

MARYLAND DEPARTMENT OF THE ENVIRONMENT

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Environmental Investigation and Drinking Water Well Impact

Barnes Store

9711 Liberty Road

Mt Pleasant, Frederick County, Maryland

(MDE –Case No. 1997-0646FR)

The Maryland Department of the Environment (MDE) Oil Control Program (OCP) continues to evaluating petroleum impacts at Barnes's Country Store, a former gasoline retail facility and currently an active convenience store. This facility has had no petroleum storage tanks since the underground (USTs) and above-ground storage tank systems (ASTs) were decommissioned in 2006.

The MDE-OCP first became aware of petroleum contamination at Barnes Store in October 1996 following the receipt of sample results from the on-site supply well. Methyl tertiary butyl ether (MTBE) was detected at 56.5 parts per billion (ppb). Petroleum contamination was also detected in a neighboring drinking water supply well which had MTBE at 3,181 ppb and benzene as high as 1,770 ppb. Consequently a new well was drilled for this off-site private well and granular activated carbon treatment installed to eliminate petroleum constituents.

MTBE is a fuel additive commonly used to reduce carbon monoxide and ozone levels caused by auto emissions. There is no national regulatory standard for MTBE in drinking water. In 1997, the U.S. Environmental Protection Agency (EPA) issued an advisory for MTBE of 20 to 40 ppb, based on taste and odor. Although the EPA has not established a regulated Maximum Contaminant Level (MCL) for MTBE, the MDE has adopted an action level of 20 ppb. Benzene is a petroleum constituent. The USEPA has set a drinking water standard referred to as an MCL for benzene at 5 ppb.

In 1986, three steel USTs were registered to an independent operator. These first generation USTs included a 2,000-gallon gasoline tank installed in April 1980; a 1,000-gallon gasoline tank installed in 1978; and, a 290-gallon kerosene, which the date of installation was unknown. The UST system was comprised of steel with galvanized piping material.

The property was purchased by Klingler, Pascual and Associates in 1986. The kerosene tank was reportedly filled in-place prior to the transfer of ownership and the gasoline USTs were removed in June 1990. In October 1990, two 5,000-gallon gasoline USTs were installed. These tanks comprised cathodically protected steel with fiberglass reinforced piping material. In October 1996, the tanks were registered to Klingler, Pasqual and Associates.

In September 2002, Rosa Prak, LLC. purchased the property. The 5,000-gallon USTs were used to dispense gasoline and diesel fuel; while, kerosene was sold from a 1,000-gallon AST. In March 2006, the two 5,000-gallon UST were removed and no perforations were observed in the tanks. The kerosene AST and associated dispenser were also removed in August 2006. Consequently all petroleum retail activities have ceased at the facility.

Since January 2006, an activated carbon (GAC) treatment system was installed on the supply well and has been maintained at the expense of the property owner. The Department currently maintains a GAC system on one off-site private well at no expense to the resident. At this time, the MDE-OCP does not anticipate sampling off-site residential wells beyond sampling needed to ensure community safety.

■ 3 off-site private drinking water wells have been sampled:

- 2 wells No detectable levels of MTBE
- 1 well MTBE detected above 20 ppb. GAC filtration systems have been installed.
9712 Liberty Road - MTBE – 3,181 ppb; benzene – 1,770 ppb (*old well – sampled 10/1996*)
MTBE – 201 ppb (*new well - sampled 2006 ; GAC installed 12/2006*)
(*last sampling event 01/30/07 MTBE at 43 ppb*)



Chronology:

- March 9, 1984. The Department of Natural Resources – Water Supply Program (precursors to the MDE-OCP) issued a *Warning Notice –SB84-001* to the independent operator of Barnes Store for failure to maintain daily stick readings for fuel inventory purposes.
- March 21, 1984. Copy of analytical results for sample collected from an off-site drinking water supply well at 9712 Liberty Road.
 - Sampling event on 02/27/84
 - DW (untreated old supply well) Benzene – 1,770 ppb; total petroleum hydrocarbons – 4,000 ppb.
- June 19, 1990. MDE-OCP on-site to observe the removal of two USTs.
 - No contamination observed in excavation
- October 8, 1996. MDE-OCP received a complaint regarding petroleum odors at 9714 Liberty Road.
 - Two USTs (1000 gallon and 2000 gallon) removed from Barnes Store in 06/1990.
 - Replaced with two, 5,000-gallon gasoline USTs.
 - Sewage like odor noted in one of the tank field wells.
 - A new drinking water well was reportedly drilled at the Barnes store property in response to gasoline contamination in the existing well.
 - Some compliance issues identified (e.g. inventory records).
 - Property at 9714 Liberty Rd. has a 300 ft. well and a 100 ft well. Petroleum odors noticeable in the 100 ft. well.
 - MDE-OCP collected samples from residential properties adjacent to 9711 Liberty Rd.
 - Sampling event on 02//27/84
 - PW (untreated) Barnes store old MTBE at 56.5 ppb
 - DW (untreated old supply well) 9712 Liberty Rd. MTBE – 3181 ppb; benzene – 94 ppb; naphthalene – 19.8 ppb
 - DW (untreated) 9718 Liberty Road Non detect (ND) for petroleum constituents
 - DW (untreated) 9706 Liberty Road Benzene at 1.3 ppb
- October 9 and 11, 1996. MDE-OCP completed a Compliance Assistance Inspection
 - Repairs required to fix leaking solenoid on the Regular Unleaded dispenser
 - Vapor recovery system requires upgrade
 - Repairs made to leaking solenoid on dispenser
 - Owner obtaining information to upgrade vapor recovery
- December 23, 1996. MDE-OCP site visit to provide the 08/1996 sampling results to the property owner at 9711 Liberty Road.
- August 3, 2005. MDE-OCP site visit to evaluate current use of the property and to collect a water sample from the on site supply well.
 - Facility retails diesel and unleaded gasoline. Kerosene is dispensed from a 1,000-gallon AST
 - Grocery items are sold from the store.
 - A drinking water sample collected from outside spigot located on east side of building
 - No GAC system on the facility's supply located on the east side of property, 10 feet from Liberty Road.
- August 25, 2005. MDE-OCP received the sample results for the sample collected on 8/3/05. (*See table for results*)
- August 26, 2005. MDE-OCP notified owner, Mr. Prak, by phone and fax, regarding the results of the sample collected on 8/3/05.
- August 26, 2005. MDE-OCP notified, Frederick County Health Department (FCHD) of the 08/03/05 drinking water

sample results.

- August 31, 2005. MDE-OCP conducted a compliance assistance inspection. Several outstanding violations were identified:
 - Submit proof of insurance
 - Begin proper inventory procedures
 - Test cathodic protection
 - Install Stage I containment basin.
 - Clean containment basins
 - Provide proof of release detection
- September 29, 2005. MDE-OCP site visit to discuss with the operator the requirement to install a GAC system on the drinking water supply well.
- November 21, 2005. MDE-OCP on-site to review compliance status with regard to the inspection completed on 08/31/05.
- December 2, 2005. MDE-OCP site visit confirmed that the GAC system had not yet been installed. FCHD notified of the situation.
- December 7, 2005. MDE-OCP issued *Notice of Violation (NV-2006-018)* requiring the following:
 - Install a GAC treatment system on the transient non-community supply well
 - Collect samples from the GAC system on a quarterly basis.
 - Bring the UST system into compliance with applicable regulations including the emergency regulations for high-risk groundwater use areas.
- December 8, 2005. MDE-OCP letter to the fuel supplier, notifying L.S. Fuel that Barnes Country Store has been ordered to cease accepting fuel deliveries.
- December 12, 2005. MDE-OCP received proof of liability insurance effective until 03/01/06.
- December 13, 2005. MDE-OCP telephone conversation with the representative of the property owner –Rosa Prak LLC, regarding outstanding compliance issues.
- December 22, 2005. FCHD letter to Rosa Prak LLC advising that since the Barnes Store is a licensed food service facility, the on-site drinking water well must be retrofitted with a GAC system in accordance with MDE’s directive letter.
- February 13, 2006. MDE-OCP collected samples the currently and formerly used, drinking water supply wells at 9712 Liberty Road (*see table for results*)
- February 16, 2006. Fax from the property owner’s representative –Rosa Prak LLC, informing the MDE-OCP that the two USTs will be removed.
- March 8, 2006. MDE-OCP on-site to observe the removal of two USTs (a 5,000 –gallon gasoline, a 5000-gallon diesel). No perforations observed.
 - Soil samples collected from bottom of excavation and one each from sidewalls
 - Analytical results of soil samples indicate maximum concentration of TPH/DRO at 2739 ppm.
- March 8, 2006. MDE-OCP received, a fax of the on-site drinking water sample results.
 - Sampling event 02/09/06.
 - Sample may have been collected after GAC treatment system that was installed in January 2006. (*see table for results*)

- March 22, 2006. MDE-OCP faxed a copy of the 02/09/06 sampling results to the property owner of 9712 Liberty Road.
- July 24, 2006. MDE-OCP on-site to discuss with the property owner's (Rosa Prak LLC) representative the need to sample the on-site drinking water supply pre-, mid- and post-filtration.
- August 23, 2006. MDE-OCP report of observations indicating the removal of the kerosene AST that was previously located on the west side of the property.
- September 26, 2006. MDE-OCP on-site to collect samples from the supply wells at 9711 and 9712 Liberty Road. (*see table for results*)
- October 26, 2006. MDE-OCP on-site to collect confirmatory samples from the supply wells at 9711 and 9712 Liberty Road due to possibility of error with September 2006 sampling event. (*see table for results*)
- November 21, 2006. MDE-OCP telephoned property owner of 9712 Liberty Road regarding the 10/26/06 sampling results. The need for a GAC system was emphasized.
- November 30, 2006. MDE-OCP letter to property owner at 9712 Liberty Road including the 10/26/06 sampling results and *Access Agreement* to allow for the State to install a GAC system.
- December 14, 2006. MDE-OCP received the signed *Access Agreement* from property owner at 9712 Liberty Road to allow for the State to install a GAC system
- December 21, 2006. MDE-OCP contractor installed a GAC system on the resident at 9712 Liberty Road.
- January 24, 2007. MDE-OCP visited the Barnes Store to discuss the need to properly operate, maintain and collect samples from the GAC filtration system.
- January 26, 2007. MDE-OCP received a telephone call from the property owner's –Rosa Prak LLC representative regarding required sampling of the GAC filtration system.

Future Activities:

- MDE directive letter will be issued in March 2007 to Rosa Prak LLC, requiring proper maintenance of the on-site GAC system, expanded sampling of off-site private wells, and a detailed subsurface investigation.
- MDE-OCP continues to maintain one GAC system at the an off-site property at no expense to the property owner.

Future Updates:

- Future updates on this case investigation will be posted at www.mde.state.md.us [at the MDE home page, (select) Land, (select) Program (select) Oil Control, (select) Remediation Sites].

Contacts:

- Maryland Department of the Environment (MDE) Oil Control Program: 410-537-3442
- Frederick County Health Department (FCHD): 301-600-1715

Disclaimer

The intent of this fact sheet is to provide the reader a summary of site events as they are contained within documents available to MDE. To fully understand the site and surrounding environmental conditions, MDE recommends that the reader review the case file that is available at MDE through the Public Information Act. The inclusion of a person or company's name within this fact sheet is for informational purposes only and should not be considered a conclusion by MDE on guilt, involvement in a wrongful act or contribution to environmental damage.

Drinking Water Sampling Results in the vicinity of the Barnes Store

| Sample location | Sample dates | Petroleum Constituents of Concern (ppb) | |
|--|--|---|---|
| | | MTBE (20 ppb – action level) | Other petroleum constituents MCL for benzene and 1,2-Dichloroethane is 5 ppb TAME is an unregulated compound |
| Transient Non-Community Supply Well | | | |
| Barnes Store 9711 Liberty Road GAC treatment system installed by owner in 01/2006 | 10/1996 MDE | 56.5 | Non-detect (ND) |
| | 08/03/05 MDE | 93.3 (est) | ND |
| | 02/09/06 MDE | ND | ND |
| | 09/26/06 MDE | pre-filter - ND | TAME - 4.77 ppb |
| | | mid-filter - 50.7 | ND |
| | | post-filter - ND | ND |
| | 10/26/06 MDE | pre-filter - 200 | TAME - 5.17 ppb |
| | | mid-filter - 102 | ND |
| | | post-filter - ND | ND |
| Off-site Private Residential Wells | | | |
| 9712 Liberty Road (FR-71-0512 ?) New well (FR-94-0056) Old Well (FR-71-0512) New well (FR-94-0056) Old Well (FR-71-0512) | 02/27/84 | --- | Benzene - 1770 ppb |
| | 10/1996 MDE | 3181 | benzene – 94 ppb, naphthalene - 19.8 ppb |
| | 02/13/06 MDE | ND | 1,2-Dichloroethane - 1.21 ppb |
| | 02/13/06 MDE | 16.6 | ND |
| | 09/26/06 MDE | pre-filter - 70.6 ppb | TAME 1.60 ppb |
| | | post-filter - 84.8 | TAME 1.44 ppb |
| | 09/26/06 MDE | 38.8 | ND |
| | New well (FR-94-0056) GAC installed by MDE-OCP on 12/2006 | 10/26/06 MDE | pre-filter – 201 ppb |
| post-filter – 171 ppb | | | TAME 2.33 ppb |
| 01/30/07 MDE | | pre-filter - 43 ppb | 1,2-Dichloroethane – 9 ppb |
| | | mid-filter - ND | ND |
| | post-filter - ND | ND | |
| 9706 Liberty Road | 10/1996 MDE | ND | benzene 1.3 |
| 9718 Liberty Road (holding time exceeded) | 10/1996 MDE | ND | ND |