

Methane Findings and Preventative Actions at the Hamden Middle School

This fact sheet was developed for parents whose children attend or will attend Hamden Middle School to provide you with information about the findings of methane gas in soil beneath the concrete slab of the boiler room of the Hamden Middle School. If you have any questions that this fact sheet does not answer or need more information, please refer to the contact people listed on the reverse side of this sheet.

SUMMARY: As part of the environmental investigation associated with the proposed renovations to the Hamden Middle School, soil vapor tests revealed the presence of methane in soil beneath the boiler room of Hamden Middle School. Several steps were taken to determine if methane found underground was getting into the ambient air of the school. Methane was not detected in the school building, nor were airborne levels detected in the boiler room or any of the crawlspaces¹ in follow-on tests.

Methane was one of many compounds tested for because portions of the 14-acre property were used as a landfill prior to the school being built in 1955. Landfills commonly generate gases as a result of the decomposition of materials present in the landfill. Because the underground levels were high, the Connecticut Department of Public Health and the Quinnipiac Valley Health District consulted with health and landfill experts at the Agency for Toxic Substances and Disease Registry (ATSDR), a division within the Centers for Disease Control and Prevention.

As a result of consulting with ATSDR, the following actions were taken to insure that methane does not get into the school: 1) a continuous methane monitoring device was installed in the boiler room equipped to alarms and notification systems; 2) Hamden's Fire Marshal established a routine whereby he evaluates the ambient air first thing Monday mornings using a portable methane monitor to ensure that methane has not built up over the weekend while the school is largely closed; and, 3) ventilation practices were put into place in the crawlspace and the boiler room to reduce the potential for methane to build up, should it actually be released from the underground soil. These actions are all designed to ensure the continued safety of the children and staff at the Hamden Middle School. The local health director has developed a methane monitoring plan based on these recommendations which is available on the website www.qvhd.org, or by calling QVDH directly.

WHAT IS METHANE?

Methane is a flammable, colorless, tasteless and odorless gas. Methane is not toxic to the body, but breathing in enough of it can cause suffocation because it prevents a person from breathing in enough oxygen. Therefore, it is important that people are aware of any methane present in indoor air. This is why the gas companies add an odor to natural gas, so if there is a gas leak, it can be detected, allowing enough time for proper procedures can be performed to ensure safety for anyone exposed. Most people are familiar with methane because it is the primary component of natural gas used for heating many homes and buildings throughout the country. Natural gas was ruled out as the source of the methane because it did not contain a tracer compound present in natural gas.

In the presence of enough oxygen and an ignition source (such as a lighted cigarette or spark from static electricity) methane can be ignited and burned. In a controlled process, the heat generated from the burning of methane is what is used to heat your home. However, in a confined space if methane levels reach a certain limit, it can react with oxygen and produce an explosion with an ignition source. The concern was that as the gas finds the path of least resistance would it enter the building and possibly accumulate in a confined space

¹ The crawlspace areas exist because the majority of the building is built on pilings, leaving a 3 to 5 foot space between the ground (which is covered in asphalt) and the floor of the building.

such as closet or small room. This does not appear to be happening because methane is not detected anywhere in the ambient air. The building is sufficiently ventilated so that there should not be any build up of methane, even after the school has been closed up over a weekend.

WHERE IS THE METHANE?

Based on the sampling results, the methane appears to be contained underground and with the exception of one of the outdoor samples, confined to a "pocket" below the boiler room. The ambient air within the boiler room and the crawlspace areas have been tested using a monitoring device that specializes in detecting methane. No methane was detected in the air in those areas. The source of methane is still under investigation. It is possible that it is generated from decomposing debris within the former areas of the landfill. It is also possible that it is coming from decomposing oil associated with a former leaking underground oil tank. Since we don't know where that path of least resistance is, normally what is done with many landfills, for example, is to create a path where the gas can safely escape using a venting technique. Engineers are currently evaluating how best to address this.

WHAT IS BEING DONE AT THE HAMDEN MIDDLE SCHOOL?

Since the methane underground is odorless, methane detectors can be used inside buildings to determine that the indoor air remains free from methane. The methane detector is very similar to a smoke alarm, or a carbon monoxide detector that you may have in your own home. If a very low level of methane is detected, the alarm will sound, giving those people in the building enough time to be removed from the building and allow emergency personnel to be notified and respond to the situation. In such a case, adequate ventilation using open windows and fans will allow the methane to be safely released to the outdoor air.

The need for the methane detector can be thought of as an insurance policy. A methane monitoring device was installed in the boiler room that continuously measures for methane in the boiler room. The intake tube is located in the boiler room because underneath the slab is where the methane was found. The digital display monitor is located in the maintenance room, directly above the boiler room. The alarm is set to go off well below levels of concern. The alarm company notifies the fire department, the building supervisor, and the facilities director.

The Hamden Fire Department inspects for the presence of methane every Monday morning in the boiler room, as well as throughout the rest of the building to ensure that no methane has seeped into the building over the weekend. There are air intake grates that have been opened to allow fresh air into the crawlspaces, which will continue to ensure that those areas will be free of methane. The boiler room has several large louvered windows that are kept open at all times, again to provide an added layer of assurance that methane, if it were to leak into the building, that it never build up because the room was well ventilated.

Need More Info?

Quinnipiack Valley Health District (QVHD)
Leslie Balch (203) 248-4528

CT Department of Public Health
Brian Toal or Meg Harvey (860) 509-7748

Hamden Fire Marshal
Robert Westervelt (203) 407-5880

Hamden Public Schools
Superintendent's Office (203) 407-2000