FMC Corporation

1701 E Patapsco Avenue
Baltimore, MD 21226
Congressional District 2
EPA ID #: MDD003071875
Site property area: 90 acres
Last Updated: 01/17/2012

Current Progress at the Site

This facility is approximately 84 years old and is located on Curtis Bay, in Baltimore, Maryland. FMC has ended operations at the Curtis Bay agricultural chemicals facility and the manufacturing buildings and structures have been dismantled. FMC is working with Energy Answers International to develop a Resource Recovery Plant at this location.

On December 13, 1989, EPA issued a RCRA Corrective Action Permit, EPA ID No. MDD003071875 (Permit), under RCRA Section 3004(u), 42 U.S.C. Section 6924(u), to FMC for the Facility. The Permit, which on its terms expired on December 13, 1999, has been administratively extended. The Permit requires, among other things, FMC to characterize the extent of groundwater contamination at the Facility and evaluate remedy options.

In September 1993, EPA approved a Supplemental Groundwater Characterization Report (Supplemental Report) submitted by FMC pursuant to the Permit. The Supplemental Report provided additional information necessary to characterize the groundwater conditions at the Facility and to assess any potential biological impacts to Curtis Bay. Three subsurface units were identified: surface fill; the Pleistocene Formation; and the Patapsco Formation. Shallow groundwater generally flows from north to south across the Facility, and becomes radial as it approaches Stonehouse Cove and Curtis Bay. Groundwater flow in the Patapsco Aquifer is to the southeast, consistent with the regional dip of the Patapsco Formation. Based on the results from aquifer performance tests which were completed as part of the Supplemental Report, groundwater collection appeared to be a viable remedial option.

In August 1994, EPA approved a Contaminant Characterization Report which described the nature and extent of contamination at the Facility and presented corrective measures for the biologic impacts to Curtis Bay associated with the discharge of contaminated groundwater from the Facility. In August 1995, EPA conditionally approved a Corrective Measures Plan in which FMC identified groundwater recovery and treatment as the preferred remedial alternative for the Facility. In May 1996, EPA approved the Final Basis of Design for RCRA Corrective Measures/Stabilization which provided the design details for a groundwater recovery and treatment system (Groundwater Recovery System). In May 1997, pursuant to the interim measures provisions of the Permit, FMC installed the Groundwater Recovery System. At the

request of EPA, FMC installed an additional recovery well in the Upper Patapsco in November 2005. Currently, FMC is operating the Groundwater Recovery System and is conducting groundwater monitoring at the Facility under the interim measures provisions of the Permit.

In November 1999 and, again in April 2003, the U.S. Army Corps of Engineers (Corps), on behalf of EPA, conducted Visualization of Groundwater Contamination studies to evaluate the effectiveness of the Groundwater Recovery System. Bioassay studies were also conducted at the Facility in 1985, 1992, 1999, and 2006, respectively, to evaluate the toxicity of groundwater discharging from the Site to aquatic organisms in Stonehouse Cove and Curtis Bay. Based on the findings of the various studies, EPA has determined that not all Facility-related contaminants are being captured by the Groundwater Recovery System.

In October and November 2008, FMC conducted Site-wide groundwater sampling. The sampling data revealed a plume of contaminated groundwater in the northern 23 acres at the Facility which is referred to as the North Parcel. Groundwater and soils in the North Parcel contain volatile organic compounds (VOCs) in concentrations above their respective Maximum Contaminant Levels (MCLs) promulgated at 40 C.F.R. Part 141 pursuant to Section 1412 of the Safe Drinking Water Act, 42 U.S.C. Section 300g-1, or Region III's Risk Based Concentrations (RBCs) if no MCL exists. Pursuant to the interim measures provisions in the Permit, FMC is currently investigating and delineating the plume and characterizing the soils at the North Parcel.

Final Corrective Measures

EPA is requiring FMC to implement EPA's final remedy for the Facility through the issuance of a Permit Modification to include the following corrective measures.

A. Groundwater Remediation Strategy

EPA's corrective action goals for Facility groundwater are 1) to restore groundwater to drinking water standards established by the MCLs or RBCs, if there are no MCLs, and 2) to control Site-related groundwater contamination from entering Stonehouse Cove and/or Curtis Bay or site-adjacent properties. In addition, FMC is required to conduct a Comprehensive Groundwater Recovery and Treatment Study (Comprehensive Study), described in more detail below. As part of the Comprehensive Study, FMC has developed and and will implement a Comprehensive Sediment and Pore Water Sampling and Analyses Plan to measure the impacts of Facility-related contaminated groundwater on Stonehouse Cove and Curtis Bay.

1. **Restoration of Groundwater to Drinking Water Standards**

FMC is required to operate and, as necessary, to expand the Groundwater Recovery System until drinking water standards established by the MCLs or RBCs, if no MCLs exist, are restored. Once the Comprehensive Study is completed and all data are evaluated, FMC will evaluate the existing Groundwater Recovery System and make improvements as necessary. In order to accelerate the groundwater restoration process FMC will evaluate additional remedial actions such as chemical and biological treatment at known source areas. The introduction of chemical and/or biological treatment at identified source area may take place at the Site anytime

that FMC feels that it would help accelerate the remediation process. FMC will notify EPA in advance of their intentions to apply such treatments.

2. **Control Contamination From Entering Stonehouse Cove and/or Curtis Bay or Site-adjacent Properties.**

As part of the Final Remedy, FMC is required to conduct a Comprehensive Groundwater Recovery and Treatment Study (Comprehensive Study) to evaluate the short-term and long-term effectiveness of the Groundwater Recovery System in controlling site-related groundwater contamination from entering Stonehouse Cove and/or Curtis Bay, or site-adjacent properties. If the results of the Comprehensive Study show that groundwater is not being effectively controlled and site-related contamination continues to enter Stonehouse Cove, Curtis Bay, or site-adjacent properties at unacceptable concentrations, EPA will require FMC to improve the groundwater capture and treatment system. Additional remedial improvements may include the use of chemical and/or bio-remediation technologies at identified source areas, and/or the construction of a physical barrier to contain contaminated groundwater.

EPA is requiring that the Comprehensive Groundwater Recovery and Treatment Study include the following elements:

1) Two years of semi-annual groundwater sampling

EPA has directed FMC to conduct two years of semi-annual groundwater sampling. The parameters to be analyzed will be the same 10 VOCs and 20 SVOCs currently required to be sampled annually under the Permit and any compound that was equal to or exceeded the EPA Screening Level for that compound during the Site-wide groundwater sampling program implemented in the fall of 2008.

2) Sediment and Pore Water Sampling

FMC will conduct a sediment and pore-water sampling effort in accordance with an EPA and MDE-approved Comprehensive Sediment and Pore Water Sampling and Analyses Plan. The sampling data will be used to measure the impacts of Facility-related contaminated groundwater on Stonehouse Cove and Curtis Bay. Based on the results of the sediment and pore-water sampling, EPA will determine if benthic studies will be necessary.

Once the results of the additional groundwater sampling and Sediment and Pore Water Study are evaluated the need for additional recovery well installation will be assessed and the appropriate actions will be taken.

B. Soil Management Strategy

In accordance with EPA's final remedy FMC has developed a Soil Management Plan that has been approved by EPA and will be implemented during earth moving activities, including construction and drilling on Facility property. The Soil Management Plan details how all excavated soils will be handled and disposed.

Soil remediation cleanup standards will be determined by EPA and MDE using EPA Region III's Risk-Based Concentrations (RBCs) for industrial screening levels. In addition, all soils that are stockpiled will be sampled and analyzed using the Toxicity Characteristic Leaching Procedure (TCLP) and will be disposed off-site as necessary. A separate Corrective Measures Plan to address site-wide capping requirements and surface water runoff control will be submitted at a later date for EPA approval.

C. Installation of Vapor Mitigation Systems

Buildings located above a contaminated groundwater plume are vulnerable to subsurface vapor intrusion coming from the plume and entering through cracks, joints and utilities openings. Due to the known presence of VOC contamination in the groundwater beneath the Facility, EPA and FMC have agreed that the final remedy to address potential vapor intrusion will be to require the installation of vapor control systems in all new and existing Facility buildings.

D. Implementation of Institutional Controls

EPA's final remedy requires that institutional controls be implemented in order to prevent any activities which would interfere with or adversely affect the integrity and protectiveness of the final remedy. The institutional controls are necessary to ensure that (1) contaminated groundwater is not used for potable purposes or any other use that could result in human exposure; (2) the integrity and protectiveness of the groundwater remediation system is maintained; (3) the Facility is not used for residential purposes, (4) subsequent purchasers of the Facility property are informed of the environmental conditions at the Facility and of EPA's final remedy for the Facility and (5) exposure to vapor intrusion and contaminated soils is limited.

Site Description

Located in Baltimore, Maryland, the FMC Corporation Site encompasses approximately 90 acres. The facility was built by previous owners in 1915 as an ethanol and acetone production facility to help provide war materials. In 1954 FMC purchased the site and has used it since then for the production of agricultural and industrial organic chemicals.

Site Responsibility

RCRA Corrective Action activities at this facility are being conducted under the direction of EPA Region 3 with assistance from the State.

Contaminants

The main contaminants in the groundwater and surface water are benzene, ethyl benzene,

chlorobenzene, substituted chlorobenzene isomers and phenolic compounds.

Community Interaction

The FMC Corporation Site is located in an industrial area of Baltimore. The facility borders Curtis Bay which drains into the Chesapeake Bay. The nearest community is located within one mile of the facility.

Since 1989, the FMC Corporation and EPA Region III held a public meeting to inform the community about progress of the cleanup.

FMC's redevelopment plans for the site were received favorably by MDE and the nearby community association.

Institutional Controls

No institutional controls are currently in place. EPA's final remedy requires that institutional controls be implemented in order to prevent any activities which would interfere with or adversely affect the integrity and protectiveness of the final remedy. The institutional controls are necessary to ensure that (1) contaminated groundwater is not used for potable purposes or any other use that could result in human exposure; (2) the integrity and protectiveness of the groundwater remediation system is maintained; (3) the Facility is not used for residential purposes, (4) subsequent purchasers of the Facility property are informed of the environmental conditions at the Facility and of EPA's final remedy for the Facility and (5) exposure to vapor intrusion and contaminated soils is limited.

Institutional controls will include, but may not be limited to, an environmental covenant to be entered pursuant to the Maryland Uniform Environmental Covenants Act, Maryland Environment Code, Sections 1-801 to 1-815 (UECA) and to be recorded with the deed for the Facility property. The Environmental Covenant would be required to include the following:

i. a restriction on the use of groundwater beneath the Facility for potable purposes or any other use that could result in human exposure, unless such use is required by the Final Remedy,
ii. a restriction on well drilling at the Facility without prior EPA approval, to prevent inadvertent exposure to the contaminated groundwater and adverse affects to the Final Remedy,
iii. a restriction that the Facility not be used for any purpose other than industrial unless it is demonstrated to EPA that another use will not pose a threat to human health or the environment and EPA provides prior written approval for such use;

iv. a requirement that any earth moving activities by any entity on Facility property, including construction and drilling, be done in accordance with the EPA and MDE-approved Soil Management Plan, and

v. a requirement that a vapor control system, the design of which shall be approved in advance by EPA, is installed in any existing and all new structures constructed at the Facility**.**

Government Contacts

EPA Project Manager
Mr. Bill Wentworth - 3LC20
U.S. Environmental Protection Agency - Region III
1650 Arch Street
Philadelphia, PA 19103-2029
Phone: (215) 814-3184
Email: wentworth.william@epa.gov

Mr. C. James Leizear
Maryland Department of Environmental Quality
1800 Washington Blvd., Suite 645
Baltimore, MD 21230-1719
Phone: (410) 537-3400
Email: JLeizear@mde.state.md.us

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

Facility Contact

Mr. Michael Shannon, Environmental Project Manager
FMC Corporation
1735 Market Street
Philadelphia, Pa. 19103
Phone: (215) 299-6125
Email: michael_shannon@fmc.com