764-3557.

Sincerely,

Richard A. Lynch

Richard A. Lynch, MBA, CIEC

Industrial Hygienist

NJ Licensed Indoor Environmental Consultant

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Reviewed and Authorized:

Richard M. Lynch

Richard M. Lynch, Ph.D., CIH, CMC, CMRS, CHFM

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EMSL Analytical, Inc.

200 Route 130 North, Cinnaminson, NJ 08077

Phone: (856) 303-2500 Fax: (856) 858-4571 Email: EnvChemistry2@emsl.com

Attn:

Dr. Richard Lynch
Environmental Safety Management Corp.
21 E. Scott Street
Riverside, NJ 08075-3601

4/19/2021

Phone: (856) 764-3557
Fax: (856) 764-3558

The following analytical report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 4/12/2021. The results are tabulated on the attached data pages for the following client designated project:

Wall High 4-8 4-9

The reference number for these samples is EMSL Order #012103567. Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact me at (856) 303-2500.

Approved By:

Phillip Worby, Environmental Chemistry
Laboratory Director



The test results contained within this report meet the requirements of NELAP and/or the specific certification program that is applicable, unless otherwise noted.
NELAP Certifications: NJ 03036, NY 10872, PA 68-00367, CA ELAP 1877

The samples associated with this report were received in good condition unless otherwise noted. This report relates only to those items tested as received by the laboratory. The QC data associated with the sample results meet the recovery and precision requirements established by the NELAP, unless specifically indicated. All results for soil samples are reported on a dry weight basis, unless otherwise noted. This report may not be reproduced except in full and without written approval by EMSL Analytical, Inc.

**EMSL Analytical, Inc.**

200 Route 130 North, Cinnaminson, NJ 08077
 Phone/Fax: (856) 303-2500 / (856) 858-4571
<http://www.EMSL.com> EnvChemistry2@emsl.com

EMSL Order: 012103567
 CustomerID: ESMC62
 CustomerPO:
 ProjectID:

Attn: **Dr. Richard Lynch**
Environmental Safety Management Corp.
21 E. Scott Street
Riverside, NJ 08075-3601

Phone: (856) 764-3557
 Fax: (856) 764-3558
 Received: 4/12/2021 09:00 AM

Project: **Wall High 4-8 4-9**

Analytical Results

Client Sample Description 1 West bleacher on **Collected:** 4/8/2021 **Lab ID:** 012103567-0001

Method	Parameter	Result	RL Units	Prep Date & Analyst	Analysis Date & Analyst
METALS					
6009	Mercury	ND	0.091 µg/m³	4/16/2021 MBF	4/19/2021 MBF 10:25

Client Sample Description 2 South gym on **Collected:** 4/8/2021 **Lab ID:** 012103567-0002

Method	Parameter	Result	RL Units	Prep Date & Analyst	Analysis Date & Analyst
METALS					
6009	Mercury	ND	0.083 µg/m³	4/16/2021 MBF	4/19/2021 MBF 10:28

Client Sample Description 3 Center gym on **Collected:** 4/8/2021 **Lab ID:** 012103567-0003

Method	Parameter	Result	RL Units	Prep Date & Analyst	Analysis Date & Analyst
METALS					
6009	Mercury	ND	0.061 µg/m³	4/16/2021 MBF	4/19/2021 MBF 10:30

Client Sample Description 4 North gym on **Collected:** 4/8/2021 **Lab ID:** 012103567-0004

Method	Parameter	Result	RL Units	Prep Date & Analyst	Analysis Date & Analyst
METALS					
6009	Mercury	ND	0.058 µg/m³	4/16/2021 MBF	4/19/2021 MBF 10:32

Client Sample Description 5 Blank **Collected:** 4/8/2021 **Lab ID:** 012103567-0005

Method	Parameter	Result	RL Units	Prep Date & Analyst	Analysis Date & Analyst
METALS					
6009	Mercury	ND	0.010 µg/tube	4/16/2021 MBF	4/19/2021 MBF 10:34

**EMSL Analytical, Inc.**

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EMSL Order: 012103567
 CustomerID: ESMC62
 CustomerPO:
 ProjectID:

Attn: **Dr. Richard Lynch**
Environmental Safety Management Corp.
21 E. Scott Street
Riverside, NJ 08075-3601

Phone: (856) 764-3557
 Fax: (856) 764-3558
 Received: 4/12/2021 09:00 AM

Project: **Wall High 4-8 4-9**

Analytical Results

Client Sample Description 6 **Collected:** 4/9/2021 **Lab ID:** 012103567-0006
 Center gym off

Method	Parameter	Result	RL Units	Prep Date & Analyst	Analysis Date & Analyst
METALS					
6009	Mercury	ND	0.10 µg/m ³	4/16/2021 MBF	4/19/2021 MBF 10:44

Client Sample Description 7 **Collected:** 4/9/2021 **Lab ID:** 012103567-0007
 South gym off

Method	Parameter	Result	RL Units	Prep Date & Analyst	Analysis Date & Analyst
METALS					
6009	Mercury	ND	0.069 µg/m ³	4/16/2021 MBF	4/19/2021 MBF 10:46

Client Sample Description 8 **Collected:** 4/9/2021 **Lab ID:** 012103567-0008
 North gym off

Method	Parameter	Result	RL Units	Prep Date & Analyst	Analysis Date & Analyst
METALS					
6009	Mercury	ND	0.094 µg/m ³	4/16/2021 MBF	4/19/2021 MBF 10:48

Client Sample Description 9 **Collected:** 4/9/2021 **Lab ID:** 012103567-0009
 West bleacher off

Method	Parameter	Result	RL Units	Prep Date & Analyst	Analysis Date & Analyst
METALS					
6009	Mercury	ND	0.078 µg/m ³	4/16/2021 MBF	4/19/2021 MBF 10:50

Definitions:

- MDL - method detection limit
- J - Result was below the reporting limit, but at or above the MDL
- ND - indicates that the analyte was not detected at the reporting limit
- RL - Reporting Limit (Analytical)
- D - Dilution Sample required a dilution which was used to calculate final results