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## **PCBs in Indoor Air of Schools, Short-Term Occupancy Options**

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In 2021, the Vermont legislature required that by 2024 all schools built or renovated prior to 1980 be tested for polychlorinated biphenyls (PCBs) in the indoor air. The Vermont Department of Health (Health) developed [school action levels \(SALs\)](#) to prioritize action when PCBs are found in school indoor air. PCB levels in the indoor air of schools should be kept as low as possible.

The school action levels are:

- 30 ng/m<sup>3</sup> (nanograms per cubic meter) for pre-kindergarten
- 60 ng/m<sup>3</sup> for kindergarten through 6<sup>th</sup> grade
- 100 ng/m<sup>3</sup> for 7<sup>th</sup> grade through adult

If at least one location in the school is at or above the SAL, this memo outlines three occupancy options a school can take to decrease exposure to PCBs in indoor air. **These occupancy options are short-term recommendations while the school conducts additional work to address the source(s) of PCBs**, as required by the Department of Environmental Conservation (DEC). The occupancy options provide schools with flexibility to make decisions regarding acceptable risk in their school community. If building materials are found to contain PCBs above applicable federal standards, occupancy options may also need to be discussed with and approved by the United States Environmental Protection Agency (EPA), which regulates PCBs in building materials.

**Occupancy options follow a framework to reduce exposure in rooms where PCB levels are at or above the SALs.** The SALs are derived based on noncancer health effects and reasonable maximum exposure assumptions for staff and students. The risk of noncancer health effects is estimated by comparing an exposure concentration to a toxicological reference concentration. The Hazard Quotient (HQ) is the ratio of estimated exposure to a chemical and the level at

which no adverse effects are expected. An HQ equal to or less than 1 is considered to have negligible health risk. The SALs correspond to an HQ of 1.

**All occupancy options exclude the use of rooms where PCB levels are at or above the Immediate Action Level (IAL).** The IALs are derived based on the same noncancer health effects and exposure assumptions as the SALs and correspond to an HQ of 3. The concept of not using a room that exceeds an HQ of 3 is taken from [EPA Removal Management Levels](#) policy for prioritizing actions that may warrant the use of removal authority. The EPA program uses a HQ of 3 as the upper target risk level based on the range of uncertainty defined in the toxicological reference concentration.

Before a school is tested for PCBs in indoor air, a [building materials inventory](#) will be conducted to identify rooms that have similar potential PCB sources. These rooms are placed into the same group, and the indoor air from a representative number of rooms from each group are tested. Since not all rooms in a school can be tested, data from representative rooms in a group will be extrapolated to untested rooms in the same group. The PCB levels in tested rooms and the extrapolation to untested rooms will be used to recommend occupancy options that reduce PCB exposures in the school. The occupancy options will follow the framework below.

**Each school will receive a letter from DEC and Health to provide an individualized explanation of how to respond to the results of the indoor air sampling,** and if levels at or above the SAL are detected how to address them based on the four occupancy options described below. Any deviations from this approach will be explained in the individualized explanation to the school.

## **Options 1- Lowest Risk:**

### **Option 1**

The first option is to **use all tested rooms less than the SAL, and also untested rooms that fall into a group** with:

- 1) no rooms at or above the IAL and
- 2) equal to or less than 50 % of rooms at or above the SAL.

By excluding rooms in groups with more than 50% of rooms at or above the SAL, the school is reducing the probability that untested rooms are at or above the SAL.

Tested rooms less than the SAL and the untested rooms that meet the criteria above can be used for a specific number of hours per week. Health calculates the specific number of hours per week by using the 95<sup>th</sup> percent upper confidence limit (95<sup>th</sup> UCL) of the average results collected from rooms. Rooms that are not occupied most of the day, such as bathrooms, hallways, and stairways, may be excluded in the 95<sup>th</sup> UCL calculation. Rooms or groups with known PCB sources may be excluded in the 95<sup>th</sup> UCL calculation. Any exclusions will be justified in the individualized letter to schools. The 95<sup>th</sup> UCL is used as an approximate concentration for untested rooms. Using the 95<sup>th</sup> UCL, the number of hours per week is calculated to correspond to a HQ of 1. This method is a way to reasonably ensure that even in a scenario where untested rooms are used, the HQ is not expected to exceed 1. The school should conduct additional work to address the source(s) of PCBs in rooms that are at or above the SAL within one year.

### **Option 2 – Lower Risk:**

If option 1 is not feasible, option 2 provides greater use of rooms for a specific number of hours per week. This option accepts a greater PCB exposure risk, with the timeline to initiate mitigation being shortened so that exposure duration is limited. In this option, **all rooms less than the IAL can be used, as well as all untested rooms in a group with no rooms at or above the IAL.** These rooms can be used for a specific number of hours per week. Occupancy of rooms over the SAL will result in an HQ greater than 1, and therefore, presents a greater risk than options 1 and 2. While over the HQ of 1, risk is reduced by reducing occupancy based on the 95<sup>th</sup> UCL of rooms. Mitigation of rooms that are at or above the SAL should be underway within 6 weeks.

### **Option 3 – Higher Risk:**

If options 1 and 2 are not feasible, option 3 lowers exposure to PCBs by excluding rooms at or above the IAL. This option accepts greater PCB exposure risk, with the timeline to initiate mitigation being shortened so that exposure duration is limited. In this option, **all rooms less than the IAL can be used, as well as all untested rooms in a group with no rooms at or above the IAL.** Since rooms over the SAL are used up to full time, this option accepts the greatest amount of PCB exposure and risk to students and staff. Mitigation of rooms that are at or above the SAL should be underway within 6 weeks.

