VERMONT
DEPARTMENT OF HEALTH

Health Update
September 22, 2020

TO: Vermont Health Care Professionals in Chittenden County

FROM: Mark Levine, MD, Health Commissioner

PCB contamination at the Burlington High School and Technical Center Campus

Note: This Health Advisory is superseded by a Health Advisory issued on October 12, 2020.

Background
Buildings on the Burlington High School campus, which includes the Technical Center and a licensed child care center, have polychlorinated biphenyls (PCBs) in the building materials (caulk). PCBs are a group of 209 persistent, manmade chemicals that impart elasticity to building materials. Health Department officials were notified of the PCBs in building materials on August 18, 2020. The PCBs have migrated from the building materials into the soil and indoor air. Indoor air is the primary route of exposure to PCBs from building materials.

Indoor air testing confirmed the presence of PCBs in the indoor air:

- Buildings A-E have indoor air levels of PCBs ranging from 1 – 300 ng/m^3.
- Building F has indoor air levels of PCBs ranging from 160 – 6,300 ng/m^3.
- Go here to see a map of the buildings and indoor air concentrations.

To ensure that exposure to high school students and staff results in a cancer risk of less than one in a million, the Health Department recommends indoor air levels be below 15 ng/m3. To ensure that exposure to high school students and staff results in negligible risk of non-cancer health effects including immune, reproductive, endocrine and nervous system toxicity, the indoor air levels should be below 190 ng/m3. EPA recommends indoor air levels not exceed 100 – 600 ng/m3 depending on the age of the person exposed.

Acute health effects of PCBs
Short term exposure to excessive amounts of PCBs (acute effects) can lead to chloracne, decreased liver function, respiratory problems, neurological effects, and gastrointestinal effects. These types of acute effects due to high levels of exposure were reported in occupational studies of people who work directly with PCBs and are generally rare. Studies also show that high levels of PCBs in pregnant women can have an impact on their children's birth weight, short-term memory, and learning.

Chronic health effects of PCBs
The likelihood of having a health effect from PCB exposure depends on how much a person was exposed to, and for how long.

- **Non-cancer effects:**
  PCBs can affect the immune, reproductive, nervous and endocrine systems. PCB exposure in neonates led to a smaller thymic volume, indicating possible impaired immunologic development. Studies that examined reproductive end points found indications that exposure to PCBs is associated with menstrual disturbances in women and effects on male fertility. Neurobehavioral alterations have been reported in newborns exposed to PCBs in utero. The epidemiological studies suggest a link between exposure to PCBs and thyroid hormone toxicity in humans. Both positive and negative associations between PCB levels and TSH, T_4 and T_3 are reported, perhaps due to the varying toxicities of the 209 PCBs. Some studies report an increase in type 2 diabetes in people who had elevated levels of PCBs in their blood due to fish consumption. Many other health effects are reported with varying consistency in studies. These studies are summarized in the Agency for Toxic Substances and Disease Registry Toxicological Profile – the link is included at the end of this document.

- **Cancer:**
  PCBs are carcinogenic to humans, as determined by the International Agency for Research on Cancer. In humans, PCBs can cause malignant melanoma. Positive associations have been observed for non-Hodgkin lymphoma, breast cancer, and liver cancer.

Biomonitoring

PCBs are a group of 209 chemicals, with varying half-lives. ranging from a week to infinity. The highest PCB concentrations are found in adipose tissue. There are no treatments or procedures that can rid the body of PCBs . PCBs can be measured in the serum at some commercial reference laboratories. Most people in the U.S. have detectable levels of some of the 209 PCBs in their serum. A serum test cannot discern how much people were exposed to at school, versus how much came from their diet, nor will it predict an individual's health outcome or help direct an individual's medical care. For those reasons, we do not recommend testing for people who spent time in the buildings on the Burlington campus.

Medical History

Exposure to PCBs should be documented in the patient's medical history. Providers should take into account the patient's complete medical history, lifestyle and risk factors, including genetics, when determining whether and how to screen for specific health outcomes that may be related to PCB exposure. There is no specific treatment to reduce or reverse PCB accumulation. Liver function tests may be informative for people who were exposed to PCBs, as part of routine medical care. Patients should avoid further PCB exposure as well as other hepatotoxic substances, including ethanol. PCBs have been implicated as a potential cause of cancer in humans. Screening tests are available for breast cancer and melanoma.

Breastfeeding
PCBs can pass into breast milk. However, we do not discourage anyone from breastfeeding, including women who worked in the building.

For more information –

If you have a patient you think is experiencing health effects due to PCB exposure, please call the Health Department at 1-800-439-8550. Having an exposure does not mean that a person will develop health problems as a result.

For recent updates and indoor air reports, go to the Burlington High School website:
https://www.bsdvt.org/district/budget/bhs-renovations/

For detailed summaries of the toxicology and epidemiology studies on PCBs:
International Agency for Research on Cancer: https://publications.iarc.fr/131
Agency for Toxic Substances and Disease Registry case study on PCBs:
https://www.atsdr.cdc.gov/csem/csem.asp?csem=30&po=10
Agency for Toxic Substances and Disease Registry Toxicological Profile:
https://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=142&tid=26

HAN Message Type Definitions
Health Alert: Conveys the highest level of importance; warrants immediate action or attention.
Health Advisory: Provides important information for a specific incident or situation may not require immediate action.
Health Update: Provides updated information regarding an incident or situation; unlikely to require immediate action.
Info Service Message: Provides general correspondence from VDH, which is not necessarily considered to be of an emergent nature.