

PCB Testing in Vermont Schools

Trish Coppolino, Department of
Environmental Conservation

What are PCBs?

- PCBs = polychlorinated biphenyls
- PCBs were manufactured between 1930 – 1979
 - During this time an estimated 1.5 billion pounds of these industrial chemicals were produced in the US
- Monsanto Corporation was the sole producer of PCBs in the US
 - Production was banned by EPA in 1979

Why Test for PCBs in Schools?

- PCBs were used in hundreds of industrial and commercial applications including: caulking, paint, fluorescent light ballasts, window glazing, ceiling tiles, spray-on fireproofing, floor finishes, mastics (glue or resin) and carbonless copy paper.
- Effects of PCB exposure to children can have the most health effects.
- Schools have become one of largest sources of PCB impacts to students and staff.
- PCBs were found at high levels when Burlington High School was tested as a part of a renovation (more on this).

Burlington High School

- August 17, 2020, Spill Team notified of a release of PAHs and PCBs (>50PPM) in soil above standards. PCBs attributed to building materials.
- August 19, 2020, Agencies request IA sampling....working through who has regulatory authority - EPA? VDH? DEC?
- September 1, 2020, approve workplan for IA sampling.
- September 9, 2020, preliminary data received.
- Indoor Air concentrations Range from ND-6,300 ng/m³.
- September 10, 2020, all classes go remote.

*
Remember this was after all classes were remote from March 2019 to June 2020

Burlington High Scrambles After Air Tests Detect Cancer-Causing Chemicals

By COURTNEY LAMDIN



Signs warning about PCBs at Burlington High School

COURTNEY LAMDIN © SEVEN DAYS

Vermont PCB History and Legislation

- H.439 (Act 74) (2021)
 - Legislation requires that all public, approved and recognized independent schools constructed or renovated before 1980 must conduct indoor air sampling for PCBs. DEC was provided \$4.5 million fund the sampling. Change Definition of Release.
 - ***“Release” also means the intentional or unintentional action or omission resulting in the spilling, leaking, emission, or disposal of polychlorinated biphenyls (PCBs) from building materials in a building or structure.***
- H.747 (Act 78) (June 2023)
 - States that mitigation and remediation costs as part of the testing program are 100% reimbursable from AOE (\$13M)

Vermont Team Partners and PCB support group started July 2021

- VT DEC
 - Nine project managers
- Health
 - Sarah Owen, Danielle Allen, Pamela Wadman
- VT AOE
 - Jill Briggs Campbell
- US EPA Region I
 - Kim Tisa (before retirement), Katherine Woodward, Dan Wainberg, Matthew Rigdon

How is Testing of Vermont Schools being Approached?

- Sampling, mitigation, and cleanup follows the existing process used by DEC for investigating and remediating contaminated properties for any hazardous material release. **This process has DEC oversight for all steps in the process.**
- Sampling at each school will be representative
- VDH derived Screening Levels, School Action Levels (SALs) and Immediate Action Levels (IALs) to prioritize the need for action when PCBs are detected
 - PCB levels in the indoor air of schools should be kept as low as possible
 - SALs indicate when schools need to identify and abate potential sources of PCBs inside their buildings
 - IALs indicate the need for immediate, emergency corrective actions to reduce exposure. In order of priority, these actions are:
 - Eliminating the use of rooms where samples exceed the IAL;
 - Limiting the amount of time the space is used; and then
 - Deploying mitigation measures to reduce PCB concentrations in indoor air.

The “Built” Program

VTDEC	Health	AOE
Hire Consultants/hold technical meetings	Develop School Action Levels (SAL)	Coordinate and help with school communications
Prepare Technical Documents/FAQs (team)	Develop Immediate Action Levels (IAL)	Reimburse Schools for work conducted
Build a PCB database (team)	Develop Occupancy Options for Schools	Use Pre-approved Env. Consultants (BGS)
VAEL	School Meetings (team)	
Contract with University of Iowa (funded by DEC/Health)	Develop Communication Letters (team)	
Regulatory Process/WPCE, etc		
Coordination with EPA (technical/MOA)		

School Action Levels

- School Action Levels Immediate Action Levels (ng/m³)

	Pre-K	K-Grade 6	Grade 7 to Adult
School Action Level	30 ng/m ³	60 ng/m ³	100 ng/m ³
Immediate Action Level	90 ng/m ³	180 ng/m ³	300 ng/m ³

How the Program Works

1. Survey to schools
2. Prioritize schools and set sampling schedule
https://dec.vermont.gov/sites/dec/files/wmp/Sites/schedule_website.pdf
3. Assign consultants and DEC staff to school districts/private schools

How the Program Works (cont)

4. Consultant:

- Contacts school to schedule date/time for inventory
- Submits WPCE to DEC to conduct inventory (DEC approves)
- Conducts full building inventory of all spaces
- Provides DEC with grouping of spaces and WPCE to conduct IA sampling (DEC approves)
- Schedules IA sampling with school *school

How the Program Works (cont)

5. IA results received:

- DEC reviews IA results, QC and upload
- Upload notifies Health
- Health evaluates data and provides occupancy options for school
- Occupancy options letter sent to school
- DEC/Health/AOE meet with school

How the Program Works (cont)

6. School:

- Joint Letter/occupancy options letter received
 - 10 days to notify DEC what occupancy option they have selected
- School send letter to community about findings
- Data is public 10 days from receipt

How the Program Works (cont)

7. School:

- School is responsible to hire consultant to identify source of PCBs
- DEC reviews/Approves WPCE for SI/Cleanup
- AOE reimburse schools for approved costs

8. DEC work towards SI/Cleanup

- sample building materials that may contain PCBs
- work towards cleanup in compliance with DEC/EPA

*MOA with EPA and guidance documents

What the inventory/Grouping looks like

Table 1. Room Grouping Summary

Group # / Construction Year	Location	# Rooms	# Proposed Samples
1/1949	Most administration rooms, classrooms, and hallway associated with original construction – Rooms A1, A2, A3, A4, A5, A6, and H3	7	3
2/1954	Administration rooms and classrooms in 1954 addition – Rooms A7, A8, A9, A10, A11, A12, and A13	7	3
3/1949	Classrooms, hallway, and storage in original construction – Rooms B1, B2, B3, B4, B5, B6, B7, B8, B9, and B10, H2, and ST1	12	4

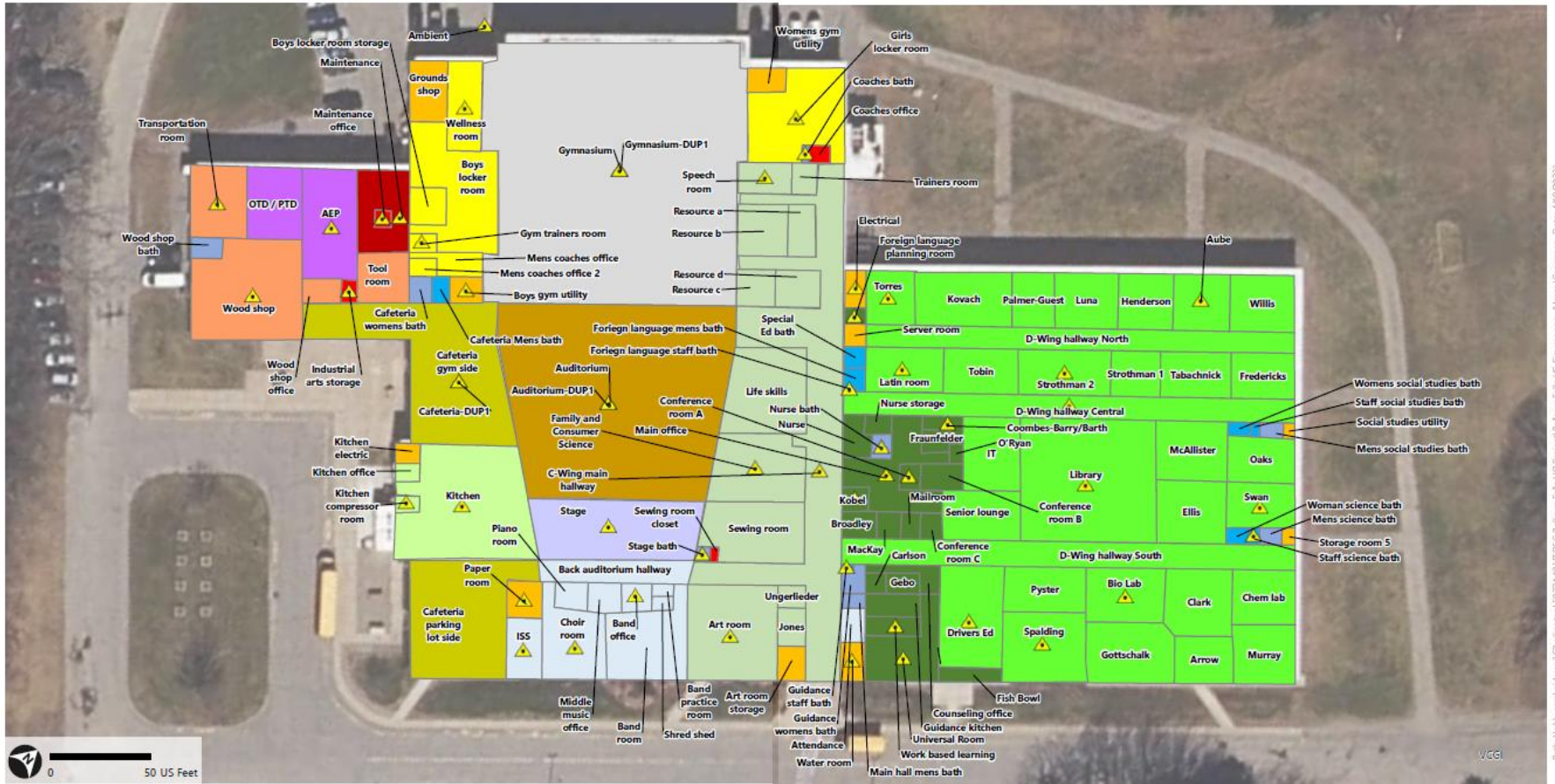
What the Inventory/Grouping looks like

Group #	Room ID	Sample ID	Justification	Potential PCB Containing Materials
1	A1	5212-A1 / 5212-A1- FD	Representative administrative room. Includes transformer.	Carpet mastic, paint, ceiling tiles, transformer
	A6	5212-A6	Representative administrative room. Spatial distribution.	Carpet mastic, paint, cove base, ceiling tiles
	H3	5212-H3	Representative hallway	Cove base, paint, carpet mastic, ceiling tile

BFUHS Grouping

Figure 2: First Floor Plan, Grouping, and Proposed Sample Locations

Bellows Falls High School | Bellows Falls, VT



Path: \\vhb.com\gis\proj\04ringen\38724_10_VT\DC\Bellows Falls_HHS\Project\Bellows Falls_HHS_Figures.mxd, Date: 4/19/2023

VCGI

What does IA Sampling Look Like

- Number of samples:
 - Groups with multiple spaces shall sample, at a minimum, 30% of spaces in each group.
- Analytical/Sampling:
 - 24 hour sampling event
 - TO-10A (5L/min)
 - EPA method 8082
 - RL of 10ng/m³ or below

Picture of Indoor Air Sampler for PCBs



University of Iowa Superfund Research Program

Rank	Surface
1	Glass blocks
2	Brick wall
3	Cinderblock wall
4	Floor tile
5	Dry wall
6	Cove base
7	Carpet

1: Glass blocks



2: Brick wall



3: Cinderblock wall



Funding – Sampling Indoor Air

- Average Inventory (\$,700-\$16,000)
- Average Indoor Air Sampling (\$11,000 - \$30,000)
- Estimated Building Material Sampling (\$10,000-\$300,000)
- Estimated Cleanup (\$50,000 -\$18M)

Funding – Assessment and Mitigation

- Mitigation measures are immediate/interim steps to reduce or offset known negative effects. Common measures for mitigating PCB levels in indoor air include:
 - Increasing ventilation
 - Providing or increasing air filtration
- Mitigation is coupled with investigation and building materials testing to identify PCB sources
 - Important because often source(s) of the PCBs are not immediately evident
 - Access to funding is essential to responding quickly to exceedances of established action levels

Funding – Remediation

- Remediation measures are intended to permanently address identified sources of PCB contamination. Common measures for remediating PCB levels in indoor air include:
 - Upgrading air handling/ventilation systems
 - Isolating/encapsulating suspected or known PCB source(s)
 - Removing and properly disposing of PCB-containing building materials
- Current funding: \$13M for schools (assessment/mitigation/cleanup)
- *\$16M for BHS*

Funding – Remediation

- All activities that are approved by DEC as a part of the Corrective Action Plan are eligible for funding.
- AOE will administer grants through its existing grant management process. DEC will oversee work and payment will be made on a reimbursement basis after DEC approval of work.

What we are learning

Number of schools requiring testing	Number of schools where inventories have been approved by SMS to conduct	Number of schools where Indoor Air testing has been approved by SMS to implement (% complete)	Number of schools with at least one sample that exceeded the SAL (% exceeded)	Number of schools with at least one sample that exceeded the IAL (% exceeded)	Number of schools with all results below the SAL
324	160 (49%)	116 (36%)	31 (34%)	13 (14%)	59 (66%)

What we are learning

Highest IA results are between 600 ng/m³ at Green Mountain – 880 ng/m³ at Bellows Falls Union High School

Twin Valley Elementary

- Spray on Fireproofing 33,000 mg/kg
- Cove Mastic 2,300 mg/kg
- Duct Mastic 4,700 mg/kg
- Floor Coating 1,930 mg/kg
- Expansion Joint 740 mg/kg

Poultney Elementary

- Window caulk 240,000 mg/kg
- Doorframe caulk 13,700 mg/kg
- Expansion Joint caulk 107,000 mg/kg

Green Mountain High School

- Window Caulk 460,000 mg/kg
- Stair Trim caulk 120,000 mg/kg

What we are learning

- Best laid plans.....
 - Simple is better when it comes to communication
 - Always budget for more time
 - Always budget for more money
 - Communicate, Communicate, Communicate....with EVERYONE
- Build strong teams and a good support system!
- You might find something in a school that is NOT PCBs
- Build a program that can grow and change.
- Lots to explain around differences in values –Vermont (SV, SAL, IAL) and EPA (Exposure Levels)
- We have a lot more to do!

Resources

- Common Misconceptions about PCBs Obscure the Crisis of Children's Exposure in School. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9730834/>
- VT School Action Levels. <https://www.healthvermont.gov/sites/default/files/documents/pdf/ENV-PCB-school-action-level-development.pdf>
- VT PCB Screening Value. <https://www.healthvermont.gov/sites/default/files/documents/pdf/ENV-PCB-indoor-air-screening-value-development.pdf>
- The Class of 1964 Policy Research Shop, PCB testing in Vermont Public Schools. <https://legislature.vermont.gov/Documents/2024/WorkGroups/House%20Education/PCB%20Testing/W~Gretchen%20Bauman~PBC%20Testing%20in%20Vermont%20Public%20Schools%20-%20Dartmouth%20College%20Policy%20Research%20Shop~2-28-2023.pdf>

Resources

- VTDEC Website:

<https://dec.vermont.gov/waste-management/contaminated-sites/PCBsInSchools>

- HEALTH Website

<https://www.healthvermont.gov/environment/chemicals/polychlorinated-biphenyls-pcbs>

Contact Info

VTDEC

SOV.PCBSampling@vermont.gov

Health

ahs.vdhpcbschoolsampling@vermont.gov