Fact Sheet

Underground Home Heating Oil Tanks

Laurel Bay Military Housing Area,
Marine Corps Air Station Beaufort, South Carolina

February 2017

Introduction and Background Information

The Marine Corps Air Station (MCAS) Beaufort and the Naval Facilities Engineering Command (NAVFAC) have prepared this Fact Sheet to provide information about environmental sampling related to past underground home heating oil tanks in the Laurel Bay Housing Area.

Capehart style homes within the Laurel Bay Housing Area were formerly heated using heating oil stored in underground storage tanks (UST) at each residence. Heating oil has not been used at Laurel Bay since the mid-1980s. As was the accepted practice at the time, USTs were drained, filled with dirt, capped, and left in place when they were removed from service.

In 2007, MCAS Beaufort began a voluntary program to remove the heating oil USTs and conduct soil and groundwater sampling to determine if, and to what extent, tanks may have impacted the surrounding environment.

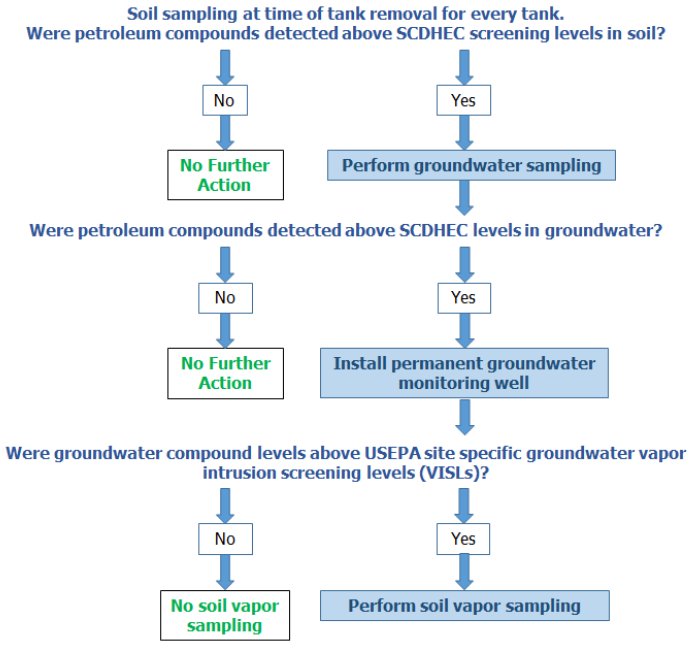
Why were USTs removed?

Residential heating oil tanks are not regulated in the State of South Carolina – meaning there are no federal or state laws governing installation, management, or removal. When home heating was converted to other fuel sources in the 1980s, heating oil tanks were abandoned in place, as was the normal practice for unregulated tanks. In 2007, MCAS Beaufort began a voluntary program to remove home heating oil tanks. Since that time, MCAS Beaufort has removed more than 1,250 tanks. Through review of historical documents and other location efforts using ground penetrating radar, metal detectors, and probes, MCAS Beaufort has identified and removed all known tanks at Laurel Bay.

Because there are no regulations governing removal procedures, MCAS Beaufort coordinated with South Carolina Department of Health and Environmental Control (SCDHEC) to develop removal procedures that were consistent with procedural requirements for regulated tanks. All tank removals and follow-on actions are conducted in coordination with SCDHEC.

How were tank removals performed?

The following flow chart explains the tank removal process:



This screening process was developed and implemented

For More Information

MCAS Beaufort wants to keep you informed about the environmental activities being conducted in your neighborhood and will continue to update you as new information becomes available. For questions or further information, please contact the Public Affairs Office at (843) 228-6229 or email at laurelbayhealthstudy@usmc.mil.

with the assistance of SCDHEC and using United States Environmental Protection Agency (U.S. EPA) guidance. As shown above, the screening process typically begins with soil sampling followed, if necessary, by groundwater analysis. Exceptions to the process have been made to account for instances where existing structures or planned structures could potentially be built on top of former heating oil tank locations. Exceptions are explained below. None of the 73 locations noted below had results that indicated vapor intrusion.

In 2014, the public private venture that manages Laurel Bay began a residential reconstruction project whereby old homes were demolished with the intent to construct new homes. Because of the potential for new structures to be constructed on top of soils that could impact the vapor intrusion pathway, 39 former tank locations were selected for a soil vapor evaluation to determine the risk, if any, to the occupants of future homes constructed in these areas. Locations for evaluation were selected based on concentrations of chemicals detected in soil during the UST removal. In most cases, the soils exhibiting the highest concentrations of volatile chemicals were selected for evaluation. However, a few locations with lower volatile concentrations were selected in an attempt to develop a correlation between soil and soil vapor concentrations that could later be used to establish site-specific soil screening levels which could be applied in the selection process of future vapor intrusion assessment locations at Laurel Bay. None of the 39 locations tested showed potential for vapor intrusion into the home.

In 2016, a review of housing records indicated that 34 houses had a heating oil tank under a portion of the house that was added on after initial construction (such as a porch, storage shed, garage, or sun room) and could not be removed without damaging the house foundation. Given there was a suspected tank under a portion of the house, these houses were considered to have the highest potential for vapor intrusion. However, during the vapor intrusion sampling, ground penetrating radar (GPR) surveys confirmed there were no tanks present at the houses. Vapor intrusion sampling has been completed at each house and none have indicated the potential for vapor intrusion.

How am I affected if the former tank at my home leaked?

Heating oil is relatively thick and has limited ability to move when released to soil and groundwater. Testing typically reveals that the impacts to soil, groundwater, and soil vapor remain very close to the vicinity of the tank.

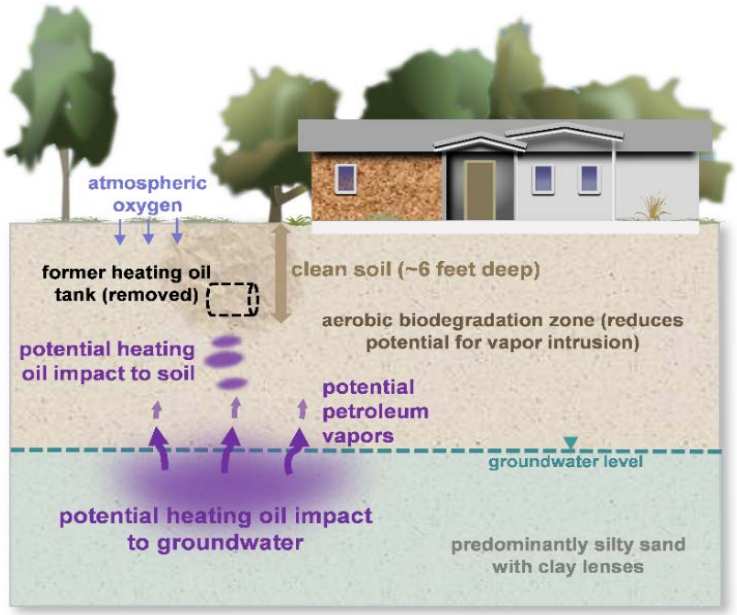
Based on the depth of the heating oil tank (approximately 6 feet below ground surface), surface soil was not impacted by heating oil tanks. Playing in soil or gardening does not create an exposure to contaminated soil. Soil management procedures during tank removal were to place excavated soil on a plastic sheet to keep it isolated. After the tank was removed and soil sample taken, the excavated soil from the tank site was placed back into the excavated hole, then covered with clean fill dirt.

Has drinking water been effected?

Since 1965, water has been supplied to the residents and schools in Laurel Bay by Beaufort Jasper Water and Sewer Authority (BJWSA). Likewise, BJWSA provides the water for MCAS Beaufort and MCRD Parris Island. BJWSA follows U.S. EPA (Safe Drinking Water Act) and SCDHEC protocol for testing the quality of the water they provide to your home. Water quality reports, available on the BJWSA website at http://www.bjwsa.org/, indicate water meets all U.S. EPA standards.

What is Petroleum Vapor Intrusion?

Vapor intrusion is the term used to describe the migration of vapors from a contaminant source in soil or groundwater upward through the soil and into buildings through cracks or holes in building foundations or slabs. The term petroleum vapor intrusion is used when those vapors are the result of a release from a petroleum product. Heating oil previously used in Laurel Bay has compounds common to all petroleum products that can vaporize easily. These are known as volatile organic compounds (VOCs). Examples of the vapors from VOCs are the smell of gasoline, fingernail polish remover, solvents, oil, etc. Soil vapor sampling in Laurel Bay is



being done to determine if there is a potential for heating oil from UST leaks to have created petroleum vapor intrusion into homes.

U.S. EPA screening levels are concentrations of chemicals below which the SCDHEC and the U.S. EPA recognize as unlikely to pose a health concern. Based on comparison of ground water samples to U.S. EPA established screening
levels, SCDHEC determined whether or not more sampling was needed to check for the potential for vapor intrusion.

Vapor Intrusion Sampling

Vapor intrusion sampling is an iterative process that starts by sampling soil vapors at the point where the UST was located. The UST location will typically have the highest concentration of compounds from heating oil that may have leaked from a tank. Soil vapor samples taken at the tank location are compared to U.S. EPA established screening levels. If the potential for vapor intrusion cannot be ruled out from samples at the UST location, subsequent samples will be taken from directly beside the house, then under the house, and finally inside the house. Each result is compared to the U.S. EPA screening levels to see if there is a concentration of vapors that would create the potential for migration into a house and cause a potential health concern. Laboratory analytical results from each sampling stage are available approximately six to eight weeks after the sample is taken.

What happens if a problem is found?

The presence of heating oil vapors in a home is a concern if there is long term exposure to a concentration level that exceeds guidance recommended by the U.S. EPA. The U.S. EPA has developed risk screening levels for vapor intrusion based on a 30 year period of residential exposure. If heating oil vapor intrusion is identified as a concern at any home, timely and appropriate measures will be taken to address the problem.

How do I find sampling results?

We encourage all residents to review the information at: http://www.beaufort.marines.mil/Resources/Laurel-Bay-Health-Study/. You may also email questions to LaurelBayHealthStudy@usmc.mil.