FIVE-YEAR REVIEW REPORT

CHEMICAL CONTROL CORPORATION SUPERFUND SITE

CITY OF ELIZABETH, UNION COUNTY, NEW JERSEY

Prepared by:
U.S. Environmental Protection Agency
Region II
New York, New York

September 1998

U.S. Environmental Protection Agency
Region II
Emergency and Remedial Response Division
Five-Year Review (Type I)

Chemical Control Corporation Superfund Site
City of Elizabeth, Union County, New Jersey

I. INTRODUCTION

Authority Statement. Purpose. The U.S. Environmental Protection Agency (EPA) Region II conducted this statutory five-year review pursuant to Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), Section 300.430(f)(4)(ii) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and OSWER Directives 9355.7-02 (1991), 9355.7-02A (1994) and 9355.7-03A (1995). 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 document will become part of the Site's Administrative Record file. This review (Type I) is applicable to sites at which remedial action activities have been completed. Ongoing post-remedial environmental monitoring activities at the Site have indicated that the remedy may not be protective of public health and the environment.

Site Characteristics. The Chemical Control Corporation (CCC) Site consists of a 2-acre vacant gravel-covered lot located adjacent to the Elizabeth River, in the City of Elizabeth, New Jersey. From 1970 to 1978, CCC operated as a hazardous waste storage, treatment, and disposal facility, accepting various types of chemicals including: acids, arsenic, bases, cyanides, flammable solvents, polychlorinated biphenyls (PCBs), compressed gases, biological agents and pesticides. Throughout its operations, CCC was cited for discharge and waste storage violations. The facility operated until March 1979, when it was closed due to numerous environmental and safety violations.

Shortly after the facility ceased operations, the New Jersey Department of Environmental Protection (NJDEP) developed and began to implement a site cleanup strategy. On April 21, 1980, a fire of unknown origin started at the Site and burned for a period of 10 hours. The fire destroyed most of the structures and other materials on-site. After the fire, the NJDEP continued the initial remediation of the Site. In general, the initial remediation included: 1) removal of several thousand drums, and other materials; 2) construction of a berm along the Elizabeth River; 3) removal of the top three feet of soil from the Site; and 4) backfilling of the Site with clean coarse gravel.

EPA conducted a remedial investigation (RI) at the Site from 1985 to 1986. The RI indicated high levels of volatile organics, phenolic compounds, PAHs and inorganic compounds.

The first Record of Decision (ROD) for the Site was signed in 1983; a second ROD was signed on September 23, 1987. On October 23, 1990, the Primary Settling Defendants for the CCC Site entered into a Consent Decree (CD) for implementation of the 1987 ROD remedy.

II. DISCUSSION OF REMEDIAL OBJECTIVES; AREAS OF NON-COMPLIANCE.

The 1983 ROD addressed the decontamination and removal of eleven box trailers and a vacuum truck along with cleaning and repair of the storm sewer, manholes and catch basins. In addition, pursuant to the 1983 ROD, divers removed drums, pails, gas cylinders and other materials from the Elizabeth River.

The remedy selected in the second ROD, signed in 1987, called for the following:

- Treatment of the 18,000 cubic yards of contaminated soil at the Site using in-situ fixation;
- Removal of debris remaining from earlier response actions, including drill cuttings, monitoring well development water, items recovered from the Elizabeth River under the initial remedial measure, used equipment, and the decontamination pad;
- Sealing of the sanitary sewer line under the Site where it connects to the South Front Street storm sewer;
- Repairs of the berms that separate the Site from the Elizabeth River; and
- Collection and analysis of environmental samples, as required, to ensure the effectiveness of the remedy, including an evaluation after five years to assess its protectiveness of public health and the environment.

In addition to the above, adjustments were made during the remedial design. These adjustments were made pursuant to the Additional Work provision under the CD. Originally, the entire Site was scheduled to be solidified. However, the City of Elizabeth requested use of the "right-of-way" portion of the Site, for the future expansion of South Front Street. The right-of-way extends 20 feet from the curb onto the Site, and extends approximately the length of the Site. This portion of the Site was excavated and backfilled with clean fill. The excavated soils were mixed in with the remaining soils at the Site and solidified, as called for in the ROD. A slurry wall was also constructed around the perimeter of the Site (along the inner limit of the right-of-way). The slurry wall was anchored into the clay layer to seal off groundwater intrusion into the solidified mass.

The implementation of the remedy selected in the 1987 ROD was completed in September 1994. As part of the quality control measures implemented during construction, samples of the solidified soils were collected and tested. The samples were tested for unconfined compressive strength, Toxicity Characteristic Leaching Procedure (TCLP), permeability, and volume increase(due to solidification). Of these, the two critical tests were the unconfined compressive strength and the permeability test. The samples tested achieved the levels set by EPA for all tests.

The effectiveness of the remedy is assessed by monitoring groundwater contaminant concentrations immediately adjacent to the solidified mass. Specifically, the purpose of the monitoring is to determine whether there is a net decrease in the contaminant concentrations emanating from the solidified mass. The net difference is ascertained by comparing the post-remediation mean concentration of a given contaminant in a given well with the pre-remediation mean concentration in that well. The aim is to achieve a significant net decrease between the post-remediation and the pre-remediation mean concentrations for each compound.

Vinyl chloride and 2-butanone were selected as the indicator compounds in the post-remediation groundwater monitoring program. Three monitoring wells (CW-3,CW-4, and CW-5), situated between the Elizabeth River and the solidified slurry wall were sampled for these compounds. The indicator parameters are generally below the detection limits in wells CW-4 and CW-5. However, contaminant concentrations in well CW-3 remain of concern.

The statistical data show that the well CW-3 pre-remediation mean concentrations are 375.2 parts per billion (ppb) for 2-butanone and 1,072.5 ppb for vinyl chloride. For well CW-3, the post-remediation 95% upper confidence level concentrations are 197 ppb for 2-butanone and 463 ppb for vinyl chloride. The post-remediation 95% lower confidence level concentrations are 123 ppb for 2-butanone and 206 ppb for vinyl chloride. The statistical data for both indicator parameters in well CW-3 show that the pre-remediation mean is greater than the post-remediation 95 percent upper confidence limit for these parameters. This suggests that a statistically significant reduction has occurred for these indicator parameters.

However, a closer look at the data shows that most of this reduction occurred around the time the soils were solidified. Since solidification, there has not been much further reduction in the vinyl chloride and 2-butanone concentrations in well CW-3. Moreover, absolute concentrations of the indicator parameters have remained relatively high. For instance, over the last four sampling events, concentrations of 2-butanone in well CW-3 have ranged from less than 100 ppb to 250 ppb and vinyl chloride concentrations have ranged from 260 ppb to 880 ppb.

The levels of contaminant concentrations in well CW-3 indicate a possibility that the Site may not be protective of public health and the environment. Among the possible causes of such high results could be:

1. improper sample location;

2. improper sampling and/or analytical procedures;

3. continuing migration of contamination from the solidified mass; or

4. continuing contaminant migration from other sources.

Surface water data continue to indicate that no significant impacts to the Elizabeth River can be attributed to the CCC Site.

Based on January and September 1998 inspections of the Site, the surface of the Site appears intact. The drainage is functioning properly. The river berm is in good repair and the fence is in good order.

III. RECOMMENDATIONS

1. The EPA shall forward this report to NJDEP and the PRPs and shall initiate efforts to further investigate the source of contaminant concentrations found in well CW-3 samples.

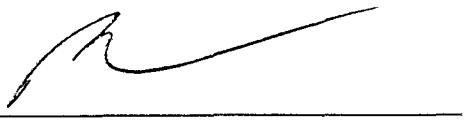
2. If necessary, EPA, in conjunction with the PRPs and NJDEP, shall take appropriate actions to address the source of contaminant concentrations found in well CW-3 samples.

IV. STATEMENT

Based upon a review of the ROD, Remedial Action Report, Site Monitoring Reports. Operations and Maintenance/Post-Remediation Monitoring Plan and an inspection of the Site, it is not evident that the remedies at the Chemical Control Corporation Site are protective of human health and the environment. EPA will take action to verify the protectiveness of the remedies and, if necessary, to make the remedies protective.

V. NEXT FIVE-YEAR REVIEW

Since hazardous substances, pollutants or contaminants remain at the Chemical Control Corporation Superfund Site above levels which would allow for unlimited use or unrestricted exposure, EPA will conduct another five-year review on or before August 2003.



Richard L. Caspe, Director
Emergency and Remedial Response Division

9/20/99
Date