



Minnesota Pollution Control Agency

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

October 19, 2004

Mr. Douglas Hildre, P.E.
Environmental Control Manager
United Defense LP
Armament Systems Division
4800 East River Road
Minneapolis, MN 55421-1498

RE: FMC Corporation Superfund Site

Dear Mr. Hildre:

The Minnesota Pollution Control Agency (MPCA) staff has reviewed the document entitled "Results of Vertical Aquifer Profiling and Seep Assessment, Former FMC Site, 4800 East River Road, Fridley, MN," (Report) dated August 19, 2004. The Report was submitted pursuant to the Response Order by Consent between FMC Corporation (FMC) and the MPCA, dated October 28, 1986.

The Report is an excellent presentation of the data collected during the off site Cone Penetration Testing (CPT) investigation. In general, the (CPT) work confirms that there is significant stratification of site volatile organic compounds (VOCs). Trichloroethylene (TCE) and perchloroethylene (PCE) comprise the majority of VOC concentrations in the off-site plumes at the FMC Site. In addition, the CPT work has given a much better definition of the vertical and lateral extent of the off site unconfined and confined plumes. The MPCA staff is in agreement with the recommendations for new monitoring wells with some modification (see Attachment I). The additional work proposed in your report should help to provide further definition of the plumes in several areas.

The MPCA staff hereby modifies the Report pursuant to Attachment I of this letter.

If you have any questions regarding this letter, please contact me at (651) 296-7818.

Sincerely,

David N. Douglas, Project Manager
Superfund Unit 2
Superfund Section

Majors and Remediation Division

DND:csa

cc: Thomas Smith, U.S. Environmental Protection Agency
Dan Owens, U.S. Navy

Attachment I

Modifications to the Report Entitled, "Results of Vertical Aquifer Profiling and Seep Assessment, Former FMC Site, 4800 East River Road, Fridley, MN," (Report) Dated August 19, 2004

Discussion – Vertical and Lateral Extent of PCE and TCE Plume, page 7/11, paragraph 2

In general the MPCA staff agrees with the statement made that the data shows that TCE and PCE concentrations decrease with depth. There is, however, one exception to this observation at VAP-1. There is a decrease in TCE concentration with depth in VAP-1 (18 ug/l TCE at 76 feet) but a considerable increase in TCE concentration at the 86-foot level (48ug/l and 82 ug/l split results). The MPCA staff requests that UDLP note this exception in the Report.

With regard to the lateral extent of the unconfined and confined plumes to the south, there appears to be fairly good lateral definition of the plumes along Section C-C'. Some additional work is proposed in the area of FMC-35 to better resolve the extent of the confining layer in that area and to determine if the aquifer is confined, semi-confined or unconfined. The work may change some of the interpretations in that area. The MPCA staff requests that the new information be shown on a revised cross section.

UDLP has requested sampling of several Navy monitoring wells on the north end of Section C-C'. The MPCA staff agrees. The MPCA staff requests that this information be shown on a revised cross section.

UDLP proposes additional monitoring wells in the FMC-21 area along Section D-D'. Data collected from those wells will provide further information regarding the southern lateral extent of the plumes to the south. This information may result in a new interpretation regarding the southern extent of the unconfined and confined plumes. The MPCA staff requests that this information be shown on a revised cross section.

Additional Information – Evaluation of existing Remedial System Downgradient of RW-1, pages 8/11 to 9/11

In general it appears that, based on existing data, the interpretation of the impact of RW-1 on the unconfined plume in the area near RW-1 may be correct (i.e. ground water containing elevated concentrations of chlorinated compounds within the clay "bowl" is being contained and is not migrating off-site). The MPCA staff does not agree that VOCs are not migrating off-site in the unconfined aquifer downgradient of RW-1. The MPCA staff will defer to chemical monitoring and equipotential maps presented in UDLP AMRs that use the modified monitoring well network to evaluate the remedial system performance.

Cross Sections C-C' and D-D'

The cross sections present an excellent presentation of the geologic information collected during the CPT work and incorporates all of the existing lithologic and well information from previous borings. It would be helpful for future versions of the cross sections to include the water levels in all of the wells shown in the section. For samples, at points where split samples were collected, the MPCA staff requests that UDLP indicate both concentration levels near the sample point. The MPCA staff requests that this information be shown on a revised cross section.

Recommendations, page 10/11, Cross Section C-C', Bullet 1

The MPCA staff agrees with this recommendation. It's interesting to note that the shallow analytical data from VAP-1 (located approximately 50' away) seems to contradict the concentrations of TCE in USGS-4 and USGS-5. Where USGS-5 indicated a low TCE concentration (0.6 ug/l TCE), the corresponding depth from VAP-1 indicated 170 ug/l TCE. USG-4 indicated 322 ug/l TCE, while the equivalent depth in VAP-1 was <1.0 ug/l TCE. The MPCA staff requests that UDLP review the sampling and lab sheets to determine if the results for the two different depths for one of the locations were inadvertently transposed during labeling or reporting.

Recommendations, page 10/11, Cross Section C-C', Bullet 2

The MPCA staff agrees with this recommendation. However, the MPCA staff is concerned that for the deepest samples collected in VAP-1 (86'), the TCE level increases substantially (48-84 ug/l TCE in splits) in concentration over the sample collected above it (18 ug/l TCE). The MPCA staff requests that this information be noted on a revised cross section.

Recommendations, page 10/11, Cross Section C-C', Bullet 3

The MPCA staff agrees with this recommendation.

Recommendations, page 10/11, Cross Section C-C', Bullet 4

The MPCA staff agrees with this recommendation and agrees that it will be important to determine the stratigraphy in this area. There are three existing monitoring wells in this area (FMC-35, FMC-45 and FMC-64). Each well was sampled and yielded the following TCE results on 10/30/2003: FMC-35 23 ug/l TCE, FMC-45 43 ug/l TCE and FMC-64 67 ug/l TCE. It is unclear whether or not the wells in this area are unconfined, semi-confined or confined and to what interval the sampling results should be assigned. The MPCA staff requests that UDLP determine how continuous the fine grained layer is between VAP-3 and FMC-64 for determining how to classify the wells. The MPCA staff requests that this information be shown on a revised cross section.

Recommendations, page 10/11, Cross Section C-C', Bullet 5

The MPCA agrees with this recommendation. If the MPCA staff can be helpful in any way in obtaining approval from the Navy to sample these wells, please do not hesitate to contact us.

Additional MPCA Staff Recommendation

In the final revised cross sections, the MPCA staff requests UDLP indicate the water levels measured in all of the cross section wells be indicated on the sections.

Recommendations, page 10/11, Cross Section D-D', Bullet 1

The MPCA agrees with this recommendation.

Recommendations, page 10/11, Cross Section D-D', Bullet 2

The MPCA agrees with this recommendation. The new well should be sampled as soon as is possible after installation and development. The MPCA staff requests that the unconfined plume be properly bounded in a lateral direction to the south. The MPCA staff and UDLP can discuss sampling results from this new well to determine if any additional work may be needed to adequately define the unconfined plume to the south. The MPCA staff may collect splits from these wells to confirm the initial results. Please contact MPCA staff regarding the sampling schedule so staff can be available during the sampling.

Recommendations, page 10/11, Cross Section D-D', Bullet 3

The MPCA agrees with this recommendation. The MPCA staff requests that the new well be sampled as soon as is possible after installation and development. The MPCA staff requests that the confined plume be properly bounded in a lateral direction to the south. The MPCA staff and UDLP can discuss the sampling results from this new well to determine if any additional work may be required to adequately define the confined plume to the south. The MPCA staff may collect splits from these wells to confirm the initial results. Please contact MPCA staff regarding the sampling schedule so staff can be available during the sampling.

Additional MPCA Recommendation, page 10/11, Cross Section D-D'

The MPCA staff requests that UDLP install a new monitoring well with a 10' screen under the clay confining unit at the VAP-5 location approximately 100' south of existing well USGS-6. Both VAP-5 and VAP-6 indicated elevated TCE levels below fine grained layers. It appears that the unconfined and confined plumes may converge in this area where the confining unit is thin or absent.

Additional MPCA Recommendation, page 10/11, Cross Section D-D'

The MPCA staff requests that UDLP incorporate FMC-20 into the unconfined monitoring well network.

Additional MPCA Recommendation for Map

The MPCA staff requests that UDLP include an approximate area on a modified report map that estimates where the confining layer is no longer present near the Mississippi River.