Environmental Resources Group
Assessment • Remediation • Compliance • Risk Management

AIR MONITORING AND FINAL CLEARANCE AIR SAMPLING REPORT

CHIPPEWA MIDDLE SCHOOL
4000 OKEMOS ROAD
OKEMOS, MICHIGAN 48864

PREPARED FOR:

OKEMOS PUBLIC SCHOOLS
4406 OKEMOS ROAD
OKEMOS, MICHIGAN 48864
ATTENTION: BRIAN LIEBER/ALLISON DUNCAN - VERIDUS

PREPARED BY:

ENVIRONMENTAL RESOURCES GROUP, LLC
3125 SOVEREIGN DRIVE, SUITE 9B
LANSING, MI 48911

ERG PROJECT NO.: 250962

PROJECT DATE: JULY 18 – JULY 22, 2025

FINAL REPORT DATE: SEPTEMBER 25, 2025

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1.0 INTRODUCTION

Environmental Resources Group, LLC (ERG) was retained by Okemos Public Schools to conduct project oversight, representative exposure monitoring, work area perimeter and final clearance air sampling for an asbestos abatement project in the Chippewa Middle School Weight Room Tunnel. The field sampling was conducted by Kyle Goosen, an industrial hygiene consultant (IHC), in accordance with federal and state regulations.

It is important to note that prior to any abatement work, other trades had removed the ceiling of the tunnel making the area open to the atmosphere and no longer a confined space.

2.0 OVERVIEW OF THE PROJECT

Green For Life Environmental (GFL) was retained by Okemos Public Schools to remove a total of approximately 20 linear feet of asbestos-containing pipe insulation from the Weight Room Tunnel at Chippewa Middle School, Okemos, Michigan. The asbestos-containing material (ACM) was removed utilizing Class I work practices. The removal was conducted to accommodate renovation planned within the building as part of the 2022 Bond Fund set of projects.

3.0 DESCRIPTION OF ABATEMENT ACTIVITY

3.1.1 PIPE INSULATION

The asbestos-containing pipe insulation removal was conducted within a regulated area isolated with banner tape, warning signs, and a drop cloth decontamination with a dedicated HEPA filter-equipped vacuum. Pipe insulation removal was conducted using glovebags within the regulated area. A water source was placed in each glovebag, the insulation was made wet, removed, the pipe cleaned, the inside of the bag washed along with the pipe, after which the waste was secured into the bottom of the glovebag, the glovebag twisted and the twisted bag secured with duct tape. The glovebag interior and remaining pipe were then encapsulated using Fosters 32-32 Lockdown encapsulant.

All generated waste was placed in black, labeled, 6-mil, asbestos waste disposal bags sealed using duct tape. A visual inspection of the work area was conducted, and no visible asbestos debris was observed during the inspection.

Passive final clearance samples were collected following the removal. Passive final clearance samples were collected because the Weight Room Tunnel had a dirt floor and was exposed to the atmosphere, essentially existing entirely out-of-doors.

3.2 WASTE DISPOSAL

Asbestos waste generated during this project was stored in a locked GFL work van. After the project, waste was transported to Republic Services C&C Expanded Sanitary Landfill in Marshall, Michigan for landfill disposal. Individual bags of waste were labeled with the required Michigan Occupational Safety and Health Administration (MIOSHA), Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) and Michigan Department of Transportation (MDOT) labels.

3.3 PERSONAL PROTECTIVE EQUIPMENT

All workers involved in asbestos removal wore half face, negative pressure, air purifying respirators equipped with P100 filters during all phases of the work except set-up and tear-down, where no personal protective equipment was needed or worn. All workers also wore rubber work boots, full body covering disposable coveralls, and hard hats during the abatement work.

3.4 AIR SAMPLING EQUIPMENT

All work area perimeter and final clearance samples were collected using high-volume vacuum pumps. Representative exposure samples were collected using low-volume vacuum pumps. Each sample was calibrated at the cassette face using a rotameter, prior to and after sample collection. Twenty-five

millimeter (25-mm) diameter air sample cassettes equipped with 25-mm, 0.8 micron pore size mixed cellulose ester filter (MCEF) membranes, backup pads and 50-mm long conductive cowls were used on this project.

3.5 SAMPLING METHOD

Air sampling was conducted during and following the abatement process. Work area perimeter and representative exposure samples were collected to verify no detrimental impact to air outside the regulated area and to document worker exposure to airborne fibers (asbestos), respectively.

Work area perimeter monitoring was conducted pursuant to MIOSHA requirements.

Final clearance sampling was conducted to document airborne fiber concentrations after the abatement was complete.

Field blank cassettes were collected and analyzed to confirm that sample handling and processing were not sources of fibrous contamination of samples.

Aggressive clearance samples were not collected due to the Weight Room Tunnel having a dirt floor. The samples would be occluded if aggressive samples were collected, therefore passive final clearance samples were collected.

3.6 SAMPLE ANALYSIS METHOD

Laboratory analysis of all PCM air samples was conducted by a trained ERG microscopist. The PCM sample analysis was performed according to the Modified NIOSH 7400 Method, Issue #3 for determining the concentration of airborne (asbestos) fibers. ERG is a proficient participant in the American Industrial Hygiene Association (AIHA) Proficiency Analytical Testing (PAT) Program (Lab Code 101009).

4.0 SAMPLE RESULTS

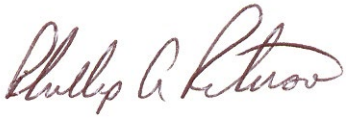
Representative exposure samples were determined to be below the MIOSHA Permissible Exposure Limit (PEL) of 0.10 fibers per cubic centimeter of air (f/cc) and the MIOSHA Excursion Limit (EL) of 1.0 f/cc. Work area perimeter samples were determined to be below 0.01 f/cc.

All final clearance samples were determined to be below the State of Michigan mandated clearance value of 0.05 f/cc and the AHERA and specification mandated clearance value of 0.01 f/cc. Additionally, the visual inspection revealed no suspect ACM in the work area. As such, the work area is safe to reoccupy.

5.0 CONCLUSION

This abatement project was conducted in accordance with applicable laws and current industry standards. For additional information, review the attached information and data or contact ERG at 3125 Sovereign Drive, Suite B, Lansing, Michigan 48911, telephone (517) 999-6020.

Kyle Goosen
Industrial Hygiene Technician



Phillip A. Peterson
Senior Project Manager

Environmental Resources Group, LLC.

PROJECT OVERVIEW

ERG Project #: 250962 Date(s): 7/18/2025-7/22/2025

Project Name: Chippewa Middle School I.H.T.: Kyle Goosen

Project Address: 4000 Okemos Road, Okemos, Michigan 48864

Client Name: Okemos Public Schools

Client Address: 4406 Okemos Road, Okemos, Michigan 48864

Project Description: Pipe Insulation Removal

Reason for Abatement: Renovation of the building

1. Crew Information:

WORKER INFORMATION		EXPIRATION DATES
Name	Accreditation Number	Certification
John Schmierer	A53351	11/14/25
Nicholas D. Marx	A36309	4/19/26
Elijah R. Baker	A64343	12/23/25

2. Contractor Information:

Name: GFL Environmental Phone: 517-886-2772

Primary Contact: Brett Eberhard Fax: 517-886-3817

Address: 2170 Apollo Drive, Lansing, MI 48906

3. Equipment On-Site:

X indicates item on-site	Item	Manufacturer name and model or description
X	Respiratory equipment	Powered air purifying respirator with P100 filters
X	Personal Protective Equipment	Full-body disposable coveralls
X	Personal Protective Equipment	Hard hats
X	Personal Protective Equipment	Rubber boots
X	Glovebags	Avail
X	HEPA vacuums	Euroclean
X	Signage	Black "Danger Asbestos" on red background
X	Sprayers	Handheld
X	Disposable towels	Kleenguard
X	Polyethylene sheeting	Clear 6-mil
X	Other	Various hand tools
X	Other	Black 6-mil asbestos waste disposal bags

4. Waste Disposal:

Waste disposal site: Republic Services C & C Expanded Sanitary Landfill

Disposal address: 14800 P Drive North, Marshall, MI 49068

Waste transporter 1: GFL Environmental

Address: 2170 Apollo Drive, Lansing, MI 48906

Waste transporter 2: Republic Services C & C Expanded Sanitary Landfill

Address: 14800 P Drive North, Marshall, MI 49068

Total number of bags/packages/cubic yards disposed of during the project: 5 bags

Asbestos Project Daily Summary

Project Number: 250962 **Date:** 7/18/25

Project Location: Chippewa Middle School **Technician:** Kyle Goosen

Worker Log

Name	Accreditation #	OSHA Class	Foreman / Worker	Expiration Date
John Schmierer	A53351	I	Foreman	11/14/25
Nicholas D. Marx	A36309	I	Worker	04/19/26
Elijah R. Baker	A64343	I	Worker	12/23/25

Personal Protection Equipment

Respiratory:

- x ½ Face Negative Pressure
- ___ Full Face Negative Pressure
- ___ PAPR
- ___ Other

HEPA Filters:

- x Yes
- ___ No
- ___ Additional Cartridge

Personal Protective Equipment:

- X Full-body Disposable Coveralls
- x Rubber Boots
- ___ Other
- ___ No PPE Required

Air Monitoring Performed

- ___ Baseline
- X Representative Exposure
- X Area, during removal / setup
- ___ Perimeter
- ___ Inside Enclosure
- ___ HEPA Exhaust
- ___ Aggressive Clearance
- X Passive Clearance
- ___ No Air Monitoring Performed

Project Number: 250962 **Date:** 7/18/25

Work Area: North East Tunnel - Weight Room

Scope: Pipe Insulation Removal

Pre-Commencement:

Y Banner tape
Y Warning signs
Y Equipment room (dropcloths & HEPA vac)
Multi-stage decon;
# of stages
Contiguous shower
Remote shower
Critical barriers properly installed (y/n)
(If no, see technician's notes)

Glovebag Removal:

Y Negative pressure glovebag
Glovebag (without negative pressure)
Y On-site to observe activity (y/n)
If yes, complete the following:
Y Glovebag integrity checked (y/n)
Y Smoke test passed (y/n)
Y Dropcloth in place (y/n)
Y Material observed sufficiently wet (y/n)
Y Glovebag cleaned prior to removal (y/n)
Y Glovebag collapsed prior to removal (y/n)
Y Proper glovebag technique observed (y/n)
(If no, see technician's notes)

Housekeeping:

Y Wet methods employed (y/n)
Y HEPA vacuum (y/n)
Y Disposable towels (y/n)

Waste:

Y Waste properly containerized (y/n)
Describe:
Black 6-mil asbestos waste bags
Y Waste containers decontaminated (y/n)
Y Properly labeling (y/n)
3 # of waste containers removed from work area
Y Storage (y/n)
Describe:
Locked Van
Y Removed from site (y/n)

Post-Abatement Visual Inspection:

Y Visual inspection conducted (y/n)
Y Vertical and horizontal surfaces free of visible dust and debris (y/n)
(If no, see technician's notes)
Y Substrate free of visible dust and debris (y/n)
(If no, see technician's notes)
N Encapsulant applied (y/n)
If yes, describe method:
N Other corrective actions necessary (y/n)
(If yes, see technician's notes)

Final inspection:

Y Pass
Fail

Project Number: 250962 Date: 7/18/25 Date Collected: 7/18/25

Project: Chippewa Middle School Sampled by: Kyle Goosen

Client: Okemos Public Schools Analyzed by: Kyle Goosen

Air Sample Data Sheet

Sample #	Type	Description (Name, Task, Location)	Time On / Time Off	Sample Time (MIN)	Flow On / Flow Off (L/MIN)	Average Flow	Volume (Liters)	Fibers	Fields	F/MM²	Conc. Fibers/cc
1	EL	Elijah Baker, A64343, TSI Removal in the Northeast tunnel	9:27 9:58	31	2.1 2.1	2.1	65.1	2.5	100	3	<0.04
2	AM	Outside the regulated near the Northeast tunnel	9:29 10:24	55	2.1 2.1	2.1	115.5	2	100	3	<0.02
3	RE	Elijah Baker, A64343, TSI Removal in the Northeast tunnel	9:58 10:24	26	2.1 2.1	2.1	54.6	1.5	100	2	<0.05
4	PF	On the left side of the northeast tunnel	10:35 12:03	88	15.2 15.2	15.2	1337.6	2.5	100	3	< 0.005
5	PF	In the center of the northeast tunnel	10:35 12:03	88	15.2 15.2	15.2	1337.6	2	100	3	< 0.005
6	PF	On the right side of the northeast tunnel	10:35 12:03	88	15.2 15.2	15.2	1337.6	3	100	4	< 0.005
7											
8											
9											
10											

* "<" = The f/cc concentration is calculated based on the method detection limit of 5.5 fibers or the ERG reporting limit of 0.005 f/cc.

Sample Types: AF - Aggressive Final Clearance
AM - Area Monitoring, During Removal / Setup
BL - Baseline
CR - Clean Room
EL - Excursion Limit
HE - HEPA Exhaust
IE - Inside Enclosure
P - Perimeter
PA - Post Abatement Area
PF - Passive Final Clearance
RE - Representative Exposure
* - Sample Occluded
# - Sample Damaged
DC - Duplicate
FB - Field Blank
QC - Quality Control

Quality Control Data

Type		Fibers	Fields	F/MM²
FB	Field blank	1	100	1
FB	Field blank	0	100	0
QC	Sample #1 recount, Passed	2	100	3

Analyst: _____

Representative Exposure Monitoring Summary

Project Number: 250962 **Date:** 7/18/25

Work Area: Northeast Tunnel

Excursion Limit Time Weighted Average

Sample #	Representative	Accreditation #	Respirator	Tasks(s)	TWA
1	Elijah R. Baker	64343	PAPR	GB	<0.04
""	Nicholas D. Marx	36309	PAPR	GB	""

Representative Exposure Time Weighted Average (8 hour)

Sample #	Representative	Accreditation #	Respirator	Task(s)	TWA
1, 3	Elijah R. Baker	64343	PAPR	GB	< 0.005
""	Nicholas D. Marx	36309	PAPR	GB	""

SU - Setup
IE - Inside Enclosure
GB - Glovebagging
BO - Bag Out
OE - Outside Enclosure
CU - Cleanup
RM - Removal
EN - Encapsulation
SV - Supervisor
HF - Half Face Negative Pressure Respirator
PAPR - Powered Air Purifying Respirator
FF - Full Face Negative Pressure Respirator

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Technician Notes
Project #250962
Date: 7/18/25

8:15 – I, Kyle Goosen of Environmental Resources Group, LLC. (ERG) arrive on site at Chippewa Middle School, 4000 Okemos Road, Okemos, Michigan 48864. I meet with competent person, John Schmierer (A53351), with Green For Life Environmental (GFL) to discuss the work plan for the day. The crew will be removing less than 25 linear feet of pipe insulation from the Northeast Tunnel in the Weight Room of the school to accommodate for renovation of the building. They are still setting up the regulated area.

8:30 – I begin setting up my equipment in the Gymnasium of the school.

9:27 – The crew begins entering the regulated area to remove the pipe insulation, so I begin an excursion limit (EL) sample on Elijah Baker (A64343) and an area monitoring (AM) sample outside of the regulated area.

9:58 – I collect the EL sample from Mr. Baker and begin a representative exposure (RE) sample on him.

10:22 – The crew is finished with abatement and clean up, so I enter the regulated area with the proper PPE to conduct a visual inspection. The tunnel is free of leftover pipe insulation and debris from the area of removal. They begin exiting the regulated area.

10:24 – I collect the RE and AM samples from the crew as they exit the tunnel.

10:35 – I begin passive clearance samples in the northeast tunnel.

12:03 – I collect the clearance samples from the regulated area.

12:17 – The clearance passed, so I let Mr. Schmierer know that the crew can tear down the regulated area.

12:30 – I pack my equipment and leave the site.

Asbestos Project Daily Summary

Project Number: 250962 **Date:** 7/22/25

Project Location: Chippewa Middle School **Technician:** Kyle Goosen

Worker Log

Name	Accreditation #	OSHA Class	Foreman / Worker	Expiration Date
Juan Castillo-Castro	A63442	I	Foreman	06/17/26
Efren Perez Peralta	A63727	I	Worker	07/24/25
Edder Ramirez	A60933	I	Worker	05/30/26

Personal Protection Equipment

Respiratory:

- x ½ Face Negative Pressure
- ___ Full Face Negative Pressure
- ___ PAPR
- ___ Other

HEPA Filters:

- x Yes
- ___ No
- ___ Additional Cartridge

Personal Protective Equipment:

- X Full-body Disposable Coveralls
- x Rubber Boots
- ___ Other
- ___ No PPE Required

Air Monitoring Performed

- ___ Baseline
- X Representative Exposure
- X Area, during removal / setup
- ___ Perimeter
- ___ Inside Enclosure
- ___ HEPA Exhaust
- ___ Aggressive Clearance
- X Passive Clearance
- ___ No Air Monitoring Performed

Project Number: 250962 **Date:** 7/22/25

Work Area: North East Tunnel-Weight Room

Scope: Pipe Insulation Removal

Pre-Commencement:

Y Banner tape
Y Warning signs
Y Equipment room (dropcloths & HEPA vac)
Multi-stage decon;
# of stages
Contiguous shower
Remote shower
Critical barriers properly installed (y/n)
(If no, see technician's notes)

Glovebag Removal:

Y Negative pressure glovebag
Glovebag (without negative pressure)
Y On-site to observe activity (y/n)
If yes, complete the following:
Y Glovebag integrity checked (y/n)
Y Smoke test passed (y/n)
Y Dropcloth in place (y/n)
Y Material observed sufficiently wet (y/n)
Y Glovebag cleaned prior to removal (y/n)
Y Glovebag collapsed prior to removal (y/n)
Y Proper glovebag technique observed (y/n)
(If no, see technician's notes)

Housekeeping:

Y Wet methods employed (y/n)
Y HEPA vacuum (y/n)
Y Disposable towels (y/n)

Waste:

Y Waste properly containerized (y/n)
Describe:
Black 6-mil asbestos waste bags
Y Waste containers decontaminated (y/n)
Y Properly labeling (y/n)
2 # of waste containers removed from work area
Y Storage (y/n)
Describe:
Locked Van
Y Removed from site (y/n)

Post-Abatement Visual Inspection:

Y Visual inspection conducted (y/n)
Y Vertical and horizontal surfaces free of visible dust and debris (y/n)
(If no, see technician's notes)
Y Substrate free of visible dust and debris (y/n)
(If no, see technician's notes)
N Encapsulant applied (y/n)
If yes, describe method:
N Other corrective actions necessary (y/n)
(If yes, see technician's notes)

Final inspection:

Y Pass
Fail

Project Number: 250962 Date: 7/22/25 Date Collected: 7/22/25

Project: Chippewa Middle School Sampled by: Kyle Goosen

Client: Okemos Public Schools Analyzed by: Kyle Goosen

Air Sample Data Sheet

Sample #	Type	Description (Name, Task, Location)	Time On / Time Off	Sample Time (MIN)	Flow On / Flow Off (L/MIN)	Average Flow	Volume (Liters)	Fibers	Fields	F/MM²	Conc. Fibers/cc
1	EL	Edder Ramirez, A60933, TSI cleanup and removal in the Northeast tunnel	7:50 8:19	29	2.1 2.1	2.1	60.9	4	100	3	<0.04
2	AM	Outside the banner tape near the Northeast tunnel	7:51 8:31	40	2.1 2.1	2.1	84	3.5	100	5	<0.02
3	RE	Edder Ramirez, A60933, TSI cleanup and removal in the Northeast tunnel	8:19 8:31	12	2.1 2.1	2.1	25.2	3	100	4	<0.05
4	PF	On the left side of the Northeast tunnel	9:19 10:48	89	15.2 14.7	14.95	1330.55	5	100	4	< 0.005
5	PF	In the center of the Northeast tunnel	9:19 10:48	89	15.2 14.7	14.95	1330.55	4.5	100	6	< 0.005
6	PF	On the right side of the Northeast tunnel	9:19 10:48	89	15.2 15.2	15.2	1352.8	5	100	7	< 0.005
7											
8											
9											
10											

* "<" = The f/cc concentration is calculated based on the method detection limit of 5.5 fibers or the ERG reporting limit of 0.005 f/cc.

Quality Control Data

Type		Fibers	Fields	F/MM²
FB	Field blank	2	100	3
FB	Field blank	1	100	1
QC				

Analyst: _____

Sample Types:
AF - Aggressive Final Clearance
AM - Area Monitoring, During Removal / Setup
BL - Baseline
CR - Clean Room
EL - Excursion Limit
HE - HEPA Exhaust
IE - Inside Enclosure
P - Perimeter
PA - Post Abatement Area
PF - Passive Final Clearance
RE - Representative Exposure
* - Sample Occluded
# - Sample Damaged
DC - Duplicate
FB - Field Blank
QC - Quality Control

Representative Exposure Monitoring Summary

Project Number: 250962 **Date:** 7/22/25

Work Area: Northeast tunnel

Excursion Limit Time Weighted Average

Sample #	Representative	Accreditation #	Respirator	Tasks(s)	TWA
1	Edder Ramirez	60933	HF	CU	<0.04
""	Efren Perez Peralta	63727	HF	CU	""

Representative Exposure Time Weighted Average (8 hour)

Sample #	Representative	Accreditation #	Respirator	Task(s)	TWA
1, 3	Edder Ramirez	60933	HF	CU	< 0.005
""	Efren Perez Peralta	63727	HF	CU	""

SU - Setup
IE - Inside Enclosure
GB - Glovebagging
BO - Bag Out
OE - Outside Enclosure
CU - Cleanup
RM - Removal
EN - Encapsulation
SV - Supervisor
HF - Half Face Negative Pressure Respirator
PAPR - Powered Air Purifying Respirator
FF - Full Face Negative Pressure Respirator

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Technician Notes
Project #250962
Date: 7/22/25

7:00 – I, Kyle Goosen of Environmental Resources Group, LLC. (ERG) arrive on site at Chippewa Middle School, 4000 Okemos Road, Okemos, Michigan 48864. I meet with competent person, Juan Castillo-Castro (A63442), to discuss the work plan for the day. The crew will be cleaning any leftover debris in the Northeast tunnel from the last abatement. The crew will also remove a small amount of pipe insulation.

7:20 - The crew begins setting up the regulated area in the tunnel.

7:50 – I begin an excursion limit (EL) sample on Edder Ramirez (A60933) and an area monitoring (AM) sample outside of the regulated area.

8:19 – I collect the EL sample and begin a representative exposure (RE) sample.

8:31 – The crew is finished with cleaning, so I collect the samples as they exit the regulated area.

8:35 - I enter the regulated area with the proper PPE to conduct a visual inspection. I notice that the crew did not encapsulate the area of pipe that was removed. Once I leave the tunnel, I will ask the crew to do that. I do not notice any leftover debris after a very thorough inspection.

8:40 – I exit the tunnel. The crew begins painting encapsulant over the exposed ends of the remaining pipe insulation.

9:19 – I begin passive clearance samples in the Northeast tunnel.

10:48 – I collect the clearance samples from the Northeast tunnel.

11:05 – The clearance samples passed, so I reach out to a member of GFL that is at a nearby jobsite to collect their equipment.

11:35 – I pack my equipment and leave the site.