

Second Five-Year Review Report

for

FMC YAKIMA

Superfund Site

Yakima, Washington

SEPTEMBER 2003

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Prepared by:

United States Environmental Protection Agency
Region 10
Seattle, Washington

Approved by:

Date:

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September 29, 2003

Michael F. Gearheard, Director
Office of Environmental Cleanup
U.S. EPA, Region 10

Executive Summary

In December 1992, FMC completed a remedial action at the Yakima Superfund Site which had operated as a pesticide formulation plant from 1951 to 1986. The cleanup was conducted in conformance with the 1990 ROD and the 1993 ESD.

At the FMC-Yakima Superfund Site, hazardous material residuals were left on site at depths generally below 7 feet from grade, following soil removal and treatment, at least enough to seasonally impact groundwater quality. The ground water has been regularly monitored through an EPA approved network of wells. The groundwater remains contaminated, mainly by dieldrin/aldrin (aldrin is a pesticide breakdown product), which were not included in the ROD but which are closely related carcinogens with equivalent groundwater risk levels in IRIS. Levels of dieldrin/aldrin rose dramatically during the soil removal, and have since dropped and stabilized, but at concentrations about an order of magnitude higher than prior to excavation. Of the 2 contaminant groups listed in the ROD, endosulfans also rose dramatically, but the RfD was changed in IRIS so that even the elevated levels were no longer a risk. Those levels have also since dropped somewhat and stabilized. Groundwater concentrations of the other contaminant group, DDT series, dropped dramatically following the soil excavation.

The remedy for the FMC-Yakima site remains protective despite the rise in dieldrin/aldrin concentrations because these contaminants do not travel very far in groundwater before they re-adsorb onto soil particles. As a result, the plume extent is self-limiting. The plume expands and shrinks seasonally, with the largest plume existing in the late summer / early fall. At that time, the plume expands and may reach the boundary of the site. Since no one uses (or is likely to use) the groundwater under the FMC property for drinking water purposes, there is no complete exposure pathway for groundwater. Although the site is zoned industrial, EPA should ensure that appropriate legal restraints on groundwater use are in place.

The soil removal reduced the risks from direct contact with the soil to acceptable levels down to about 7-10 feet (a little below the seasonally low water table). Excavation below the water table is highly unlikely. Contaminants were also removed from the interior of the site warehouse building, making it safe for reuse.

The remedy for the site is considered protective because the cleanup levels are still within EPA's risk range and there is no current exposure.

Five-Year Review Summary Form

Site Identification

Site Name: FMC YAKIMA
EPA ID Number: WAD000643577
Region: 10
State: Washington
City/County: Yakima,

Site Status

NPL Status: Final
Remediation Status: Operating under LTRA
Number of OUs: One
Construction Completion Date: December 1993

Review Status

Lead Agency: US EPA
Author Name: Lee Marshall
Author Title: Project Manager
Author Affiliation: EPA, Region 10
Review Period: August 2003 through September 2003
Date of Site Inspection: September 4, 2003
Type of Review: Statutory
Five-Year Review Number: 2
Triggering Action: Previous Five-Year Review Report
Triggering Action Date (WasteLAN): September, 1998
Due Date: September, 2003

Issues

Since hazardous substances remain onsite under the current ROD and ESD cleanup plans, the development of Institutional Controls need to be considered for protection future property users from accessing the groundwater or for excavations into the contamination zone.

Recommendations and Follow-up Actions

It is recommended that an Institutional Control be considered as a component for voluntary inclusion on the deed. Even though the site is zoned industrial/commercial it should have proper documentation to alert future property owners about potential subsurface soil and groundwater contamination.

Protectiveness Statement

The remedy at this site currently protects human health and the environment because the groundwater plume is stable beneath the site and is not a source of drinking water, and the surface soil is clean.

Other Comments

None

Second Five-Year Review Report

FMC YAKIMA SUPERFUND SITE Yakima, Washington

I. INTRODUCTION

The purpose of the five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this Five-Year Review report pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgement of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The Agency interpreted this requirement further in the NCP; 40 CFR § 300.430(f)(4)(ii) which states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

The US Environmental Protection Agency (EPA), Region 10 conducted the Five-Year Review of the remedy implemented at the FMC Yakima Site, located in Yakima, Washington. This Second Five-Year Review for the FMC was conducted by the EPA Remedial Project Manager (RPM) from January 2003 through September 2003. This report documents the results of the review.

This is the second five-year review for the FMC Yakima site. The triggering action for this statutory review is the completion of the First Five-Year Review Report, dated September, 1998. The five-year review is required because hazardous substances, pollutants, or contaminants remain in the soil and groundwater above levels that allow for unlimited use and unrestricted exposure.

II. SITE CHRONOLOGY

Table 1 Chronology of Site Events
FMC YAKIMA

<u>Event</u>	<u>Date</u>
FMC operations	1951 thru 1986
Preliminary Investigations	1982
NPL Listing	1982
Administrative Order (State)	June 1983
Administrative Order on Consent (EPA) RI/FS	July 1987
Administrative Order on Consent (EPA) RD/RA	May 1988
Phase I and II Clean up Completed	April 1990
ROD Signature	Sept 14, 1990
Incineration Began	Nov 1992
ESD	April 1993
Incineration and Construction Completed	August 1993
Final RA Report Submitted	November 1993
Groundwater Monitoring Plan	November 1993
EPA Issues Certification of Completion	December 1993
Property resold to current owners	1995
EPA Five Year Review	September 1998

III. BACKGROUND

Site Location and Description:

The FMC Superfund Site was placed on the National Priorities List (NPL [Superfund List]) in 1982.

The former FMC Yakima pesticide formulation facility is located at Four West Washington Avenue (Figure 1-1), approximately 1 mile east of the Yakima Municipal Airport in Yakima, Washington. The site consists of a 58,000-square-foot fenced area which was leased from the Union Pacific Railroad. FMC operated the facility from 1951 to 1986. The site is located in the lower Ahtanum Valley, an area of about 100 square miles in central Yakima County, Washington. Most of the land surrounding the site is zoned for light industry. There is one two-acre parcel bordering the western side of the property that is zoned two-family residential. There are no homes nearby.

FMC operated a plant to manufacture both pesticide dusts and liquids on the site from 1951 to 1986. Pesticide dusts were formulated at the facility throughout its operation. Liquid products were formulated in the 1970s. Between 1952 and 1969, FMC disposed of wastes containing pesticides in an onsite pit. An estimated 2000 lbs. of waste consisting of raw material containers, soil contaminated by leaks or spills occurring during formulation activities, and process wastes were dumped into the excavated pit and covered with dirt. After 1969, waste materials were disposed of at Yakima Valley Disposal in Yakima, and Chemical Waste Management's Arlington, Oregon facility.

The former FMC Yakima site slopes to the southeast with a grade of less than one percent. The property is outside the 500-year flood plain of the Yakima River 1.5 miles east of the site and Wide Hollow Creek, which is approximately 1 mile south of the site. No surface water bodies or wetlands exist on the property. Vegetation within the fenced site is limited to weeds and grasses. The shallow groundwater beneath the site occurs in alluvial silty sands and gravels and flows southeastward toward the Yakima River. The groundwater levels fluctuate seasonally, with the seasonal high water level occurring during the agricultural growing season, in response to the area recharge by irrigation water. There are no wells currently used for drinking water in the shallow aquifer within a one-mile radius of the site.

The site currently contains an active metal fabrication facility and parking lot. Two new businesses have purchased parts of the original FMC property and have erected new buildings. One is True Value Hardware store and Plant Resale Nursery, the other facility is the Butler RV Sales and Service Company. Much of the new operations are now conducted on property that is now paved. Figure 1-2 shows these structures, the location of the former disposal pit, and the groundwater monitoring wells.

Site History:

A. Early Investigations

Waste materials and an estimated 2,000 pounds of various chemicals were dumped into an on-site disposal pit between 1952 and 1969. A preliminary investigation was conducted for EPA in 1982, and the site was subsequently placed on the National Priorities List (NPL), based on high levels of pesticides found in site soils and surrounding groundwater. An Administrative Order issued by the State of Washington in 1983 required a study of the former disposal pit area. In 1986, after operations at the facility had ceased, FMC conducted a preliminary cleanup of the facility that included removal of all contents of the main facility warehouse and surface tanks, and washing of the warehouse floor and walls. EPA issued a CERCLA 106 Consent Order in 1987 requiring an RI/FS for the site. The RI/FS was followed by FMC's removal of the pit contents in two phases between 1988 and 1989. A Superfund Record of Decision (ROD) was issued in 1990 to specify selected remedies to address residual site contamination. Subsequent remedial actions included removal of additional contaminated soil and concrete as well as groundwater monitoring. Structures remaining on the site include an office building, a warehouse with loading dock, and a parking lot.

B. Phase 1

In November 1987, RI Phase I sampling conducted by FMC's consultant, Bechtel Environmental, Inc., confirmed "hot spots" of DDT and other pesticide contamination in the former disposal pit at levels of up to 25,000 mg/kg. Consequently, an Order on Consent for Necessary Response Actions was issued by EPA on May 31, 1988. Pursuant to this order, FMC performed a removal and disposed of the pit's contaminants.

The Phase I removal of the contents of the disposal pit was performed in June 1988. The pit was excavated to a depth of 4 feet (the depth of the groundwater table at the time), and 500 tons of contaminated soil was removed. In March 1989, an additional 350 tons of soils were removed, which increased the depth of the excavation to approximately 8 feet. In both cases, the waste was disposed of at Chemical Waste Management's Arlington, Oregon facility, a permitted hazardous waste disposal facility.

C. Phase II

A phase II RI was conducted to investigate the rest of the site. The study was completed in April 1990, and a Record of Decision (ROD) outlining the final site cleanup was issued September 4, 1990.

FMC signed a Consent Decree agreeing to perform a remedial action on March 27, 1991.

The consent decree was lodged with the court on August 16, 1991, and entered in the Eastern District Court of Washington on December 6, 1991.

Contaminant problems identified in 1990

The contaminants of concern for human health at the site were DDD (1,1-dichloro-2,2-bis(p-chlorophenol) ethane), DDE (1,1-dichloro-2,2-bis(p-chlorophenol) ethylene), DDT (1,1,1-trichloro-2,2-bis(p-chlorophenol) ethane), dieldrin, endosulfans, malathion, ethion, ethyl parathion, parathion, DNOC (4,6-dinitro-cresol), cadmium, and chromium VI. All of these compounds are considered toxic. Cadmium, chromium VI, DDD, DDE, DDT, and dieldrin are also carcinogenic. The contaminants of concern for potential environmental effects are DDD, DDE, DDT, endosulfans, ethion, malathion, and zinc. Groundwater contamination has been found at low concentrations, most notably the organo-chlorines (DDT, DDD and DDE), dieldrin and endosulfans.

D. Record Of Decision

The selected remedy in the ROD addressed the remaining contaminated soils and structures at the site. The selected remedy called for the following:

- Sampling of soils and concrete structures to refine the RI/FS estimate of the lateral and vertical extent of material requiring treatment,
- Excavation of contaminated soils exceeding cleanup levels,
- On-site incineration of contaminated soils,
- Dismantling of contaminated slabs and portions of the buildings that are determined to exceed cleanup goals,
- On-site incineration of contaminated concrete and debris or disposal at a RCRA-Subtitle C permitted hazardous waste disposal facility, depending on volume,
- Analysis of incinerator ash to determine the degree of contaminant destruction and leachability, and delisting of the ash if health-based cleanup goals are met,
- Groundwater monitoring for five years to confirm source removal. Groundwater monitoring to continue quarterly for two years following completion of the remedial action, and then for three more years on an annual basis. If contamination was detected above the cleanup goals, and groundwater remediation proved to be necessary, it would be addressed in a subsequent ROD.

The ROD estimated the amount of contaminated soil at the site to be 900 to 4,000 cubic yards.

ROD cleanup goals

HEALTH - BASED CLEANUP LEVELS FOR CONTAMINATED CONCRETE AND SURFACES

<u>Compound</u>	<u>Concentration (ugs/100 cm2)</u>
DDD	6.5
DDE	4.6
DDT	4.6
Dieldrin	0.1
Endosulfans	10.0
Ethion	270.0
Malathion	8,200.0
Ethyl Parathion	2,400.0

Cleanup goals will be adjusted where multiple contaminants are found.

Health - Based cleanup levels for contaminated soil

<u>Compound</u>	<u>Concentration (mg/kg)</u>
DDD	5.1
DDE	3.6
DDT	3.6
Dieldrin	0.076
Cadmium	8.0
Chromium VI	1.0
Endosulfans	4.2
Ethion	42.4
Malathion	1695.0
Ethyl Parathion	11.0
DNOC	8.5
Zinc	500.0

IV. Remedial Actions

The remedial design began on August 23, 1991. The design was performed in two phases to expedite the start of the remedial action. The excavation phase was approved April 23, 1992, and the remedial action started on that date. The design for the incineration phase was approved on May 30, 1992. Incineration began in November of 1992. On August 12, 1993, FMC notified EPA that construction activities at the site were completed.

For clean up purposes the site was divided into several different areas based on historical usage or function, See figure 1-2 The excavation phase consisted of excavating contaminated material, followed by sampling the bottom and sides of the excavations to determine if the cleanup standards were met. If the remaining material was still above cleanup standards, excavation and sampling of an area continued until the cleanup standards were met. Contaminated material was stockpiled in a lined area on the west side of the property prior to incineration. At the conclusion of the excavation phase, the material was incinerated. Incinerator ash was stored in bags until sampling determined that it met the required standards. The ash was then used as backfill.

During the excavation phase, it was determined that contamination depth was greater than estimated in the RI/FS. In addition, excavation unearthed a second pesticide disposal pit located directly west of the first pit. These factors resulted in a significant increase in the amount of soil excavated and incinerated.

During the remedial action, 5,600 cubic yards of contaminated material were excavated and treated.

ESD

Significant Differences

Change in Site Cleanup Goals:

A number of changes in the site cleanup goals became necessary as a result of the mechanical difficulties associated with excavation below the water table, and the discovery that the depth of the contamination in some areas was greater than expected.

A. Change in cleanup goals from an excess cancer risk of 1×10^{-6} to a risk of 5×10^{-5} for excavation at depths greater than 2 feet, but less than 7 feet below ground surface. These levels were set for industrial use.

The cleanup goals in the ROD were the attainment of an overall site hazard index of less than or equal to 1, and the attainment of an overall site excess cancer risk of 1×10^{-6} , both based on a residential scenario. When site excavation began, the water table was at its seasonal low of

approximately 7 feet below ground surface (bgs). Over the course of the excavation the water table rose to its seasonal high of 2 feet bgs. (The water table is at 7 feet bgs during the winter and early spring, and at 2' bgs the rest of the year.) The majority of the site excavation was of material below the seasonal high water table. Excavation below the water table resulted in sloughing of the trenches and spillage of small quantities of excavated material back into the holes as the material was removed. Thus, minimal recontamination occurred as excavation progressed. Continued excavation was not able to alleviate the recontamination problem. In addition, some previously excavated areas became submerged and out of reach of the construction equipment, making re-excavation impossible.

The contaminant concentrations resulting from recontamination were calculated to equate to risk levels well within the EPA acceptable risk range of 1×10^{-6} to 1×10^{-4} . To account for the technical impracticability of reaching the original 1×10^{-6} cleanup goal, EPA adjusted the cleanup goal (and the contaminant levels associated with it) to a risk of 5×10^{-6} for areas below 2 feet (which is below the high water table) to avoid ineffective attempts at excavation of residual contamination. For most of the site, the material with concentrations above the adjusted cleanup goal was removed by excavations ranging from 2 feet to 7 feet bgs. The areas where contaminant depth exceeded 7 feet bgs are discussed below.

B. Determination that the extent of the excavation would not exceed 7 feet below ground surface

Samples from 7 feet bgs taken during soil excavation of the drum washing area and the tank farm (two adjacent areas on the southern end of the site), contained contaminant concentrations equating to risk levels above the cleanup goals. EPA determined that excavation below 7 feet was technically impracticable, and that the material did not pose an exposure risk or a threat to the groundwater based on the following:

- 1) The water table in the area fluctuates from a depth of 7 feet bgs to a high level of 6 inches to 1 foot bgs. There is no chance of incidental direct exposure to soil 7 feet bgs which is always underwater. In addition, because the high water table is at 6 inches to 1 foot bgs, there is no potential for future subsurface construction leading to exposure of the remaining contaminated soil. Because there is no probable current or future exposure to this material, it does not present a direct exposure risk.

- 2) Prior to excavation of the site, the contaminant levels in the groundwater were below the health based levels. The bulk of the contamination has been removed during this remedial action, reducing the impact on the groundwater. The groundwater would be monitored for 5 years following the completion of the remedial action.

C. Change in Volume of Soil Excavated:

As a result of contamination extending deeper than expected, approximately 5,200 cubic yards of material were excavated.

D. Determination that Cobble Met the Soil remediation requirements and So Did Not Require Incineration:

Approximately one third of the material excavated were cobbles, approximately 2 to 6 inches in diameter. They were crushed, sampled, and found to meet the health based and RCRA based requirements of the Consent Decree Performance Standard. Therefore, the cobbles did not require incineration prior to use as backfill.

E. Modification to the Cleanup Criteria for the Warehouse Floor:

EPA developed site specific criteria for the warehouse. The exposure assumptions for determining the cleanup criteria were based on contact with the walls. A wipe test using a filter to swab walls and floors was to be analyzed and the results compared to the cleanup standards.

Subsequent to the beginning of site excavation, RCRA developed technology-based criteria for decontamination of concrete debris (57 Fed. Reg. 371904). The new RCRA criteria were developed to allow concrete to be disposed of, after the applicable treatment, without further testing. In the case of the warehouse, the cleanup criteria in the ROD were based on decontamination of the building for reuse. However, EPA determined that it was appropriate to apply the new RCRA criteria to the warehouse floor.

As part of the remedial action, the warehouse floors were scarified to a depth of 1/4" or more and no visible contamination remained. It was therefore determined that the warehouse floors were clean.

At the conclusion of the remedial action, after demobilization of the incinerator, FMC determined that 1,000 cubic yards of additional soil under the stockpile liner were contaminated due to breaches in the liner. Equipment operation on the stockpile area had punctured the liner in a number of places, and precipitation leached contaminants from the stockpile to the ground below. This additional contaminated soil was sent offsite to Chemical Waste Management's Arlington, Oregon facility for disposal.

A letter dated August 12, 1993 from FMC notified EPA that the physical activities at the site

were completed. EPA conducted an inspection of the site on August 19, 1993, and found that no additional physical site activities were required.

IV. Progress Since Last Review--CURRENT STATUS

The groundwater monitoring program has been conducted by FMC's contractor, ERM, since December 1993 on a quarterly basis until May 1996 and then semiannually. The frequency of monitoring program was again modified since the last five year review and water quality monitoring is now conducted every other year in the fall, as the fall period has been shown to be the worst case event.

Pesticides that continue to be detected in groundwater are the organochlorine pesticides DDT, aldrin, dieldrin and endosulfans. Since the removal of material from the disposal pit in 1988 and 1989, pesticide contamination in the groundwater has been below drinking water standard. Aldrin and dieldrin do not have MCL's established for drinking water.

Results of PRP's and EPA's evaluations suggest that the extent of the organochlorine pesticides still present in the groundwater at the site may be stable with respect to the extent of contamination (i.e., plume positions are not moving). A seasonal fluctuation in concentrations, caused mostly by recharging irrigation water that increases groundwater elevations, is apparent.

Groundwater contamination at the site is thought to be the result of residual soil contamination left in place after excavation and subsequent backfilling of the former disposal pit and other nearby areas. FMC and EPA agreed to halt removal excavations at a depth of approximately 7 feet below grade where groundwater was encountered. As anticipated, analytical results from post-excavation samples indicated soil concentrations of organochlorine compounds greater than ROD cleanup levels were present in soils beneath the bottom of the excavation. Residual soil contamination at the base of the excavation is in direct contact with groundwater during periods of average and seasonally high groundwater levels. The screened cobble backfill is much more permeable since the fines (silt and sand) were removed. As a result, groundwater flows through this area more easily than before the excavation, and at a faster rate than the surrounding areas, especially when the groundwater levels are elevated during the summer and fall irrigation season. Since the cobbles are more permeable than the surrounding soils, groundwater elevations are slightly lower within this area immediately adjacent to and above soil with residual organochlorine compound contamination. Excess groundwater is pulled through those residually contaminated soils into the cobble backfill and drawn in a cross-gradient direction toward the former disposal pit area. As a result, maximum concentrations of organochlorine compounds are typically detected in monitoring wells immediately down gradient after the seasonal high water table occurs. Figure 4-1 shows the typical concentrations and an estimate of the extent of contamination.

When the ROD was issued, pesticide constituents of concern in groundwater were endosulfans and DD-series compounds (DDD, DDE, and DDT). The non-carcinogenic hazard

index for endosulfans is equal to 1, at a concentration of 200 µg/l (100 times greater than when the ROD was issued in 1990). The concentration of endosulfans in site groundwater is significantly less than 200 µg/l, however, EPA is requiring the continued monitoring of endosulfan because it is suspected to be an endocrine disrupter, and the chronic toxicity of that entire class of chemicals is under review by EPA.

The most recent monitoring report dated January 2003 was conducted in the fall of 2002 by the PRP contractor, EMR inc. Residual pesticide contamination continues to be detected in site ground water sample at very low levels and their values appear to be decreasing or are stable with time. Dieldrin was detected in wells W-12A, W-13, and W-17 at 0.064, 0.25 and 0.054 ug/l respectively. DDT was not detected above the PQL. The PQL for all the listed chemicals was 0.05ug/l other than tedion which was 0.1ug/l. The highest value for total endosulfans was observed at well W-18 at 1.35 ug/l. Tables 2-1 contain the summary of Detections and individual well result from the 2002 sampling event. Figure 4-2 shows the concentrations of selected well of Aldrin plus Dieldrin over time, while Figure 4-3 shows the total Endosulfans in selected well over time. Figures include the 2002 sampling event.

A site visit was conducted on September 4, 2003. The purpose of the on site visit was two fold, one to conduct interviews and two, to observe site conditions as part of the five-year review. The site conditions are essentially the same as was observed during the last site inspection on 8/08/98. All wells are locked and in excellent condition. Photographs of the well locations are attached in the appendix. The site is operated by a metal fabricator and the field behind the remaining structure is used for open air storage of metal parts and equipment related to that business. The remainder of the fenced field is full of natural grasses and weeds.

Also, new at the site were two new business buildings which were constructed on the west side of the former FMC Site (see revised site diagram). One is a True Value Hardware and plant nursery owned by Tom De Santo, the other new operation is Murray RV Sales and Service company owned by Larry Murray. Interviews were conducted on site as part of the site inspection dated 09/04/03. In both locations, slab foundations and shallow footings were used in the construction of the buildings. Much of the sites are also paved. No problems or issues were encountered during or since the construction. There is no reason to believe the remedy is not protective for these new operations.

Prior to the first five year review water well records were obtained from the Washington State Department of Ecology and reviewed for wells located within a one-mile radius of the site. As also indicated in the previous 1990 survey, the record search indicates that no receptors from a groundwater pathway are located down gradient from the subject site. Groundwater on the FMC site and immediate vicinity is not currently used for domestic, industrial, or agricultural purposes. Although there are no institutional controls at this time on the use of groundwater, or required by the ROD, local regulations would prevent unrestricted well installations. Monitoring wells associated with the site are locked to prevent access by unauthorized personnel.

A. Protectiveness Statement from the [First] Five-Year Review

“The remedy selected for this site remains protective of public health and the environment. The current remedy is meeting the cleanup goals in the ROD, and ESD. Continued evaluation of the site monitoring data will be maintained to assure continued protectiveness.”

B. Status of the Recommendations and Follow-up Actions from First Five-Year Review

Recommendations from the first five year review were to continue monitoring and to consider implementation of institutional controls. Monitoring has continued on a regular basis and the results of that monitoring documented in this review. Institutional controls have been considered but as of this date no action has been taken.

VI. Five-Year Review Process:

The Five Year Review was conducted according to procedures in OSWER Directive 9355.7-03B-P, Comprehensive Five-Year Review Guidance. Activities in this review consisted of:

- 1) Review of site-related documents
- 2) Review of monitoring data,
- 3) Discussions with new owners
- 4) Site visit and inspection,
- 5) Community relations activities, and,
- 6) Preparation of the Five-Year Review report.

Documents reviewed for this report include:

EPA, 1990, *ROD for FMC Pesticide Formulation Facility Yakima, Wa*, dated September, 14, 1990

Bechtel, 1990, *Phase II Remedial Investigation Report for a Former Pesticide Formulation Facility in Yakima, Washington*: Report to FMC dated April, 1990.

Bechtel, 1994, *Remedial Action Completion Report*: Report to FMC dated May, 1994.

ERM, 1994, *Long-Term Monitoring Plan*: Report to FMC dated June 1994

ERM, 1998, *5- Year Data Evaluation Report* to FMC Dated September, 1998

DOJ, 1991, *Consent Decree -USA vs FMC Corp.* Dated December 6, 1991

EPA, 1993 *Explanation of Significant Differences* Dated April 24, 1993

EPA, 1993 *Superfund Preliminary Site Closeout Report FMC Corp Yakima Wa*, Dated Sept. 1, 1993

EMR, 2003 *Groundwater Sampling Program Fall 2002 Results FMC Corporation, Former FMC Pesticide Formulation Facility, Yakima, Washington*

Site Visit and Inspection:

See Attached site visit Report Dated 9/04/03

Community Notification:

There has been no recent community involvement from EPA nor has there been any interest expressed from the community in the last ten years. On July 3, 2003, a Public Notice was placed in the *Yakima Herald Republic* stating that EPA was doing this Five-Year Review and to solicit any comment. No comments were received by EPA as a result of the newspaper notice. Community interest in this site is considered low. A public notice of this five year review will be put into the local newspaper, upon completion of this report. Copies of the report will also be sent to the current land owners.

VII. Technical Assessment:

Question A: Is the remedy functioning as intended by the decision documents?

Yes. The review of documents and data, ARARs, and the results of the site inspection

indicates that the remedy is functioning as intended by the ROD.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy still valid?

Yes. There are no changes in the physical conditions of the site that would affect the protectiveness of the remedy. This site is zoned industrial and the surface soil cleanup levels are consistent with industrial use.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No. The remedial actions appear protective for the short-term. There are no Institutional Controls required by the ROD, but hazardous substances remain onsite below 7 feet and in the groundwater. As a result, Institutional Controls should be considered to keep the site classified as industrial and note on the deed that potentially hazardous substances are present at the site below 7' bgs and to prevent the installation of onsite wells.

Technical Assessment Summary

According to the data reviewed and the site inspection, the remedy is functioning as intended by the ROD. There have been no physical changes of the site that would affect the effectiveness of the implemented remedial actions.

VIII. Issues

The major issues concerning this site are presented in the table below:

Table for Listing Issues

Issues	Affects Protectiveness (Y/N)	
	Current	Future
Institutional Controls need to be developed and implemented	N	Y

IX Recommendations and Follow-up Actions

Table for Listing Recommendations and Follow-up Actions

Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Follow-up Actions: Affects Protectiveness (Y/N)	
				Current	Future
Develop Institutional Controls	EPA	EPA	12/05	N	Y

X. Statement of Protectiveness:

Based on the Technical Assessment for the FMC Yakima, the remedy is considered protective in the short-term, because there is no evidence that there is a current exposure.

XI. Next Review

Based on site conditions and the fact that hazardous substances remain on site, the next Five-Year Review should occur within five years, or before September, 2008.

List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EPA	United States Environmental Protection Agency
CFR	Code of Federal Regulations
WDOE	Washington Department of Ecology
ESD	Explanation of Significant Difference
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
PAH	Polyaromatic Hydrocarbon
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SDWA	Safe Drinking Water Act
VOC	Volatile Organic Compound

APPENDIXES

Tables and Figures
Site Inspection Check List
Interview Records
Site Photographs



