



FMC Corporation Superfund Site

Fridley, Anoka County, Minnesota

This Minnesota Pollution Control Agency (MPCA) fact sheet about the FMC Corporation Superfund Site (FMC Site):

- summarizes historical and investigation activities conducted at the site during the remedial investigation,
- discusses risks to human health and the environment that may be present at the site, and
- indicates the current status of the site.

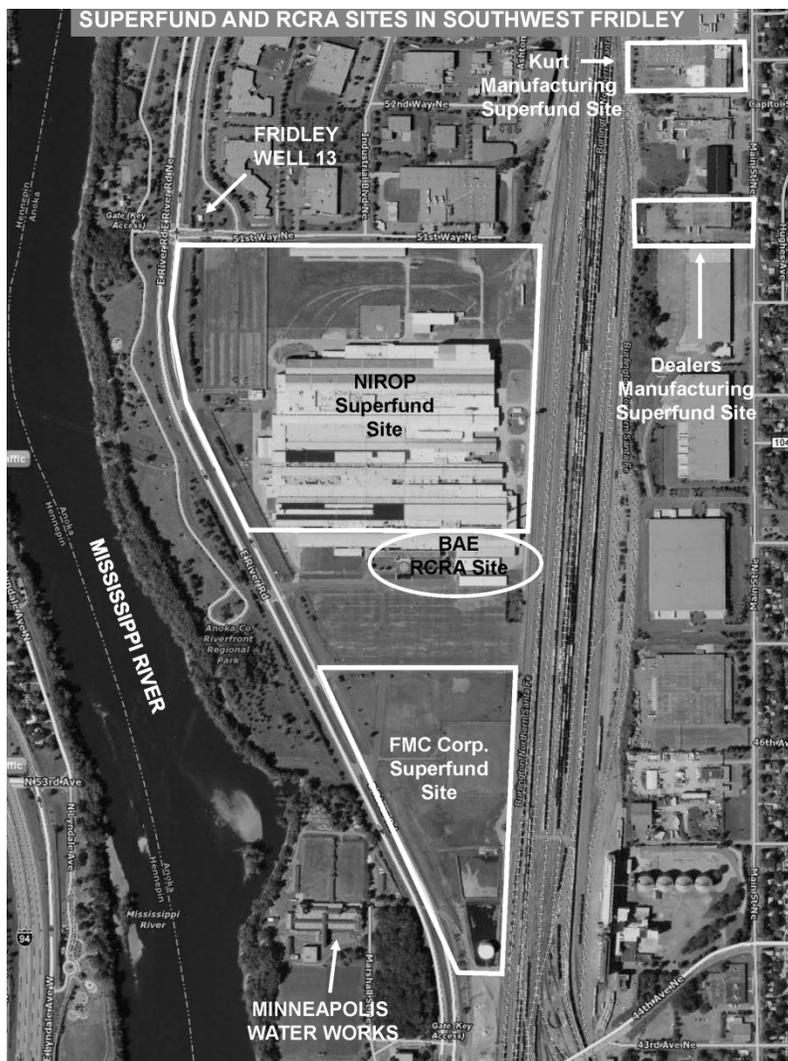
Where is the site?

The FMC Site is in Fridley on East River Road, about 1.25 miles south of Interstate Highway 694 and 700 feet east of the Mississippi River. The site is bounded on the east and south by the Burlington Northern Railroad switchyard, and on the north by the BAE Resource Conservation and Recovery Act (RCRA) Site and the Naval Industrial Reserve Ordnance Plant (NIROP) Superfund Site. To the west is East River Road, which runs between the FMC Site and the Anoka County Regional Park. The Minneapolis Water Works facility is southwest of the FMC Site and across East River Road.

The FMC Site is in an area zoned as industrial, with no residential properties within 0.25 mile of the site.

What is the site's background?

Northern Pump Company, a privately owned business, was constructed in 1940-41 on what is now the NIROP Superfund Site and BAE RCRA Site. The company produced industrial pumping equipment. With the onset of World War II, the plant was converted into a facility whose mission was to produce naval guns for the expanding war effort.



In 1964, FMC Corporation purchased the southern portion of the 140-acre NIROP property, including a portion of the manufacturing facility. The southern 18 acres of the NIROP property eventually became the FMC Site. As part of manufacturing operations at the site, chlorinated solvents, which are volatile organic compounds (VOCs), were used as degreasers for metal parts. The primary VOC used at NIROP was trichloroethylene (TCE). Smaller quantities of tetrachloroethylene (PCE) and trichloroethane (TCA) were used as well.

Between 1945 and 1969, industrial wastes from operations at the NIROP facility were disposed of in burn pits and disposal pits at the FMC Site. Wastes disposed included chlorinated and nonchlorinated solvents, oils, paint and paint sludge, cinders and construction rubble.

In January 1994, FMC Corporation and Harsco Corporation merged their defense businesses, resulting in the name change to United Defense, L.P. In June 2005, BAE Systems purchased United Defense, and now operates as BAE Systems Land & Armaments, L.P. (BAE). BAE is the responsible party for the site cleanup.

What's been done to clean up the FMC Site?

In December 1980, at the request of the MPCA, FMC Corporation initiated an investigation of the FMC Site. During the investigation, 44 drums containing hazardous materials were discovered and disposed of at approved facilities.

In June 1983, FMC Corporation, the MPCA, and the U.S. Environmental Protection Agency (EPA) executed an Administrative Order and Interim Response Order by Consent (also called a "Consent Order") regarding impacted soil at the FMC Site. Under the Consent Order, soil above the groundwater table that had VOC concentrations greater than 1 part per million (ppm) was excavated and placed into an on-site engineered, RCRA-compliant, containment and treatment facility.

In September 1983, the FMC Site was placed on the National Priorities List, also known as the federal Superfund list. In October 1984, a remedial investigation report was submitted. This was followed by a groundwater feasibility study in January 1985. In May 1985, an addendum to the groundwater feasibility study was submitted to the MPCA, and in August 1985, the MPCA accepted the feasibility study.

In October 1986, the MPCA executed an Enforcement Decision Document under the Minnesota Environmental Response and Liability Act (MERLA) that documented the selection of a remedial action for the contaminated groundwater at the FMC Site. In September 1987, the EPA signed a Record of Decision for the FMC Site and identified the following remedies to protect human health and the environment:

- Extract impacted groundwater and discharge it to the sanitary sewer system.
- Monitor the contaminant plume to assure the effectiveness of the remedy and to define termination of the extraction system.
- Establish institutional controls to prevent the use of contaminated groundwater by private or municipal wells between the FMC Site and Burlington Northern Railroad property to the south and the Mississippi River to the west.

In December 1987, the five-well groundwater extraction system was brought on line. The groundwater pumped out of the subsurface was discharged into the sanitary sewer with a permit from Metropolitan Council Environmental Services.

Since 1987:

- Five-Year Reviews were completed in 1992, 1999, 2004 and 2009.
- Between 1997 and 2001, investigations were conducted to better understand the hydrogeology of the site.

- In 2001, a seep was discovered along the bank of the Mississippi River. Subsequent sampling of the seep water found it contained TCE and the seep has been monitored regularly since then.
- In 2003 and 2004, FMC conducted an extraction well capture zone analysis and a vertical aquifer profiling study.
- In 2004 and 2006, the monitoring well network was modified to eliminate long-screened wells, add new monitoring wells, and modify the screens of several other wells.
- In August 2007, a dye tracer test was performed to determine the source of the VOCs found in the seep on the bank of the Mississippi River. However, the study was unable to determine the source.
- In 2010, a capture zone analysis was performed as recommended by the fourth Five-Year Review.
- In 2011, a supplemental site investigation was conducted to better understand the hydrogeologic conditions at the FMC Site and to better define the contaminant source areas.
- In 2012, an enhanced reductive dechlorination (ERD) pilot study was conducted to assess the feasibility of ERD as a supplemental or an alternate remedy.
- In 2013, an air stripper was installed to treat groundwater removed by the pumping wells. Treated groundwater is now discharged to the Mississippi River via the storm sewer under a National Pollutant Discharge Elimination System permit. MPCA and EPA issued an Explanation of Significant Differences to document the addition of the air stripper to the treatment system and the removal of RW-1 from the system requirements because of an insufficient volume of groundwater in the well.
- From 1988 through 2012, approximately 19,900 pounds of VOCs, including approximately 16,600 pounds of TCE, were removed from groundwater.

Summary of site risks

Contaminants of concern are primarily TCE and its degradation products (1,2-dichloroethylene and vinyl chloride) in soil and groundwater. PCE and TCA are also present at lower concentrations. Potential risk receptors include:

1. **Minneapolis Water Works (MWW) drinking water intake** located in the Mississippi River less than 0.5 mile downstream from the FMC Site: No TCE or TCE degradation products have been detected at the water intake since the late 1980s. BAE Systems samples the MWW drinking water intake annually.
2. **Fridley municipal well #13**: Located upgradient and 0.8 mile northwest of the FMC Site, this well is used for backup during periods of peak demand. TCE was detected at 1.0 µg/L (microgram per liter) or parts per billion (ppb) in 1995, with no detections of VOCs since 1997.
3. **Mississippi River**: The Mississippi is about 700 feet west and downgradient of the FMC Site. The highest TCE level in monitoring wells closest to the river in 2012 was 525 µg/L or ppb. The Class 2Bd surface water standard for TCE is 25 µg/L or ppb.
4. **Vapor intrusion in nearby properties**: The closest residential property is located upgradient and 0.25 mile east of the FMC Site. No residential properties are at risk for vapor intrusion from the FMC Site. Downgradient to the southwest, the MWW has several buildings where the FMC Site's VOC plume may pose a threat. The MPCA is conducting discussions with BAE Systems and MWW to address any potential risks to the MWW facility.

Current site status

As of January 2014, the pilot study is ongoing and preliminary results have not been fully evaluated. BAE continues to provide periodic updates of the pilot study to the MPCA.

The recently completed work at the FMC Site will aid in developing the site Close Out Plan and addressing the seep areas as recommended in the fourth Five-Year Review.

Where can I get more information?

For more information about the FMC Corporation Superfund Site or its remediation, contact:

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