

PCBs in Schools

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VERMONT
DEPARTMENT OF HEALTH

How the Health Department helps protect school health

The PCB testing program is one of many ways we work to protect the health of school communities.

We provide guidance and enforce regulations around **lead in drinking water, asbestos, lead-based paint, radon** and the use of **cleaning products**.

We may also work with schools on issues like **mold, pest management, keeping schools asthma-friendly**, and more.

What are PCBs?

PCBs are a group of toxic chemicals that can harm health. They were commonly used in building materials and electrical equipment before 1980. As these materials deteriorate, PCBs may be released into the environment.

PCBs are known as Persistent Organic Pollutants (POPs), meaning once released into the environment, they:

- remain intact for exceptionally long periods of time
- become widely distributed throughout the environment including soil, water and, most notably, air;
- accumulate in living organisms and are found at higher concentrations higher up the food chain; and
- are toxic to humans and animals.

What are the harms of PCBs?

PCBs can impact multiple systems of our bodies, and the effects can be interrelated.

Cancer	Body Systems
• Breast • Liver • Melanoma	• Immune • Reproductive • Nervous • Endocrine

To protect the health of students and staff, the EPA recommends that PCB levels in the indoor air of schools be kept **as low as possible.**

Immune system impacts

- Studies have revealed PCBs can impact the immune system across the lifespan, which can result in:
  - Reductions in the response of the immune system
  - Decreased resistance to infections
- PCBs suppress the immune system, which is thought to be a reason why PCBs also cause cancer.
- These toxins are linked to autoimmune diseases, increased infection rates, and potential disruption of vaccine responses.

Reproductive system impacts

Studies have shown PCBs can harm the reproductive system:

- Reduced birth weight
- Decreased fertility
- Reduced live birth rates
- Reduced sperm counts
- Significant decrease in gestational age

Nervous system development

- Proper development of the nervous system is critical for early learning and can impact a person's health throughout their life.
- Studies have shown PCBs affect nervous system development:
  - Significant and persistent deficits in neurological development, including learning deficits, memory, attention, and motor impairment
  - Changes can occur in utero and PCBs can be passed on through breast milk.

Endocrine system changes

- PCBs are among the most well-studied endocrine-disrupting chemicals.
- PCBs disrupt thyroid hormones critical for normal growth and brain development.
- Studies have shown that PCBs:
  - Are linked to altered puberty onset
  - Can affect brain development leading to cognitive and behavioral problems, particularly when exposure occurred in utero
  - Are associated with changes in thyroid hormone levels in infants that can result in life-long metabolic and cognitive changes

Cancer risks

- Multiple agencies classify PCBs as probable carcinogens, including the EPA.
- The International Agency for Research on Carcinogens define PCBs as carcinogenic to humans, meaning PCBs cause cancer.
- PCBs may cause malignant melanoma, and are associated with non-Hodgkin lymphoma, breast and liver cancer.

How the School Action Levels were developed

Vermont was the first state to take on a statewide school PCB testing program when Act 74 was passed in 2021.

The Health Department developed a framework that would **protect the health of students** and teachers as much as possible while remaining **feasible for schools to implement**.

The **school action levels** help prioritize when schools need to take action to address sources of PCBs inside the school and make the sources easier to identify and fix.

What are the School Action Levels?

Age	Level
Pre-K	30 ng/m^3 (nanograms per cubic meter)
Kindergarten – Grade 6	60 ng/m^3
Grade 7 - adult	100 ng/m^3

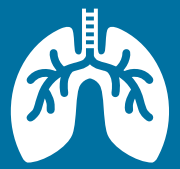
Why are Vermont's SALs different from the EPA's levels?

EPA action levels range from 100 – 600 ng/m^3

Both are based on the same science; however, Vermont's levels take additional information into account. For example:

- Vermont made a few reasonable changes to account for VT exposure levels for VT students and school staff. These changes accounted for background exposures and length of exposures that better reflect what we know about school-based exposures in Vermont.

We recommend PCBs in air stay below school action levels (SALs) to protect everyone in the school



- Contaminated air is the main pathway of concern



- This level assumes Reasonable Maximum Exposure



- Protects risk to body systems and reduces cancer risk