

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF LAND PROTECTION AND REVITALIZATION
OFFICE OF SPILL RESPONSE AND REMEDIATION

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SUBJECT: Heating Oil Look-back Study

TO: Betty Lamp, Director, Office of Spill Response and Remediation

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The Virginia Department of Environmental Quality (DEQ) oversees the investigation and corrective action of petroleum releases including discharges from home heating oil tanks. DEQ has developed programmatic procedures to streamline the release response and corrective action process for most home heating oil tank discharges. DEQ contracted with Virginia Tech to evaluate risks posed by home heating oil discharges to private water supplies and surface waters at cases closed by DEQ. The attached white paper summarizes the findings of the study, discusses potential implications related to existing program guidance and procedures, and provides recommendations based upon the results of the study.

Issue Statement

Discharges from home heating oil tanks are the most common type of oil discharge dealt with by DEQ staff. DEQ's policies and procedures must protect human health and the environment while, at the same time, not requiring those activities that provide minimal additional protection.

The DEQ contracted with Virginia Tech to evaluate risks posed by petroleum constituents to private water supplies and surface waters at home heating oil cases that had been closed by DEQ.

Discussion

DEQ's present home heating oil procedures were issued as guidance during the 2007 Fiscal Year. The objectives of the Look-back Study were:

- Determine potential for closed heating oil cases to impact private water supplies; and
- Determine potential for closed heating oil cases to impact surface water

In this study, Virginia Tech staff randomly selected home heating oil cases with drinking water wells or surface waters within 300' of the home heating oil release source. Wells already known as being impacted were eliminated from the study as they were known by DEQ and addressed while the cases were open. At each randomly selected site, Virginia Tech staff collected water samples from wells and/or surface water

and analyzed the samples for benzene, toluene, ethylbenzene, xylenes, MTBE, and PAHs (including naphthalene).

Virginia Tech collected samples from domestic water supply wells at 24 home heating oil discharge sites. Benzene was found in one water supply well at a reported concentration of 0.29 ug/l. No other petroleum constituents were found in any of the water supplies.

NOTE: The well having the hit of benzene was located five feet from the leaking heating oil tank. This water supply was sampled during site characterization and nothing was detected. The lowest detection limit that private labs usually achieve (including the lab DEQ's CFU contractor uses) is 0.5 ug/l. It is possible that benzene impacts to this water supply well may have been identified during the site characterization phase if laboratory detection limits were lower. DEQ staff contacted this homeowner regarding the detection of benzene, offered to re-sample the well, and install a carbon filtration unit if the detection was confirmed. The homeowner declined to have the well re-sampled.

Virginia Tech collected samples from surface water near five home heating oil discharge sites. Petroleum constituents were not found in any of the surface water samples.

Summary

The Look-back Study found a trace of benzene in one water supply; a water supply that was located five feet from a leaking tank. No other petroleum constituents were found in any water supplies. Petroleum constituents were not found in any of the surface water samples.

The results of the Look-back Study suggest that few wells or surface waters are likely to become impacted by petroleum after DEQ closes a case. DEQ's heating oil procedures appear to be adequately protective of surface water and private water supplies and no changes are recommended.