

Five-Year Review Report

**Beckman Instruments Site
Porterville, California**

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U.S. Environmental Protection Agency
Region IX, San Francisco
Superfund Division

U.S. Environmental Protection Agency, Region 9
Five-Year Review
Beckman Instruments Superfund Site
Porterville, California

I. INTRODUCTION

1. Purpose

EPA Region 9 conducted this review pursuant to CERCLA section 121(c), NCP section 300.400(f)(4)(ii), and OSWER Directives 9355.7-02 (May 23, 1991), and 9355.7-02A (July 26, 1994). It is a policy review. The purpose of a five-year review is to ensure that a remedial action remains protective of public health and the environment and is functioning as designed. This review included a survey of the RI/FS, the ROD, the Site Close Out Report, and discussions with the Beckman Instruments Project Manager and the DTSC Project Manager.

Because the response action at the Beckman site is a long-term remedial action (LTRA), an ongoing action which has not yet achieved the cleanup standards set in the ROD, the purpose of this review is two-fold. The first goal is to confirm that the remedy selected and implemented remains effective at protecting human health and the environment. This includes ensuring that the groundwater remedy, which is an extraction and treatment system, is operating and functioning as designed, and the soil remedy, which was excavation, remains protective. The second goal is to evaluate whether the original cleanup objectives remain protective of human health and the environment.

2. Summary of Review Results

The results of the five year review of the remedial action at the Beckman Instruments site are that: (1) the soil excavation successfully removed soils contaminated with lead; (2) the groundwater extraction and treatment system is operating and functioning as designed; (3) the VOC plume is still controlled; (4) the original cleanup objectives remain protective of human health and the environment; and (5) there are no new ARAR's which would make the remedial action insufficient.

3. Site Description and History

The Beckman Instruments Superfund site is located near the southern limit of the City of Porterville in Tulare County, approximately 25 miles southeast of Visalia on the eastern edge of California's Central Valley. The site study area is several square miles and consists of Beckman property and farm/residential property to the west of the site. Beckman has manufactured electronic equipment assemblies, subassemblies, and printed circuit boards in Porterville since 1967.

Industrial processes used at the plant include electroplating and degreasing. The waste streams from these processes have included spent halogenated solvents, inorganic and acid solutions, salts, metal-laden solutions, and plating bath sludges. Between 1967 and 1974 wastewater was discharged to the City of Porterville sewer system. From 1975 until early 1983 various waste streams were discharged to an on-site solar evaporation pond. From 1983 to present, waste streams have been treated on-site. Solid wastes are transported to appropriate disposal facilities. Treated liquids are discharged to the City of Porterville sewer system.

Liquid was detected in the evaporation pond's leak detection sump intermittently beginning in 1978. In response to enforcement actions taken by the Regional Water Quality Control Board, Central Valley Region (the Board) and the California Department of Health Services (DHS, now DTSC), Beckman initiated groundwater monitoring in the vicinity of the pond in late 1982 in conjunction with closure of the pond. Discharges to the pond were terminated in January 1983. This solar pond is considered the main source of widespread groundwater contamination in the upper aquifer and limited contamination of the upper aquitard and lower aquifer. Wastes may have also been placed in other areas near the plant.

DHS placed the site on California's Superfund State Priority Ranking List. At DHS's request, EPA assumed the lead role on overseeing remedial studies and cleanup activities at the site in October 1985. Also in 1985, under the direction of the Board, Beckman commenced operation of a groundwater pump and treat system to contain the migration of VOCs in the upper aquifer. On June 10, 1986, EPA placed the site on the National Priorities List (NPL).

II. REMEDIAL ACTION OBJECTIVES

1. Description of the Selected Remedies

EPA issued a ROD on September 26, 1989 specifying the following remedies:

- Extraction and treatment by air stripping for contaminated groundwater in the upper aquifer, upper aquitard, and lower aquifer. Treated water would be disposed of into infiltration basins to recharge groundwater, or could be used for irrigation; and
- Excavation and off-site disposal for soils contaminated with lead above 200 ppm.

Federal MCLs are designated as the cleanup standards for the groundwater. For those chemicals that have a more stringent state MCL, EPA has selected the state MCL, (specifically 1,1-DCE). For those chemicals that do not have an established state or federal MCL (Freon 113), the state action level (SAL) is designated as the cleanup standard. The selection of MCLs as cleanup goals is consistent with the National Contingency Plan and EPA policy.

The closed evaporation pond is considered to have been the main source of contamination. However, due to the migration of contaminants down to the upper aquitard underlying the site, the upper aquitard is now recognized to be a secondary residual source of contaminants in the study area. In the vicinity of the Beckman plant the aquitard is hydraulically connected to the lower aquifer. The lower aquifer has wells for human consumption and irrigation. The remedial objective continues to be to restore the aquitard to MCLs and to prevent further migration into the lower aquifer. The ROD recognizes that cleanup goals might not be achieved in the aquitard and that some combination of institutional controls might eventually be needed.

The cleanup standard established in the ROD for soils contaminated with lead is 200 mg/kg and is based on risk through direct contact and dust inhalation. This lead level continues to be protective (EPA's Region 9 PRG for lead is 400 mg/kg). By excavating and disposing of the contaminated soil, the objective of reducing the risk to human health and the environment has been met.

2. Implementation of the Selected Remedies

As of January 1990 Beckman attained ROD cleanup levels in the upper aquifer and ceased operating the upper aquifer containment/reclamation system. Beckman completed removal and off-site disposal of lead-containing soils in March 1990.

Beckman began operation of the Phase I wells in August 1991. EPA conducted an inspection of the extraction and treatment system on September 10, 1992. The Phase II wells began operating in January 1993. The following wells have been installed at the site:

Upper Aquifer: 70 monitoring wells, 90 piezometers, 10 partially penetrating monitor wells, 15 extraction wells, 4 cluster wells

Upper Aquitard: 36 piezometers, 10 extraction wells, 4 observation wells

Lower Aquifer: 31 monitoring wells, 10 extraction wells

The pre-final inspection was conducted at the site in June 1993 with representatives from EPA, DTSC and Beckman.

III. ARARS REVIEW

There are no new federal ARARs that would apply to the Beckman remedial action. Neither the federal nor state MCLs for the contaminants identified in the ROD have changed. The DTSC project manager for the site was contacted to determine if any new state ARARs have been promulgated since the ROD which would render the remedial action inadequate. He

determined that there are no new ARARs that would affect the remedy at the site.

IV. SUMMARY OF SITE VISIT

A site visit was conducted by both the EPA and DTSC project managers on August 7, 1997. The visit consisted of a walking inspection of the Beckman property which includes the closed evaporation pond, the excavated soil area, the groundwater treatment system and air stripping tower, and infiltration basins. The visit also included an inspection of the currently active extraction system wells and a drive-by to survey the area where the upper aquifer plume historically extended.

The site was found to be in excellent condition. All the components of the treatment system are properly functioning and the system is capable of continuous, automated operation. Treatment system laboratory results indicate that the system is performing properly. Interpretation of the resulting analytical data indicates that the groundwater extraction and treatment system is effective and is meeting the performance levels established in the ROD.

Operation and maintenance (O&M) activities are acceptable and have not increased more than was anticipated at the time of remedy selection.

V. CURRENT REMEDIAL ACTIVITIES

Due to the success of the remedial action, the upper aquifer reached ROD cleanup goals in January 1990, at which time all upper aquifer extraction wells in both the eastern and western well fields were turned off. Quarterly monitoring continued from 1990 to 1993. From 1993 to 1997 the well fields were monitored every 15 months. In that period of time no wells had levels of contamination above cleanup goals. The upper aquifer is considered clean and no further monitoring is planned.

Due to the success of the remedial action, many of the wells that were installed in the early 1990's are no longer used. The currently operating groundwater system includes the following wells:

Upper Aquitard: 18 piezometers, 2 extraction wells, 4 monitoring wells

Lower Aquifer: 13 monitoring wells, 3 extraction wells

The upper aquitard and lower aquifer still have low levels of contamination, with 1,1-DCE the only contaminant above cleanup goals. Recent sampling shows that 4 upper aquitard wells and 5 lower aquifer wells have 1,1-DCE above cleanup goals.

The distribution of 1,1-DCE in the upper aquitard groundwater is controlled by the location of the area relative to the former source at the site. The area closest to the source was exposed longer to higher concentrations of contaminants that migrated downward from the upper aquifer. At this location the upper aquitard is comprised of interbedded silts, clays, and fine sands. Beckman now believes that remediation of the upper aquifer and lower aquitard to below cleanup goals for 1,1-DCE might not be feasible due to the continued migration of contaminants from the fine-grained sediments in the upper aquitard.

VI. AREAS OF NONCOMPLIANCE

There were no areas or conditions of noncompliance with the goals of the remedial action at the site.

VII. RECOMMENDATIONS

On March 30, 1998, EPA received a proposal from Beckman to perform a test of the upper aquitard/lower aquifer extraction wells. EPA and Beckman believe this test is necessary to determine the effectiveness of continuing to use the current the extraction and treatment system to reach cleanup goals. The concentrations of the contaminants of concern have been reduced significantly since 1985. For the past three years the only contaminant that has been detected above cleanup goals is 1,1-DCE. Current levels range from 18 ppb to 30 ppb. While these levels are above the state MCL of 6 ppb, the extent of the plume is not increasing and it is not threatening any nearby drinking water wells.

As a test of the upper aquitard/lower aquifer extraction well field, Beckman is proposing to turn off the extraction wells for an extended period of time and to continue monitoring the groundwater. At the end of 6 months the data will be evaluated to determine if the test should be extended and if other long-term remedial options should be considered. The EPA project manager and EPA hydrogeologist intend to approve Beckman's proposal.

VIII. STATEMENT OF PROTECTIVENESS

I certify that the remedies selected for this site remain protective of human health and the environment.

IX. NEXT REVIEW

Groundwater at the site remains above cleanup goals for 1,1-DCE. It is EPA's policy to

conduct five-year reviews at long-term remedial action sites, so the next five-year review will be conducted five years from the date of this review.

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Date