UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
JOHN F. KENNEDY FEDERAL BUILDING
BOSTON, MASSACHUSETTS 02203-0001

Enforcement-Sensitive Information Attached

Memorandum

Date: July 24, 1996

Subject: Request for a Removal Action at the Brewster Pesticide Site, Brewster, Massachusetts--**Action Memorandum**

From: Dean Tagliaferro, On-Scene Coordinator
Site Evaluation and Response Section I, OSRR

To: Linda M. Murphy, Director
Office of Site Remediation and Restoration

I. Purpose

The purpose of this Action Memorandum is to request and document approval of the proposed removal action described herein for the Brewster Pesticide Site (the "Site"), in Brewster, Massachusetts. The proposed removal action will mitigate the health threat posed by high levels of pesticides in surface soils at a residential property.

II. Site Conditions and Background

CERCLIS ID #: MA0001411776
Site ID #: 013S
Category: Time Critical Removal Action

A. Site Description

1. Physical Location and Site Characteristics

The Site is a residential property located at 1574 Main Street in Brewster, Massachusetts. The property encompasses approximately 23,965 square feet and slopes downward away from Main Street. A one-story house with an attached one-bedroom rental unit is on the property. Approximately 70% of the property is grass covered and the remaining 30%, the portion in the rear of the property, is covered with wetland vegetation. The Site is bordered on the east and west by private homes; on the north by Main Street, across from which is residential rental property; and on the south by Schoolhouse Pond.

2. Site History

The current owner purchased the property in 1979 from an individual who operated an extermination business. In 1983, the current owner found five to ten 10-gallon cans in the crawl space with a dirt floor beneath the garage. All but two or three of the cans were severely corroded and were empty. The remaining cans contained material and the labels suggested that they contained pesticides. The current owner notified the Brewster Fire Department, who on March 9, 1983, notified the Massachusetts Department of Environmental Protection (MA DEP). Richard Packard of the MA DEP inspected the Site and directed the owner to properly dispose of the cans and to remove sufficient soil from beneath the cans to fill one 55-gallon drum. The current owner then:

- Gave the two to three non-empty cans to a licenced exterminator;
- Purchased a 55-gallon drum and filled the drum with soil beneath the containers; and
- Arranged for disposal of the drum at a facility in Braintree.

Prior to the owner sending the material to the Braintree facility, the Brewster Fire Department removed the drum at no cost to the owner.[1]

In 1995, the owner obtained a grant from the Lower Cape Cod Community Development Corporation (LCCCDC) to add a bedroom to the rental portion of her property. The grant was contingent upon the owner renting the apartment to low income tenants. LCCCDC sent a representative to perform an "environmental assessment" of the property. During the assessment, the owner notified the LCCCDC representative of the pesticide cans found beneath the garage and the limited soil removal. On October 30, 1995, LCCCDC hired Mason Environmental Associates to collect one soil sample from the crawl space and have it analyzed for pesticides. The sample contained 47 parts per million (ppm) chlordane, 25 ppm dieldrin, 9.7 ppm endrin, and 1.6 ppm heptachlor.

After receiving these results, LCCCDC hired Fugro East Inc. (Fugro) to further assess the property. On February 7, 1996, Fugro collected a composite soil sample from the crawl space. The laboratory report indicated that the sample contained 7 ppm chlordane. Also in February, the property owner hired a contractor who demolished the garage. This was part of the owner's plan to add a bedroom to the rental portion of the house. The garage demolition resulted in the dirt floor of the space being made accessible.

Fugro then subcontracted Advanced Environmental Services (AES) to provide excavation services. On February 29, 1996, AES excavated approximately four to six cubic yards of soil

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[1]This information is summarized from conversations between the OSC and the current property owner.

from beneath the former garage area and stockpiled the soil in the backyard. Fugro stopped the excavation due to structural concerns for the residence's foundation. AES covered the stockpiled soil with polyethylene sheeting. Fugro collected seven discrete samples at the base of the excavation. The analytical results indicated pesticides in levels as high as 350 ppm dieldrin, 4.1 ppm endrin, 4.1 ppm 4,4-DDT, and 0.23 ppm heptachlor. Fugro also collected one soil sample from the backyard as a "background" sample. The laboratory reported that this sample contained 0.081 ppm dieldrin. Based on this result, Fugro recommended conducting additional soil sampling at the property.

On March 10, 1996, Fugro collected composite soil samples from five areas of the property. Laboratory results indicated the presence of pesticides in four of the five composite samples. Fugro reviewed the analytical data and completed an Imminent Hazard Evaluation according to procedures set forth in the Massachusetts Contingency Plan (MCP). Fugro concluded that an imminent hazard was not present, but recommended additional sampling. The property owner submitted the Imminent Hazard Evaluation Notification to the MA DEP.

On May 3, 1996, Fugro collected 23 soil samples using a grid sampling pattern. Analytical results detected various pesticides with the following maximum concentrations: chlordane (47.5 ppm), 4,4-DDE (0.25 ppm), 4,4-DDT (4.5 ppm), dieldrin (0.27 ppm), endrin aldehyde (1.1 ppm), and heptachlor epoxide (0.16).[2]

During the early part of May, MA DEP received inquiries from LCCCDC and a state senator on the status of the Site. As a result of these calls, MA DEP requested all of the analytical data from Fugro. On May 23, 1996, Fugro sent copies of Site maps and analytical results to Richard Packard, MA DEP. On June 3, Richard Packard forwarded this information to EPA and requested assistance from EPA's Removal Program.

3. Removal Site Evaluation

On June 5, 1996, EPA On-Scene Coordinator (OSC) Dean Tagliaferro forwarded the analytical data provided by Fugro to the Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR reviewed the data and concluded that the elevated levels of pesticides at the base of the open excavation "pose a potential health threat if frequent exposure occurs".

On June 25 and 26, 1996, EPA's Removal Program and its contractor, Weston, performed a Removal Preliminary Assessment/Site Investigation. Weston collected 44 soil samples at depths ranging from zero to six inches and from twelve to eighteen inches and analyzed the samples on-

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[2]The sources of information regarding Fugro's activities from the Site are a letter from Fugro to LCCCDC dated June 6, 1996 and various maps and analytical data packages prepared by Fugro.

site for dieldrin and chlordane, the two primary contaminants of concern. Weston detected concentrations of chlordane ranging primarily from non-detect to 48 ppm, however, in one location, Weston detected 4,900 ppm chlordane. Similarly, dieldrin concentrations ranged primarily from non-detect to 30 ppm dieldrin. However, at the location with the high chlordane, Weston detected 490 ppm dieldrin. Weston sent eight of the soil samples screened to an off-site laboratory to evaluate the accuracy of the on-site instrument. The results from the off-site laboratory correlated well with the on-site results.

Weston also collected two composite soil samples and sent them to an off-site laboratory for a wide range of analyses commonly required by potential disposal facilities. Weston collected one composite sample from the stockpiled contaminated soil and the second composite sample from the area with high chlordane and dieldrin levels. The analytical results of these samples confirmed the high levels of dieldrin and chlordane, and identified the presence of other pesticides including heptachlor, aldrin, heptachlor epoxide, endrin, 4,4-DDE, and 4-4-DDT.

4. Release or Threatened Release into the Environment of a Hazardous Substance, or, Pollutant or Contaminant

Analyses performed by Fugro and/or by EPA indicate that the following pesticides are present at the Site: chlordane, dieldrin, 4,4-DDE, 4,4-DDT, endrin, endrin aldehyde, heptachlor and heptachlor epoxide. All of these pesticides are hazardous substances as defined by §101(14) of CERCLA.

Since the hazardous substances listed above are present in the soil, a release of hazardous substances has already occurred.

5. National Priorities List (NPL) Status

The Site is not currently proposed for the NPL, nor is EPA planning to propose the Site for inclusion on the NPL.

B. Other Action to Date

During the Removal PA/SI, EPA installed a high-visibility orange snow fence limiting access to the excavation area and the sample location that contained 4,900 ppm chlordane and 490 ppm dieldrin.

III. Threats to Public Health or Welfare or the Environment

High levels of pesticides are present in surface soils at Site. The primary contaminants of concern are dieldrin and chlordane. Children who live at the Site could be exposed to the pesticides

through the inhalation, ingestion and dermal contact of the contaminated soils. Specific health effects of chlordane and dieldrin are presented below.

Chlordane. Chlordane was used as a pesticide on agricultural crops, lawns, and gardens until March 1978, when EPA banned its use for these purposes. Chlordane was used to control termites in homes until April 1988, when EPA banned all sales and commercial uses of the chemical. EPA classifies chlordane as a probable human carcinogen. Also, exposure to chlordane can cause adverse effects to the central nervous system, the digestive system, and to the liver. These adverse effects include headaches, irritation, confusion, weakness, vision problems, upset stomachs, vomiting, stomach cramps, diarrhea, and jaundice.[3]

Dieldrin. From the 1950s until 1970, dieldrin was used extensively as an insecticide on crops such as corn and cotton. In 1970, the U.S. Department of Agriculture banned the use of dieldrin. However, in 1972 EPA approved the use of dieldrin for killing termites. Dieldrin was used for this purpose until 1987, when the manufacturer voluntarily canceled the registration for use in controlling termites. EPA classifies dieldrin as a probable human carcinogen. Also, chronic exposure to low levels of dieldrin can cause convulsions. Exposure to moderate levels of dieldrin over a long time can also cause headaches, vomiting, dizziness, irritability and uncontrollable muscle movements.[4]

IV. Endangerment Determination

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 to the environment.

V. Proposed Actions and Estimated Costs

A. Proposed Actions

1. Proposed Action Description

The proposed action is to excavate and dispose of the contaminated soil at an off-site disposal facility. The OSC will determine clean-up levels for chlordane and dieldrin in consultation with ATSDR and MA DEP. Post-excavation samples will be collected to confirm that the clean-up levels have been achieved. Following confirmation that the clean-up levels have been achieved,

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[3]Toxicological Profile for Chlordane, by ATSDR, May 1994.

[4]Toxicological Profile for Aldrin/Dieldrin, by ATSDR, April 1993

EPA will perform site restoration activities including backfilling, replacing plants and shrubs, and reseeding.

EPA may also temporarily relocate the residents during excavation activities. If relocation activities are required, the OSC will issue an Inter-Agency Agreement (IAG) to the United States Army Corps of Engineers (USACE) to perform relocation activities.

2. Contribution to Remedial Performance

The removal of the contaminated soil and the mitigation of the public health threat will eliminate the need for future remedial actions.

3. Description of Alternative Technologies

Off-site disposal of the contaminated soil is the only feasible option for this low volume of soil. Also, no suitable alternative technology options work on pesticides in soil. The options for off-site disposal include landfilling, stabilization, and incineration. The OSC will select the most cost-effective disposal method.

4. Applicable or Relevant and Appropriate Requirements (ARARs)

The potential federal ARARs identified to date are:

- ***Standards Applicable to Generators of Hazardous Waste, 40 CFR Part 262, Subpart C, Pre-Transport Requirements:***

  §262.30 Packaging
  §262.31 Labeling
  §262.32 Marking

- ***Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, 40 CFR 265, Subpart, Use and Management of Containers:***

  §265.171 Condition of Containers
  §265.173 Management of Containers
  §265.174 Inspections

- ***Clean Water Act Section 404; (40 CFR 23 and 33 CFR 320-330)***

State ARARs. The OSC sent a letter to the MA DEP requesting State ARARs and is currently awaiting MA DEP's response.

In accordance with the National Contingency Plan (NCP) and EPA Guidance Documents, the OSC will determine the applicability and practicability of complying with each identified ARAR.

5. Project Schedule

Response Actions will commence within three weeks of the signing of this Action Memorandum. The proposed removal action should be completed within three months.

B. Estimated Costs

Extramural Costs

Regional Allowance Costs	
ERCS Contractor	$225,000
USACE	$25,000
Other Extramural Costs not Funded from the Regional Allowance	
START Contractor	$50,000
Subtotal, Extramural Costs	$300,000
Extramural Cost Contingency (20%)	+$60,000
Total, Extramural Costs	**$360,000**

Intramural Costs

Direct and Indirect	$50,000
Total, Intramural Costs	**$50,000**
Total Removal Project Ceiling	**$410,000**

VI. Expected Change in the Situation Should Action be Delayed or Not Taken

Delayed action will increase the health risks by increasing the possibility of direct contact, ingestion and inhalation of hazardous substances by children.

VII. Outstanding Policy Issues

None.

VIII. Enforcement — Intended for Internal Distribution Only

See attached.

IX. Recommendation

This decision document represents the selected removal action for the Brewster Pesticide Site in Brewster Massachusetts. It was developed in accordance with CERCLA as amended and is consistent with the NCP. This decision document is based on the documents that will be placed in the administrative record for the Site.

Conditions at the Site meet the NCP §300.415(b)(2) criteria for a removal action in there are:

- "Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants or contaminants" [300.415(b)(2)(i)]; and
- "High levels of hazardous substances, pollutants or contaminants in soils largely at or near the surface that may migrate" [300.415(b)(2)(iv)]; and
- "Other situations and factors that may pose threats to public health or welfare or to the environment" [300.415(b)(2)(viii)].

Therefore, I recommend approval of this removal action. The estimated project total is $410,000 of which approximately $225,000 is for extramural cleanup contractor support.

Approval: Linda M. Murphy Date: July 30, 1996

Disapproval: _____ Date: _____