

Delaware City Refinery (Formerly: Motiva Enterprises)

**4500 Wrangle Hill Rd.
Delaware City, DE 19706
Congressional District 1
EPA ID #: DED002329738
Last Updated: 11/23/2009**

Current Progress at the Site

EPA issued a HSWA permit to the refinery in November 1988. In September 2003, DNREC issued a Corrective Action Permit to Motiva, HW09A13, and is now the lead agency for Corrective Action at this facility. The refinery has changed owners several times since going on-line in 1956. On May 1, 2004, ownership of the Motiva Refinery passed to Premcor, Inc., and on September 1, 2005 Valero Energy Corporation acquired Premcor, Inc. Motiva retained the environmental liability for the permitted waste units and all contamination in place at the time of sale. Currently, 35 SWMUs have been identified and investigated. Environmental work conducted at the Site is summarized in the following Reports, submitted to EPA and DNREC:

- Background Information Survey Report (Dames & Moore, 1991a)
- Identification of the Potential for an Occurring or Past Release Study Report (Dames & Moore, 1991b)
- Verification of Release Study (VRS) Report (Dames & Moore, 1995)
- Phase I RCRA Facility Investigation (RFI) Report (URS, 2005)
- Baseline Ecological Risk Assessment (URS, 2005)
- Interim Measures Report, Solid Waste Management Units 20B and Portions of 24B (URS, 2006)
- Interim Report – Southern Extent of Dissolved Phase Plume (URS, 2007)
- Interim Report – Dissolved Phase Plume Delineation – Phase II (URS, 2008)

The Verification of Release Report showed that soil and groundwater in certain areas of the site were contaminated with metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and chlorinated solvents. The purpose of the Phase I RFI investigation was to determine nature and extent of contamination. The Phase I Report was submitted in 2000 and after several revisions, the Final Phase I Report was approved in May 2005. Motiva conducted an ecological risk assessment. The Assessment Report was submitted to DNREC and EPA in July 2005. The 2003 DNREC Corrective Action Permit required Motiva to perform interim clean-up measures, and specifically to address two (2) SWMUs, Guard Basin No. 4 and the Oily Sediment Area. An Interim Report addressing Guard Basin No. 4 and the Oily Sediment Area was submitted in August 2006 and a revised version is presently in preparation by Motiva. To address data gaps, the Permit also required a Phase II RFI workplan, submitted in August 2005. In August 2007, DNREC granted Motiva a conditional approval to perform Phase II RFI activities. Motiva finished the Phase II RFI field work and will submit the Report in early 2010. At present, three SWMUs are under post-closure care, and four units are currently moving towards closure under

DNREC's oversight. Motiva has requested no further action determinations for many other SWMUs.

During the Phase I RFI investigation, floating free-phase hydrocarbon was found in groundwater in five areas. Motiva installed free-phase hydrocarbon recovery systems in 1994, which operated continuously until no recoverable free product was observed. Four areas of the facility have a free-phase hydrocarbon recovery system operating at this time and the number of recovery systems has been reduced from eleven to seven after successful removal of free product. EPA and DNREC required that groundwater investigations at these areas be performed on an accelerated schedule so that interim clean-up measures can be identified and implemented as soon as possible. Methyl-tert-butyl-ether (MTBE) was also detected in groundwater. Motiva conducted phased studies to better define the dissolved phase hydrocarbon plume(s).

The Southern Extent Dissolved Phase Plume Interim Report was submitted in January 2007 and the Dissolved Phase Plume Delineation – Phase II Report was submitted in August 2008. Investigations to define the southern extent of the groundwater plume (BTEX) are on-going (towards Dragon Run and beyond). To date, groundwater investigations indicates impacted groundwater from the refinery has not migrated beyond site property boundaries or to surface waters above levels of concern to human health or the environment. Additional investigations are underway to further delineate the plume and evaluate groundwater flow patterns. Site-wide groundwater monitoring is also performed at approximately 200 monitoring wells to identify potential changes to the location and characteristics of the area of impacted groundwater. Concurrent with the dissolved-phase plume investigations, Motiva initiated interim clean-up measures for groundwater remediation in two large-scale demonstration programs which continue to operate today.

The Environmental Indicator Forms discuss that current human exposure to site contaminants is under control, and that further data is needed to determine whether migration of contaminated groundwater is under control.

Site Description

The Refinery is located on 5,050-acres approximately 1-mile northwest of Delaware City, Delaware. The refining operations occupy about 1,000-acres. The facility commenced operation in 1956. The facility processes a variety of crude oils and currently produces about 180,000 barrels of petroleum product a day. Production has included diesel, gasoline, jet, fuel oil, aromatics, and methanol and propane fuels. The areas north and west of the refinery are industrial, and include some RCRA and Superfund sites, and the area south of the refinery is open fields or farmland. The Delaware River lies to the east of the facility.

Site Responsibility

RCRA Corrective Action activities at this facility are being conducted under the direction of the Delaware Department of Natural Resources and Environmental Control (DNREC) with assistance from EPA Region 3.

Contaminants

The main contaminants in the groundwater, soils and sediments are benzene, toluene, ethyl benzene, xylene (BTEX), other petroleum hydrocarbons compounds, including MTBE, and some metals in groundwater. Chlorinated hydrocarbons found in groundwater in an area on-site are believed to be from sources at neighboring facilities.

Community Interaction

Motiva prepared a Public Participation Plan in November 2005, to outline its communications strategy with citizens and the Citizen Advisory Panel (CAP). The Refinery team meets with the CAP periodically in the community.

Institutional Controls

No institutional controls are currently in place. Institutional controls may be incorporated in the Final Remedy Decision.

Government Contacts

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For more information about EPA's corrective action webpage, including Environmental Indicators, please visit our site at: www.epa.gov/reg3wcmd/correctiveaction.htm

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