

Winter 2022

Indoor Air Testing for PCBs in Vermont Schools – Technical Guidance

This Technical Guidance document accompanies the [Indoor Air Testing for PCBs in Vermont Schools- General Overview](#). This document provides information on what to include in an Indoor Air Sampling Plan, analytical methods and final report.

Pre-Sampling Building Inventory

The environmental consultant should conduct a [Pre-Sampling Building Inventory of potential PCB-containing products](#). The Pre-Sampling Building Inventory should be conducted in every space within the building and include a comprehensive inventory of potential PCB-containing products. Spaces are considered rooms and ancillary spaces (bathrooms, hallways, stairwells, etc.). All spaces should be included in the Inventory, including spaces that will not be tested. An example building inventory spreadsheet may be found [here](#).

NOTE: The pre-sampling building inventory is an example and should not be inferred to be all inclusive. If other materials are identified as potentially containing, they should be added to the inventory for assessment.

Groups Assignments and Inventory Will Be Used to Select Rooms to Sample

The environmental consultant will use the results of this inventory to assign rooms and spaces to groups that are considered to have similar PCB-containing products. Other considerations used to designate group assignments could also include type of ventilation, date of construction, and location within the building. Use of space and occupancy should not factor into group assignments.

Pre-Sampling Building Inventory and group assignments will be completed to identify which spaces will be sampled. Based on the group assignments, representative spaces within the group will be selected for sampling. Additional information needed to help with group assignments is included in the Pre-Sampling Building Inventory. This Pre-Sampling Building Inventory can be sorted to allow for easier group assignments and building materials in order to support how a group was created and support the rationale for which spaces to sample.

Short-Term Occupancy Recommendations Will Be Based on Grouping

Based on the indoor air levels of PCBs, the Health Department will use the group assignments with similar potential PCB-containing products in building materials to recommend several occupancy scenarios that the school can consider. Occupancy scenarios will be published on the Health Department's website. Group assignments will also allow for easier identification of the products that may be causing elevated indoor air concentrations. This will further identify the building products that might need to be individually sampled to determine their PCB concentration.

What Should the Indoor Air Sampling Plan Include?

The recommended sampling and analytical methods described below should be included in the Indoor Air Sampling Plan. Environmental consultants must include all the following information:

1. School name, contact information, and dates on the construction and renovation of the school (If known).
2. Map of sampling locations, with each Unique room ID and Occupancy Type identified on a base map (a table noting each labelled room and use will also be acceptable if it accompanies a facility map that has same labelling notation). Sampling locations should be labelled by floor/room number. This information is included in the pre-sampling building inventory spreadsheet and should be submitted with this workplan.
3. Number of proposed samples, including sample duplicates (this will vary by school).
4. Group Assignments for Sampling. Each Group should be sampled as equally distributed as possible. Groups with multiple spaces shall sample, at a minimum, 30% of spaces in each group. In buildings with a small number of total spaces, an alternative number of sample locations, other than what is detailed above, can be proposed to the SMS site manager
5. Proposed ambient air sample and location of sample.
6. Completed school [Pre-Sampling Building Inventory](#).
7. Justification for the proposed sampled and unsampled rooms, as identified through the Pre-Sampling Building Inventory, including information on potential current or historic PCB source locations within each room or area.
8. Proposed sampling method (see below), including sample collection height (sample collection equipment must not be placed on the floor), sampling duration, and Standard Operating Procedures for sample collection.
9. Plans for including one field blank and a duplicate sample (per every 20 samples).
10. Name of the laboratory that will analyze the samples, with laboratory reporting limits for each Aroclor.
11. Consultant .csv file to Column V completed and submitted to VT DEC with work plan. Consultant .csv file from Column V to AM completed and submitted to VT DEC after sampling event.
12. Timeline for sample collection, receipt of results, and report completion.

The Indoor Air Sampling Plan must be submitted to the DEC for review and approval within 30 days of planned sampling. All plans must be emailed to SOV.PCBSampling@vermont.gov for review and approval prior to beginning air sampling.

What Are The recommended PCB Sampling and Analytical Methods?

There are various sampling procedures and analytical methods that can be used to test for PCBs in indoor air. We recommend:

- All samples should be collected via EPA Method TO-10A for 24 hours at maximum pump flow rate (5L/min) and analyzed for individual PCB Aroclors using EPA method 8082¹;
- Sample analytical results must be reported as total Aroclors;
- The reporting limit for each Aroclor should be 10 ng/m³ or below; and
- The laboratory reviews the raw data (for example, chromatogram) and report any peaks that cannot be identified as an Aroclor (UIP) but fall within the retention time windows for a potential PCB congener.

After Sampling Has Occurred What Is Next?

The laboratory will send the analytical results via email to SOV.PCBSampling@vermont.gov in excel as well as CSV formats.

The DEC will share results with the EPA and the Vermont Department of Health.

The Department of Health and DEC will provide a joint letter to the school in response to the analytical results to determine next steps within 30 days.

What Should the Report Include?

1. All reports should be submitted electronically as a text searchable PDF within 14 days of the analytical results being submitted.
2. Executive Summary that includes the findings, conclusions and recommendations based upon the data collected during the indoor air sampling investigation
3. Property history. Past and present land use and potential sources of PCBs
 - a. This should include any information pertaining to updates or renovations to the building that may have occurred since its original construction.
4. A discussion of any deviations from the Indoor Air Sampling Plan that occurred
5. A detailed site map-that includes:
 - a. sampling locations and results (in excel format, and a map showing sample locations and corresponding results).
 - b. potential current or historic PCB source locations within each room
6. Analytical results presented in tabular format which sums each individual Aroclor and compares to 22.5 ng/m³ and the applicable Health Department School Action Level.
7. A copy of the laboratory reports, chains of custody documentation, all quality assurance data, and analytical chromatograms from each sample.
8. Field Notes (Copies of the original field notes shall be attached as an appendix and the field notes shall contain the following minimum content: the date the work was performed, name of the person conducting the work, tasks completed, documentation of weather conditions, sampling timeline with locations, sampling logs, field monitoring results, and calibration information for each type of field analytical equipment).
9. Data interpretation, conclusions and recommendations for any next steps related to the findings of the indoor air sampling.

¹ Other suitable methods exist for sampling and analyses of indoor air for PCBs, including analyses as homologs or congeners. Previous sampling efforts have shown acceptable correlation between congener and Aroclor analyses. Aroclors are recommended as a cost-effective screen for PCBs in air.

What Are the School’s Next Steps After Receiving a Joint Letter from DEC and Health?

The Department of Health and DEC will assist the school with the next steps, which may include implementing best management practices (https://dec.vermont.gov/sites/dec/files/wmp/Sites/09.01.2021.pcb_general.overview.FINAL.pdf), identifying and removing sources of PCBs, and/or relocating students and staff to prevent potential exposure, especially during any time when mitigation work may be necessary to reduce indoor air PCB concentrations. Schools may also need to hire an environmental consultant to do additional sampling.

If PCB levels exceed the Regulatory Action Level (RAL) of 22.5 ng/m³, this will be considered a “release” to the environment which will potentially require additional investigation and remedial work, per the Investigation and Remediation of Contaminated Properties Rule (IRule). The schools will be required to achieve the appropriate School Action Level (SAL) as long as it continues to be used as a school for that age group. If use changes, the cleanup level may change as well. It is recommended that schools demonstrate due diligence to show that indoor air PCB levels are as low as reasonably achievable. The school’s environmental consultant will advise schools on actions to take to show due diligence, including identifying, removing, and mitigating sources of PCBs. The best way to demonstrate due diligence to reduce indoor air PCB levels to as low as reasonably achievable is to remove PCB sources. That means schools should test and then remove detectable interior PCB sources. This may not be an option if removal of PCBs is technically infeasible (i.e. the PCBs have extensively migrated into structural substrates).

We recommend that schools reach out to the families and staff to inform them of sampling and results. Templates for communicating before testing begins and after results are received can be found on the Department of Health’s webpage.

Please note that depending on test results and potential sources identified, the EPA may become involved. The [EPA has additional information on regulations and requirements for PCBs](#).

Who Do We Contact for Additional Questions?

If you have questions about sampling indoor air for PCBs, contact:

sov.pcbsampling@vermont.gov