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FIVE-YEAR REVIEW ADDENDUM

Matthews Electroplating

Superfund Site

Roanoke County, Virginia

Prepared by:

U.S. Environmental Protection Agency

Region III

Philadelphia, Pennsylvania

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8/10/00

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Five-Year Review (Level I) Addendum
Matthews Electroplating Superfund Site
Roanoke County, Virginia

I. Introduction

A five-year review was conducted on April 19, 1999 for the Matthews Electroplating Site ("Site") pursuant to Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. §9621(c); Section 300.430(f)(4)(ii) of the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300 (as amended); and OSWER Directives 9355.7-02 (May 23, 1991), 9355.7-02A (July 26, 1994), and 9355.7-03A (December 21, 1995). It was the first five-year review for the Site.

Based on the review, it was determined that the remedy selected for the Site is currently protective of human health and the environment for industrial use. However, because the Site was rezoned from industrial to residential use four years ago, the U.S. Environmental Protection Agency ("EPA") recommended conducting additional soil sampling and reevaluating the Site. EPA also recommended surveying the clay cap and informing the Virginia Department of Environmental Quality ("VDEQ") of the drum marked "oxalate" found during the five-year review site visit. This addendum provides information gathered from these recommendations and re-evaluates the protectiveness of the Site.

II. Five-Year Review Follow-up

A. Background

The Site is located in Roanoke County, Virginia, approximately three and a half miles southwest of Salem. It is situated on Virginia Secondary Route 796, Pleasant Run Drive, near the intersection of Virginia State Route 460 and Interstate 81. The 1.7 acre site is surrounded by residential properties and is about 500 feet from the nearest residence. From 1972 to 1977, the Site was used as an auto bumper repair and electroplating facility. Bumpers were straightened and prepared for plating in the Bumper Preparation Building, and then plated with chromium and nickel in the Electroplating Building.

The Site was promulgated onto the National Priorities List in September 1983. EPA issued a Record of Decision ("ROD") on April 15, 1983. The remedial actions at this Site consist of extending the municipal water system from the water treatment plant in the City of Salem to all the area residents, removal of several drums, and decontamination of two aboveground tanks. On January 19, 1989, the Site was deleted from the NPL.

On April 19, 1999, EPA conducted a five-year review for the Site. The following action items were identified:

1. It was discovered during the review that the Site had been rezoned from industrial to residential use. In a report dated January 31, 1989, the Agency for Toxic Substances and Disease Registry ("ATSDR") recommended that the contaminated on-site soil be reevaluated if land use changes. EPA will conduct limited soil sampling and provide this information to ATSDR.

2. In 1977 when Mr. Albert Salem purchased the property, the Virginia State Water Control Board required him to implement corrective measures to prevent further leaching of chromium into the ground water from the sinkhole and its immediate area. Mr. Salem removed trash and other waste material, installed surface water drainage ditches along the foundation line of the Electroplating Building and the uphill boundary of a wet weather water course, constructed surface water diversion ditches, constructed a culvert to carry surface water runoff that flowed underneath the Bumper Preparation Building to the western property boundary, and placed a clay cap over the southwestern portion of the Site where the sinkhole and the wet weather water course were located.

   During the five-year review site visit, the integrity of the clay cap was not evaluated since there is not an "as built" drawing documenting the precise location or the thickness of the clay cap installed over the former sinkhole area. No markers were observed defining the clay cap. EPA will evaluate the clay cap and survey the cap limits.

3. During the five-year review site visit, EPA found a drum marked "oxalate" with trash stuffed on top and potential products at the bottom. EPA will contact Virginia Department of Environmental Quality (VDEQ) to sample and dispose of the drum.

B. Follow-up Actions

In August 1999, EPA collected and analyzed the on-site soils as recommended in the original report. EPA reviewed the results and concluded that the site should pose no unacceptable risk to human health even under a residential exposure scenario. Because there is no unacceptable risk at the site, EPA will not request the ATSDR to review the data as stated in the five-year review report. EPA's review of the results is attached.

EPA also evaluated the clay cap and surveyed the cap limits during this time. The information regarding the location of the cap is on figure 2 and page 7 of the Trip Report dated

October 29, 1999. A copy of the report was sent to the VDEQ and Mr. Albert Salem, relative of Ms. Clara Mankis, the current property owner. Ms. Clara Mankis was carbon copied on the cover letter.

On April 26, 1999, Mr. Tom Modena of the VDEQ called to report that the on-site drum was evaluated and determined to be nonhazardous. No further action will be taken for the drum.

III. Statements of Protectiveness

All the action items identified during the April 1999 review have been addressed. The remedy selected for the Site remains protective.

IV. Next Five-Year Review

The next five-year review will be completed no later than December 2003.

ATTACHMENT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

SUBJECT: Five-Year Review
Matthews Electroplating

11/30/99

FROM: Dawn A. Ioven, Toxicologist
Technical Support Section (3HS41)

TO: Jennifer Chan, RPM
General Remedial Section (3HS23)

I reviewed the analytical results for soil generated during the five-year review of the Matthews Electroplating site. Samples were collected at various depths from 0 to 30 inches below ground surface. In general, at several locations, trace levels of organic compounds were observed, including PAHs, carbon disulfide, pesticides and PCBs. However, none of these compounds was observed at concentrations of concern to human health. Several metals were also detected in soil at the site. Most noteworthy of these are arsenic, cadmium, chromium, iron, manganese, and nickel. Presented below is a table listing the reported ranges of these chemicals at the site, the 95th percent Upper Confidence Limit (UCL) of the arithmetic mean for each chemical, and residential Risk-Based Concentrations (RBCs) for soil ingestion.

CHEMICAL	CONCENTRATION RANGE (mg/kg)	95th PERCENT UCL CONCENTRATION (mg/kg)	RESIDENTIAL RBC for INGESTION* (mg/kg)
arsenic	4.1 - 15.1	9.2	0.43
cadmium	nd - 97.5	9.6	78
chromium	15.1 - 621	621**	120,000 / 230
iron	3370 - 53,100	53,100**	23,000
manganese	37 - 1980	1980**	1600
nickel	nd - 3920	527	1600

nd = not detected
**The residential RBC for arsenic is based on an excess cancer risk of 1E-06. For the remaining chemicals, each RBC is based on a Hazard Quotient of 1 for non-cancer endpoints. Note that for chromium, RBCs for both total and trivalent chromium are provided.*
***Because the 95th percent UCL concentration exceeds the maximum reported level, the maximum is presented for comparison to the residential RBC.*

Neither cadmium nor nickel have 95th percent UCL values in excess of respective residential RBCs. Therefore, cadmium and nickel can be eliminated from further consideration in this evaluation.

Although the maximum level of chromium exceeds the RBC for *hexavalent* chromium, it is very unlikely that chromium in soil is present predominantly in the hexavalent form. When on-site levels of chromium are compared to the RBC for *total* chromium, they fall well within the range of non-threatening concentrations.

The 95th percent UCL concentration for arsenic at the site is greater than its RBC. However, like most metals, arsenic is naturally-occurring in the environment. Because the RBC for arsenic is so low -- lower, even, than ambient levels of this metal -- it is very important to consider background concentrations of arsenic when assessing potential site-related risks. Since site-specific background data are not available, a comparison to literature values can be performed. When compared to arsenic levels in unpolluted soils of the eastern United States, on-site concentrations are unremarkable.

Iron is also naturally-occurring in the environment, at abundant levels. Like arsenic, on-site concentrations of iron are within the expected range for unpolluted areas of the eastern United States. Additionally, since toxicity criteria for iron are based on controversial endpoints, iron can be eliminated as a chemical of concern at this site.

The maximum concentration of manganese at the site marginally exceeds its residential RBC. This solitary exceedance does not, however, merit action or additional consideration.

Given the findings of the five-year review, and assuming that these findings are representative of on-site conditions in surface and subsurface soil, this site should pose no unacceptable risk to human health under a residential exposure scenario. If you have any questions or comments, please let me know.