

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II**

DATE:

SUBJECT: Removal Site Evaluation for the Canfield, M.C. Sons Co., Newark, Essex County, New Jersey

FROM: Shawna Hoppe, On-Scene Coordinator
Removal Action Branch

TO: Joseph D. Rotola, Chief
Removal Action Branch

SITE ID: A21T

CERCLIS#: NJN000206557

I. INTRODUCTION

On May 9, 2012, the United States Environmental Protection Agency (EPA) received a request from the New Jersey Department of Environmental Protection (NJDEP) to evaluate the Canfield, M.C. Sons Co. (“Site”) for a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) removal action. The NJDEP referral is included as Attachment A.

Canfield, M.C., Sons Co. (“M.C. Canfield & Sons”) operated at 93 Wilsey Street, Newark as a lead smelter and solder manufacturer. The Site has since been redeveloped and is now part of the Society Hill Phase 3 residential townhouse complex (“townhouse complex”). Soil sampling conducted by NJDEP and EPA indicate there has been a release of lead, a CERCLA-designated hazardous substance, at the Site that poses a threat to the public health, particularly to the children living in the townhouse complex. Based on the available information, a time-critical CERCLA removal action is warranted to mitigate health threats associated with potential exposure to lead in soils at the Site.

CONCURRENCES							
Name: M.C. Canfield		Date: 05/31/13			Site ID: A21T		
Symbol	ERRD-RAB	ERRD-RAB	ERRD-RAB				
Surname	Hoppe	Wilson	Rotola				
Initial							
Date							
Filename: M.C. CanfieldRSE							

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

1. Physical Location

The Site is located within the Society Hill Phase 3 townhouse complex which is bounded by Norfolk, Wickliff, W. Market and Warren Streets in Newark, Essex County, New Jersey. Maps of the Site are included as Figures 1 and 2 of Attachment B. There is a church directly adjacent to the Site in the center of the northern portion, an unused school on the northeast corner and an abandoned warehouse adjacent to the eastern edge of the Site.

2. Site History

From 1907 until 1974 M.C. Canfield & Sons operated a lead smelter on property previously located at 93 Wilsey Street. The property was sold by M.C. Canfield & Sons to Salem Trucking on March 8, 1974. Based upon historical records, it appears that the property was foreclosed on by the City of Newark on September 28, 1976. On December 31, 1993, the City of Newark transferred ownership of the property to K. Hovnanian at Newark Urban Renewal Corporation II, Inc. ("K. Hovnanian"). Ownership of a number of other surrounding lots were also transferred to K. Hovnanian and all were developed as a part of the townhouse complex. These townhouses were sold to individual property owners as single family residences, but the complex, including the outdoor grounds, is managed by Impac Property Management.

The Trinity Union American Methodist Episcopal Church, located on the corner of Cornerstone Lane and Warren Street at 226-230 Warren Street to the north of the Site, has been in that location since approximately 1922. The vacant school located at 200 Warren Street on the corner of Warren and Wickliff Streets previously housed the American History Public High School. This property has been owned by the City of Newark since at least 1892. The vacant warehouse located at 2-10 School Street has housed the Nite-Kraft Corporation, which made sleeping garments during the 1950s and Artley Exhibits and Displays, which made signs and displays, from the 1970s until at least 2003.

Historical Sanborn Fire Insurance maps confirm that the original footprint of the property owned by the former lead smelter includes land that is currently occupied by the townhouse complex. The Sanborn maps for the years 1950 and 2003 are included in Attachment C.

3. Previous Work Relevant to this Removal Site Evaluation

The NJDEP performed initial sampling at the Site on March 25, 2012 to determine if lead contamination associated with past smelting operations was present in the soil above New Jersey's Soil Remediation Standards. Nine soil samples were collected from five locations near the former location of the M.C. Canfield & Sons facility at depths ranging from 0-12 inches. Elevated levels of lead were found in the soil ranging from 753 parts per million (ppm) to 4,860 ppm. NJDEP referred the Site to EPA on May 9, 2012.

4. Site assessment activities/observations

As part of this Removal Site Evaluation (RSE), EPA collected soil samples between August 20th and August 30th, 2012. The sampling design employed was based on and is consistent with the EPA Superfund Lead-Contaminated Residential Sites Handbook dated August 2003. For this sampling event, the Site was divided into 34 quadrants (P001-SS001 through P001-SS034)) and included areas of high use, such as vegetable gardens or children's play areas. Five sample locations were designated within each quadrant and soil samples from these locations were collected from depths of 0 inch (bottom of sod), 0-2 inches, 2-6 inches, 6-12 inches, 12-18 inches, and 18-24 inches. Samples from discrete depth intervals within each quadrant were composited into one sample for that specific depth.

Composite samples were also collected from off-site locations at the Trinity Union American Methodist Episcopal Church, to the north of the Site, and another four off-site locations to determine background lead concentrations. In addition to the composite samples collected from the church property, soil samples were also collected from three locations within the drip line of the church building (6-30 inches from the building edge). Discrete samples were additionally collected from the four corners of the townhouse complex and from the four quadrants within the Site where concentrations of lead were highest. A total of 233 composite soil samples and 101 discrete soil samples were collected from the Site, the church and background locations. Samples were not collected from the adjacent unused school or abandoned warehouse.

The soil samples were screened for metals on-site using a portable x-ray fluorescence (XRF) instrument. Ten percent of the composite samples were submitted to a laboratory for Target Analyte List (TAL) metals analysis. The XRF soil screening results for lead in composite samples is included as Table 1 of Attachment D.

Based on the XRF screening results of the composite samples collected from the residential townhouse complex, lead was detected at concentrations exceeding EPA's screening level of 400 ppm from 0-6 inches below ground surface (bgs) in 13 quadrants. Concentrations ranging from 402 ppm to 1561 ppm were detected in the samples collected from quadrants P001-SS012, SS013, SS014, SS015, SS017, SS019, SS023, SS026, SS027, SS028, SS029, SS030, and SS031.

Discrete samples were collected from quadrants P001-SS012, SS013, SS014 and SS015 as well as the four corners of the townhouse complex P001-SS001, SS007, SS022 and SS034. Lead was detected in concentrations exceeding EPA's screening level of 400 ppm from 0-6 inches bgs in discrete samples collected from quadrants P001-SS012, SS013 SS014 and SS015, confirming the composite sampling results. The XRF soil screening results for lead in discrete samples is included as Table 2 of Attachment D.

Elevated levels of lead were also detected in samples collected from 0-6 inches bgs at the church. Concentrations ranging from 1061 ppm to 1959 ppm were detected in quadrants P002-SS001 and SS002. EPA conducted a lead paint screening on the exterior painted surfaces of the church using the XRF instrument. Lead was detected in some of the exterior

painted surfaces at concentrations greater than 5 milligrams per square centimeter (mg/cm²). The United States Department of Housing and Urban Development (HUD) *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*, dated July 2012, Action Level for lead in paint is 1 mg/cm². Based on the elevated lead detected during the lead paint screening using the XRF, EPA collected four paint chip samples from the exterior of the church (windows trim, wall and chips from soil) and sent them to the laboratory for TAL Metals analysis. Lead concentrations ranging from 8,600 to 120,000 ppm were detected in three of the four samples.

M.C. Canfield & Sons operated a smelter and manufactured lead solders at the Site. Tin/lead solder, or soft solder, used to be the most widely used/manufactured solder. Soil samples with the highest levels of lead, collected from within the footprint of the former smelter also contained elevated levels of tin. Elevated levels of tin were not found in samples collected from the church property. The absence of elevated levels of tin in soil samples collected from the church property soils indicates that the lead in the soil at the church is not attributable to the former smelting operation, but is instead likely the result of the breakdown of lead-based paint. A comparison of the lead and tin data for the discrete samples, church composite samples and church paint chip samples is provided as Table 3 of Attachment D.

5. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

The following hazardous substance has been identified at the Site:

<u>Substances Identified</u>	<u>Maximum Concentration</u>	<u>Statutory Source for a Hazardous Substance</u>
Lead (Subsurface)	6,863 ppm	Clean Water Act (“CWA”) § 307(a)
Lead (Surface (0-6’))	3,593 ppm	Clean Water Act (“CWA”) § 307(a)

The highest lead concentrations were found in the 18-24” bgs depth in the area immediately adjacent to where the former MC Canfield & Sons facility was located.

During the construction of the townhouse complex, contaminated soil may have been moved around to other areas and depths at the Site.

III. THREAT TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare

EPA has identified conditions at the Site that meet the requirements of Section 300.415(b) (2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), (§40 CFR 300.415) which indicate that a removal action is necessary. Site conditions that correspond to factors that provide a basis for a removal action under Section 300.415 (b) (2) of the NCP include:

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

There is a potential exposure to hazardous substances by nearby populations or the food chain. The historic footprint of M.C. Canfield & Sons includes residential property that has elevated levels of lead present in the surface and subsurface. Elevated levels of lead have also been identified on adjoining residential property within the Society Hill Phase 3 complex adjacent to the former M.C. Canfield & Sons property.

Lead was detected at concentrations exceeding the EPA residential soil screening level of 400 mg/kg in composite surface soil samples (0-6" bgs) in 13 of the 34 quadrants at the townhouse complex. Lead was detected above 1200 ppm in discrete surface soil samples (0-6" bgs) collected from quadrants P001-SS012, SS013, SS014 and SS015. These 13 quadrants have elevated levels of lead outside the drip line of the buildings in surface soil. The highest concentration of lead in surface soil, found near where the former M.C. Canfield & Sons facility was located, is 3,593 ppm.

Direct contact with the contaminated soil may occur through common outdoor activities that occur on the residential property, or by tracking lead contaminated soil into the home. Young children and women of child bearing age currently reside in the Society Hill Phase 3 complex. Contact with the lead contaminated soils may present a health risk to the residents, particularly to young children.

The effects of exposure to lead are the same whether it enters the body through breathing or swallowing. The main target for lead toxicity is the nervous system, both in adults and children. Long-term exposure of adults to lead has resulted in decreased performance in some tests that measure functions of the nervous system. Lead exposure may also cause weakness in fingers, wrists, or ankles. Lead exposure also causes small increases in blood pressure, particularly in middle-aged and older people, and may also cause anemia. At high levels of exposure, lead can severely damage the brain and kidneys in adults or children and ultimately cause death. In pregnant women, high levels of exposure to lead may cause miscarriage. High-level exposure in men can damage the organs responsible for sperm production.

Lead is a cumulative poison where increasing amounts can build up in the body eventually reaching a point where symptoms and disability occur. Particularly sensitive populations are women of child-bearing age, due to the fetal transfer of lead, and children. Cognitive deficits are associated with fetal and childhood exposure to lead. An increase in blood pressure is the most sensitive adverse health effect from lead exposure in adults. Effects on the kidney, nervous system and heme-forming elements are associated with increasing blood lead concentrations, both in children and adults. Other symptoms include: decreased physical fitness, fatigue, sleep disturbance, aching bones, abdominal pains, and decreased appetite.

The relationship between soil lead concentrations and the consequent impact on blood levels in children has been studied through numerous epidemiological studies. Based on these epidemiological studies, it is generally believed that persistent exposure to soil-borne lead results in an increase in blood lead levels (in children) of 1 to 9 ug/dl per 1,000 ppm lead in soil. Although this relationship may become less robust as exposure durations decrease and soil lead levels increase, it nonetheless provides compelling evidence of the potential lead hazard associated with the excessive lead concentrations found in the soil at the Site.

The Department of Health and Human Services (DHHS) has determined that lead and lead compounds are reasonably anticipated to be human carcinogens based on limited evidence from studies in humans and sufficient evidence from animal studies, and the EPA has determined that lead is a probable human carcinogen.

(iv) High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;

Analytical data from the composite samples indicates that elevated levels of lead have been detected in the top two feet of soil of the townhouse complex property as high as 6,863 ppm. Lead contaminated soil at the Site can potentially become airborne and/or migrate when disturbed under dry conditions; and may migrate during heavy rain events.

There is physical and analytical evidence that contamination has migrated from the location of the former M.C. Canfield & Sons property onto neighboring residential properties possibly during construction of the townhouse complex. The most highly impacted residential properties are directly adjacent to the footprint of the former M.C. Canfield & Sons. If the soils in that area are not addressed, the migration of the lead contaminated soils may continue.

(vii) There are no other appropriate federal or State response mechanisms currently available to respond to the situation at the Site.

Neither NJDEP nor the local government agencies have the resources available to conduct a time-critical removal action at the Site.

B. Threats to the Environment

At this time there is no documentation to indicate that the Site is currently having an acute impact to any sensitive environments or natural resources.

IV. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delayed action will increase the potential for exposure to elevated levels of lead in the townhouse complex. Additional migration of lead could occur over time increasing the overall extent of the cleanup.

V. CONCLUSIONS

The Site is considered a facility as defined by Section 300.5 of the NCP and Section 101(9) of CERCLA, 42 U.S.C. § 9601(9). A release of hazardous substances has occurred on the Site in a quantity and concentration that may present a threat to the public health and the environment. There is a current exposure pathway existing to humans that may present an imminent and substantial endangerment to the public health and welfare. No other party, government or otherwise, is currently available to take a timely response action to mitigate the threat.

Lead exists in surface and subsurface soils at the Site at levels which exceed the EPA residential soil screening level of 400 ppm. The Site is in residential use and sensitive populations are present. Potential exposure to high concentrations of lead in the soil at the Site may pose a health threat to unprotected individuals accessing the Site.

VI. RECOMMENDATIONS

It is recommended that a CERCLA Time-Critical removal action be undertaken to mitigate the health threat associated with potential exposure to lead in surface and subsurface soil at the Site. The removal action should address lead contaminated soil at the townhouse complex in quadrants P001-SS012, SS013, SS014, SS015. Additional investigation is required to determine if the removal action should address lead contamination in quadrants P001-SS017, SS019, SS023, SS027, SS028, SS029, SS030 and SS031.