



227007

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5**

**SUBJECT:** ENFORCEMENT ACTION MEMORANDUM - Determination of Threat to Public Health or Welfare or the Environment at the Boerke Site, Oak Creek, Milwaukee County; Wisconsin (Site WI #0507434)

**FROM:** Brad Bradley, Remedial Project Manager  
Remedial Response Branch #2 - Section #6

*Brad Bradley sub*

0000012

**TO:** William E. Muno, Director  
Superfund Division

**THRU:** Richard C. Karl, Chief  
Emergency Response Branch

*Thomas Veselich  
for*

**I. PURPOSE**

The purpose of this memorandum is to document the determination of an imminent and substantial threat to public health and the environment posed by the presence of principal threat waste, low-level threat contaminated soils, and contaminated sediments at the Boerke Site, Oak Creek, Milwaukee County, Wisconsin 53154. This action is necessary to mitigate the immediate threat to public health and the environment posed by the presence of uncontrolled hazardous materials existing on-site, principally in the form of arsenic and arsenic contaminated soils and sediments.

The response action proposed herein will mitigate threats to public health, welfare, and the environment posed by the presence of uncontrolled principal threat waste material located at the site. An Engineering Estimate/Cost Analysis (EE/CA) report has been completed by the responsible parties, which includes an assessment of chemical hazards on the site, determining the extent of contamination, and recommending a set of removal alternatives. The proximity of the site to residential properties, current and proposed public recreational areas, and unrestricted access to hazardous substances lead to the classification of this removal as **non-time critical**.

There are no nationally significant or precedent setting issues associated with the Boerke Site and the site is not on the National Priorities List.

## II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID # WID981189632

The Boerke Site is located in Oak Creek, Wisconsin, along the eastern extent of Ryan Road. The total site is approximately 50 acres, with the area of contamination being approximately 2 acres. The affected areas include a waste disposal area approximately ½ acre in size that contains approximately 3500 cubic yards of arsenic contaminated principal threat waste. This principal threat waste contains arsenic levels up to 25% arsenic (254, 000 parts per million). The waste material is the by-product of dye manufacturing that occurred in the late 1930's on an adjacent property. The affected areas also include a small wetland area and a drainage swale, both of which have been contaminated by the waste disposal area. The remainder of the property consists of woods and open fields and sample investigation did not show signs of this area having been contaminated. There is a single entrance off Ryan Road, with access being controlled by a free standing chain link gate. The site is bordered on the east by Lake Michigan and on the West by 5<sup>th</sup> Street. To the north of the site is a former manufacturing facility. It was the operations at this facility that generated the waste materials present on-site.

Liability for the on-site waste material is shared by DuPont Chemical Corporation and El Paso Energy Corporation (EPEC). EPEC is the current owner of the portion of the property that contains the principal threat waste material.

The geographical coordinates for the site are latitude 42°52'24" North and longitude 87°50'52" West. An environmental justice analysis has been prepared for the area near the site. There are 893 residents within a 1-mile radius, of which 21.2 percent are minorities.

In Wisconsin, the low-income percentage is 28% and the minority percentage is 9% (Attachment A). To meet the Environmental Justice (EJ) concern criteria, the area within 1 mile of the site must have a population that is at least twice the state low-income percentage and/or at least twice the state minority percentage. In Wisconsin, these levels are 56% low-income and/or 18% minority. At the Boerke site, the low-income percentage is 15.0 % and the minority percentage is 21.16 %, as determined by Landview III EJ analysis. Therefore, this Site meets the Region's EJ criteria based on demographics as identified in "Region 5 Interim Guidelines for Identifying and Addressing a Potential EJ Case, June 1998".

### Ownership History

The Boerke property was originally part of an approximately 130-acre parcel of lakefront farmland purchased by the Newport Company (Newport) in 1916. Newport constructed and operated a dye manufacturing plant until 1931. The plant was located immediately to the north of the Site on what is now referred to as the Allis-Chalmers Site. DuPont purchased the plant in 1931 and continued dye production until 1939. After ceasing production, the original parcel was subdivided by DuPont into a northern parcel, which contained the dye production plant, and a

southern parcel, where the waste material is located. By 1943, all manufacturing structures located on the northern parcel were demolished and the two individual parcels were sold.

The southern parcel, which was originally 70 acres of undeveloped and vacant farmland except for the waste disposal area, was transferred to Mr. E. M. Boerke in 1944. In 1979, the Edison M. Boerke Trust was created and the 70-acre southern parcel was transferred to the Boerke Trust. In November 1999, EPEC purchased a 50-acre portion of the property owned by the Boerke Trust. The Trust owns the remainder of the property.

### Waste Disposal History

As stated above, the northern parcel contained dye manufacturing areas operated by Newport and later by DuPont. Arsenic acid compounds were used in the manufacture of these dyes until roughly 1935. Solid wastes, containing high-levels of arsenic waste which were generated during the dye manufacturing process were disposed in an area located on the property now owned by EPEC. This waste disposal area is located in the southwest corner of the site. The remainder of the southern parcel has no industrial development history.

### Previous Environmental Investigations and Remedial Actions

In 1975 and 1976, U.S. EPA investigated allegations that containers of phosgene or mustard gas had been buried on the property. U.S. EPA could not find documentation or field evidence to substantiate these allegations and discontinued their investigation into buried munitions. A geophysical survey performed in 1985 to locate potential areas of buried waste found no evidence of excavation to dispose of containerized waste material below the ground surface.

In 1985, the Wisconsin Department of Natural Resources (WDNR) ordered DuPont to conduct environmental investigation of the former dye plant area, including the Boerke site, after a "red icicle" was observed along the property boundary with Lake Michigan, near the water intake building for the City of Oak Creek. Alpha naphylamine (ANA) and beta naphylamine (BNA), which are used in dye manufacturing, were found in the "icicle". Following a meeting between WDNR, DuPont, and U.S. EPA, DuPont agreed to take the lead in conducting an environmental investigation of the site. This investigation determined that there were three main areas that required remediation: the north slope of the boundary with Lake Michigan; the process water lagoons; and the ponds. From 1986 through 1987, under a work plan approved by WDNR, approximately 20,000 cubic yards of soil from these three areas were excavated and incinerated on-site. In 1985, DuPont prepared an interim investigation report of the entire former dye manufacturing facility, including the waste disposal area on the Boerke site. Samples collected from the waste disposal area and adjacent areas did not indicate the presence of ANA or BNA; however, arsenic was detected at significant concentrations in samples collected from within the waste disposal area, the adjoining wetland area, and an intermittent swale leading away from the wetland area toward Lake Michigan. No known remedial activities have occurred in the waste disposal area of the Boerke site.

In December 1994, the U.S. EPA's Technical Assistance Team (TAT) conducted site assessment (SA) activities of the waste disposal area at the Boerke site. As part of the SA, five samples were collected from the waste disposal area, the wetlands, and the intermittent swale. Based on these sampling results, the U.S. EPA concluded that a removal action was warranted.

On September 28, 1995, the U.S. EPA Region 5 issued an Administrative Order on Consent (AOC) to DuPont to conduct an Engineering Evaluation/Cost Analysis (EE/CA) to address environmental concerns connected with the waste disposal area located on the Boerke site. The initial field investigation was conducted by DuPont from November 1995 through February 1996 and a draft EE/CA report was delivered to the U.S. EPA in May 1996. This draft EE/CA report was reviewed by the U.S. EPA Region 5 Remedial Response Branch, who rejected the report in December 1998 because it: 1) did not properly address the principal-threat waste; 2) lacked significant groundwater investigation data; and 3) didn't properly develop alternative response actions to address the waste disposal area. On September 1, 1999, an amendment to the AOC was issued that named EPEC as a respondent to the order, along with DuPont. A supplemental investigation effort was conducted by both DuPont and EPEC during September and October 1999. The findings from this investigation were used to complete the revised EE/CA report, which was submitted on April 12, 2000 and approved. The revised EE/CA report proposed as the appropriate removal action for the Boerke site excavation with off-site treatment and off-site disposal. The proposed removal action was outlined in a fact sheet that was the subject of a public comment period from October 1, 2001, through October 30, 2001.

### **III. THREATS TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES**

The conditions present at the site constitute a threat to public health, welfare, or the environment based upon the factors set forth in Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), as amended, 40 C.F.R. § 300.415(b)(2). These factors include, but are not limited to, the following:

- i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.

Exposure of human populations, animals, and the food chain may occur because arsenic, a listed hazardous substance at 40 C.F.R. § 261.11(a)(3), is present at the site as waste material with principal threat waste concentrations, and as contaminated soils and sediments. The waste disposal area, and the site in general, is accessible to the local populace and animals.

- ii) High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate.

Soil samples collected by WDNR, DuPont/EPEC, and U.S. EPA during previous site

investigations have documented concentrations of arsenic as high as 24.5% (245,000 ppm) within 0 to 36 inches from the surface. Evidence indicates that surface water run-off from the waste area through a swale has caused downgradient migration of arsenic contamination. This drainage swale eventually leads to Lake Michigan. If no action is taken, this run-off contamination will eventually reach Lake Michigan.

- iii) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

Southeastern Wisconsin receives substantial rainfall during the spring and autumn. Winter temperatures are normally below freezing and snowfall occurs regularly. Significant amounts of rainfall may cause arsenic contaminated soils and sediments to migrate, affecting a larger area of the site and eventually may enter Lake Michigan.

#### **IV. ENDANGERMENT DETERMINATION**

Given the site conditions, the nature of the hazardous substances on site, and the potential exposure pathways to nearby populations described in Sections II and III above, the actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response actions selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

#### **V. PROPOSED ACTIONS AND ESTIMATED COSTS**

The revised EE/CA report submitted by DuPont and EPEC on April 12, 2000, proposed a removal action that would consist of the excavation, transport, off-site stabilization, and off-site disposal of approximately 17,000 cubic yards of effected material. The removal action would encompass the entire waste disposal area, adjacent contaminated soils, affected wetland soils, and soil/sediment found in portions of the drainage swale. The removal action will be conducted to be consistent with and meets the NCP preference for utilizing treatment to address principal threat wastes, engineered controls for low-level threat wastes, and institutional controls to limit exposures. DuPont/EPEC have initiated planning for post-removal site control consistent with the provisions of Section 300.415(l) of the NCP. All hazardous substances, pollutants, or contaminants removed off-site pursuant to this removal action for treatment and disposal shall be treated, stored, or disposed of at a facility in compliance with the U.S. EPA Off-Site Rule, 40 C.F.R. § 300.440, 58 Federal Register 49215 (Sept. 22, 1993), as determined by U.S. EPA. The elimination of principal threat waste material and the elimination of threats posed by low-level threat waste is expected to minimize the need for the U.S. EPA to monitor post-removal site control.

DuPont/EPEC have estimated the cost of the recommended removal action at \$5,393,000 and the duration of the removal to be 12 to 18 months.

The response actions described in this memorandum directly address actual or threatened releases of hazardous substances, pollutants, or contaminants at the site which may pose an imminent and substantial endangerment to public health and safety and the environment. These response actions do not impose a burden on the affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

**VI. APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS**

All applicable, relevant, and appropriate requirements (ARARs) of Federal and State law will be complied with to the extent practicable. On May 4, 2001, a letter was sent to Thom Wentland of WDNR, requesting that he identify State ARARs. Federal ARARs identified in a timely manner for this removal action will be complied with to the extent practicable.

**VII. EXPECTED CHANGES IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN**

Continued risk to the public health will result if no action or delayed action.

**VIII. OUTSTANDING POLICY ISSUES**

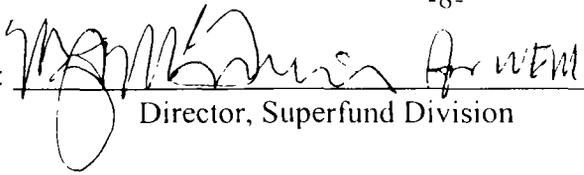
None.

**IX. ENFORCEMENT**

For administrative purposes, information concerning the enforcement strategy for this site is contained in the Enforcement Confidential Addendum.

**X. RECOMMENDATION**

This decision document supports the recommended removal action of excavation with off-site treatment and off-site disposal prescribed in the EE/CA report developed and submitted by DuPont and EPEC for the Boerke Site, located in Oak Creek, Milwaukee County, Wisconsin. This recommendation was developed in accordance with Comprehensive Environmental Response Compensation, and Liability Act of 1980 (CERCLA), as amended, and is consistent with the NCP. This decision is based upon the Administrative Record for the site. Conditions at the site meet the NCP Section 300.415(b)(2) criteria for a removal and I recommend your approval of the proposed removal action. Please indicate your decision by signing below.

APPROVE:  DATE: 4/12/02  
Director, Superfund Division

DISAPPROVE: \_\_\_\_\_ DATE: \_\_\_\_\_  
Director, Superfund Division

Attachments:

Enforcement Addendum

A. Environmental Justice Analysis

B. Administrative Record Index

cc: C. Stanton, U.S. EPA 5202G  
M. Chezik, U.S. Department of Interior, w/o Enf. Addendum  
Director, Wisconsin DNR, w/o Enf. Addendum  
George E. Meyer, WDNR

**ENFORCEMENT ADDENDUM**

**BOERKE SITE  
OAK CREEK, MILWAUKEE COUNTY, WI**

**MAY 9, 2001**

**3 PAGES**

**HAS BEEN REDACTED**

**NOT RELEVANT TO THE SELECTION  
OF THE REMOVAL ACTION**

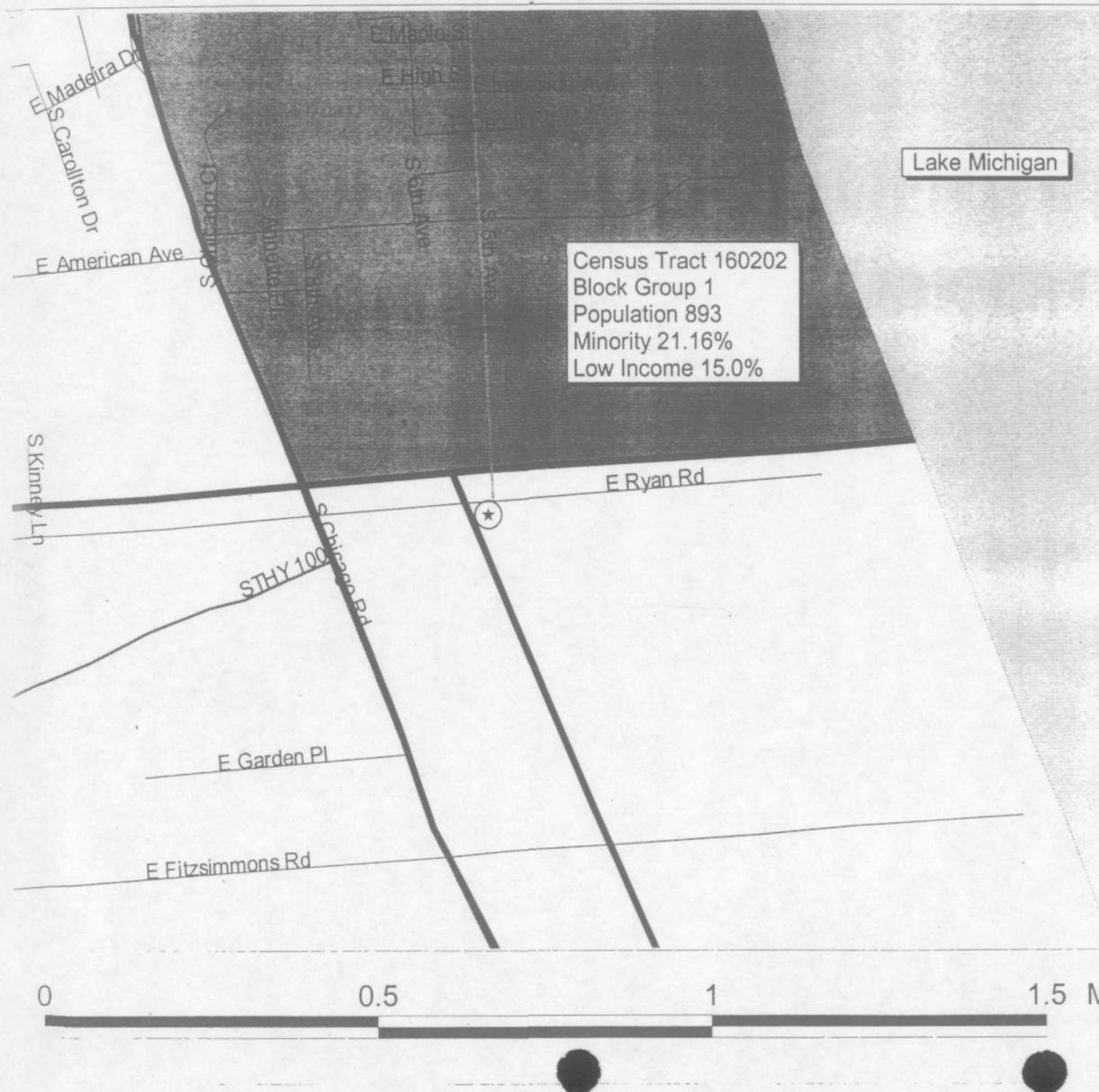
ATTACHMENT A

Environmental Justice Analysis

# Region 5 Superfund EJ Analysis

Boerke Site

Oak Creek, WI



## EJ Identification

- Low Income and Minority Less than State Average
- Low Income or Minority at or Greater than State Average
- Low Income or Minority 2 Times or Greater than State Average  
[ meets Region 5 EJ Case criteria ]

Site Location

Block Group Boundary

Region 5 EJ Case Criteria for Wisconsin  
 Minority: 18% or greater  
 Low Income: 56% or greater



U.S. EPA Region 5  
Superfund GIS

Date of Map: 4/12/01

Source of Map: 1990 Census Database

ATTACHMENT B

Administrative Record Index

U.S. ENVIRONMENTAL PROTECTION AGENCY  
REMOVAL ACTION

ADMINISTRATIVE RECORD  
FOR  
BOERKE SITE  
OAK CREEK, MILWAUKEE COUNTY, WISCONSIN

UPDATE #2  
MARCH 21, 2001

<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	09/28/95	U.S. EPA	Respondent	Administrative Order by Consent w/ Attached Scope of Work for the Engineering Evaluation/Cost Analysis (EE/CA) for the Boerke Site	35
2	05/20/96	DuPont Environmental Remediation Services	U.S. EPA	Removal Site Evaluation/ Engineering Evaluation/ Cost Analysis Report for the Boerke Site	153
3	06/18/96	U.S. House of Representatives/ Committee on Appropriations	Public	Excerpt from Report re: Cleanup Options at the Boerke Site	2
4	12/15/98	Collins, M., U.S. EPA	Yalvigi, S., DuPont Engineering	Letter re: U.S. EPA's Comments on the May 1996 Removal Site Evaluation/ Engineering Evaluation/ Cost Analysis Report for the Boerke Site	5
5	03/31/99	Yalvigi, S., DuPont Engineering	Collins, M., U.S. EPA	Letter re: DuPont's Response to U.S. EPA's Comments on the May 1996 Removal Site Evaluation/ Engineering Evaluation/ Cost Analysis Report for the Boerke Site	10
6	04/13/99	Collins, M., U.S. EPA	Yalvigi, S., DuPont Engineering	Letter: U.S. EPA's Request for Cost Comparison of On-Site Containment/On-Site Treatment with On-Site Treatment/Off-Site Disposal for the Boerke Site	3

<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
7	05/07/99	Yalvigi, S., DuPont Engineering	Collins, M., U.S. EPA	Letter re: DuPont's Response to U.S. EPA's Request for a Cost Estimation for Two Additional Removal Action Alternatives at the Boerke Site	5
8	12/20/99	Harding Lawson Associates	U.S. EPA	Summary of Supplemental Investigations Findings for the Boerke Site	37
9	07/06/00	Environmental Strategies Corporation	U.S. EPA	Removal Site Evaluation/ Engineering Evaluation/ Cost Analysis for the Boerke Site: Volume I (Text, Tables and Figures)	139
10	07/06/00	Environmental Strategies Corporation	U.S. EPA	Removal Site Evaluation/ Engineering Evaluation/ Cost Analysis for the Boerke Site: Volume II (Appendices A-D)	288
11	09/00/00	U.S. EPA	Public	Proposed Plan for Cleanup of the Boerke Site	8
12	00/00/00	U.S. EPA	Public	Action Memorandum (PENDING)	