

Protecting the Most
Vulnerable
Indoor Air Testing for
Polychlorinated Biphenyls
(PCBs) in Vermont Schools



What are Polychlorinated Biphenyls

Polychlorinated Biphenyls(PCBs) are:

- Human made chemicals
 - Commonly used in building materials and electrical equipment
 - Banned by EPA in 1979
- PCBs may harm the immune, reproductive, nervous and endocrine systems
 - Results in impaired immunologic development, fertility problems, changes to brain development in utero, thyroid hormone changes, increase in Type 2 diabetes
- Are Cancer Causing

Potential PCB containing Building Materials

PCBs were used historically in building products to impart flexibility in certain products such as:

- Caulking
- Paint
- Fluorescent Light Ballasts
- Window Glazing
- Ceiling Tiles
- Spray-on Fireproofing
- Floor Finish
- Mastics (glue or resin)

Why are PCBs in Building Materials a Concern?

How PCB containing building materials impact indoor air:

- Released into the air through off-gassing
- PCBs in the air can be absorbed into other building materials, furnishings and dust
- PCBs present in some products, caulking or paint, could move directly into adjoining materials and contaminate them (wood or concrete)

2013 Vermont School Pilot Test

Barre Town Elementary

- 23 indoor air samples collected;
- 3 of the 23 samples had detections, all others were ND below 15 ng/m³;
- Detected concentrations were 33 ng/m³, 56 ng/m³ and 130 ng/m³; and
- VDH determined that these levels were not a significant health threat because the average indoor air concentration was below 15 ng/m³.

Champlain Elementary School, Burlington

- 20 indoor air samples were collected;
- 4 of the 20 samples had detections, all others were ND below 15 ng/m³;
- Detected concentrations were 27 ng/m³, 32 ng/m³, 36 ng/m³ and 65 ng/m³
- VDH determined that these levels were not a significant health threat because the average indoor air concentration was below 15 ng/m³.

2013 Vermont School Pilot Test

- Holland Elementary
 - 10 indoor air samples collected
 - All samples were ND below 15 ng/m³
- Mt Anthony, Bennington
 - 24 indoor air samples were collected
 - All samples were ND below 15 ng/m³

Burlington High School Indoor Air Results

Building A

- 12 indoor air samples collected;
- Detected concentrations ranged from 4 ng/m³ to 260 ng/m³;
- Building Survey to determine potential PCB building products and sampling;
- Caulking and floor Mastic have elevated concentrations

• Building B

- 12 indoor air samples collected;
- Detected concentrations ranged from 27 ng/m³ to 270 ng/m³;
- Building Survey to determine potential PCB building products and sampling;

• Building D

- 10 indoor air samples collected;
- Detected concentrations ranged from 11 ng/m³ to 300 ng/m³;
- Building Survey to determine potential PCB building products and sampling;

• Building F

- 17 indoor air samples collected;
- Detected concentrations ranged from 160 ng/m³ to 7100 ng/m³;
- Building Survey to determine potential PCB building products and sampling;

Budget Considerations

Estimated up to 300 schools statewide could require indoor air testing

- built or renovated before 1980

The cost for indoor air sampling is estimated to be between \$15,000 and \$20,000 per school (\$4,500,000)

Remaining funds will be used to:

- Provide a publicly accessible data management system
- Provide technical assistance

Not Considered in the Budget

Testing Potential PCB Containing Building Materials

- Assume between \$10,000 and \$300,000 (or more) per school

Remediating or Mitigating an Impacted School

- Assume between \$50,000 (low), \$200,000 (medium), \$1M to \$18M (high)

Additional cost for assessment and cleanup (estimates):

- Sampling \$5,000,000
- Cleanup \$36,000,000 (does not include replacement costs)