



# STATE OF NEW YORK DEPARTMENT OF HEALTH

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Richard F. Daines, M.D.  
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*Executive Deputy Commissioner*

February 11, 2010

Kimberly Staiger  
On Scene Coordinator  
Removal Action Branch  
U.S. EPA, Region 2  
2890 Woodbridge Avenue  
Building 209  
Edison, NJ 08837

Re: Letter Health Consultation  
Residential Property Sampling  
2009 Sampling Results  
Former Jewett White Lead Property  
and Adjacent Residential Neighborhood  
Staten Island, Richmond County

Dear Ms. Staiger:

The New York State Department of Health (NYSDOH), under the cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR), has evaluated soil lead data collected by the United States Environmental Protection Agency (USEPA) near the former Jewett White Lead property in Staten Island, Richmond County. In a January 2009 letter to the USEPA, the NYSDOH determined that additional soil sampling was needed to better characterize the on-site and off-site soil conditions. Based on USEPA follow up sampling, this letter summarizes NYSDOH's public health evaluation of potential exposures to lead in residential soils in the neighborhood south of the site and provides an update on actions taken on-site.

## **Background and Statement of Issues**

The former Jewett White Lead property, located at 2000 Richmond Terrace in Staten Island, Richmond County, is a former lead pigment processing facility owned by National Lead Industries until 1949. The facility was located on parcels currently designated as 2000-2012, and 2015 Richmond Terrace in the Borough of Staten Island, Richmond County. According to the historical information, lead substrates were stored and converted on-site into a product known as "white-lead" through the Dutch Process and for the most part used for pigments in paint products. This process was initially used by Jewett White Lead and then by National Lead from 1839 until manufacturing ceased in 1949. Since 1949, the property has changed owners at least three times with none of the subsequent owners manufacturing lead-based products. Currently the

0.25-acre site contains no structures and was recently used to store construction materials for local public works projects. Immediately bordering the site to the south is an inactive raised railroad trestle from the former Staten Island Railroad. Adjacent to the abandoned railroad track are single and multi-family residential dwellings. To the north, east and west are active industrial and commercial facilities. A site location map is attached as Appendix A, Figure 1.

In 2008, the current owner submitted data to USEPA indicating elevated concentrations of lead in the on-site soil. USEPA requested, through the cooperative agreement with ATSDR, that NYSDOH evaluate the data to determine the potential for exposure to nearby residents. NYSDOH noticed that the three samples were collected from 0-15 inches below ground surface. NYSDOH considers samples from 0-2 inches in depth to represent soil that people are most likely to be exposed to through casual contact. Additionally, samples collected from deeper discrete intervals (e.g. 2-6 inches and 6-12 inches below ground surface) would provide useful exposure information for people who may engage in activities that would require excavating through the surficial layer to deeper sub-surface soil. Such activities could include gardening and upgrades to their landscaping by installing trees or sub-surface lawn utilities. Therefore, NYSDOH and ATSDR found that these samples were not sufficient for an exposure evaluation and recommended, in January 2009, that additional samples be collected so public health implications could be evaluated.

In December 2008, USEPA collected soil samples from 16 test pits excavated to a depth of 4 feet below grade. Surface soil samples were collected from the 0-3 inch interval at each location prior to excavation. Soil samples were also collected at 1 foot, 2 foot, and 3 foot depths. Additionally, four off-site samples were collected along Richmond Terrace. One sample was sediment collected from the sidewalk; the remaining three samples were road grit collected from the curb line. The lead levels in these off-site samples ranged from 282 - 2,760 milligrams per kilogram (mg/kg) lead. Through review of the results and consideration of USEPA field personnel observations, the NYSDOH and ATSDR determined that these road grit results indicated that lead contaminated soil may be migrating from the site to the roadway and possibly to the adjacent residential neighborhoods. This represented a public health concern for people, especially children in the nearby residential neighborhood.

In April 2009, USEPA requested that the current property owner take interim measures to stabilize the Site to prevent the migration of lead contaminated soils in storm water runoff. The property owner established storm water management controls, improved the existing condition of the fencing, spread grass seed and mulch, posted lead hazard warning signs, and performed wet sweeping of the sediment and dust on the sidewalks and adjoining curb line.

In June 2009, USEPA collected off-site soil samples from the community which included the backyards of homes in the neighborhood directly adjacent to the site (see Appendix A, Figure 1). A discussion of this sampling event is given below.

## **Discussion**

### **A. Environmental Contamination and Pathways**

In June 2009, the USEPA collected soil samples at locations that included an abandoned railroad trestle, residential yards, roadside grass patches, a Consolidated Edison owned property and grit from roads in the Port Richmond community. The focus of this health consultation is the residential soil sampling program, because the likelihood for exposure is greatest in this area. Surface soils (0-2 inches) were collected from 13 properties, subsurface soils (2-6 inches) were collected from five of 13 properties and the deepest soil (6-12 inches) from six of 13 properties. Several residential properties had multiple soil samples collected from them and the NYSDOH in conjunction with ATSDR concluded that the appropriate approach to determine exposures was to compare the average concentration across the study area to the appropriate standard.

NYSDOH averaged and compared the results to the New York State (NYS) 6 NYCRR Part 375 Environmental Remediation Programs Regulations cleanup objective for soils in residential areas (NYSDEC 2006). The NYS Part 375 Soil Cleanup Objective for lead in residential soil is 400 mg/kg, which is the same as the USEPA's lead hazard standard for bare soils in children's play areas (USEPA 2001).

The average surface soil lead concentration for the homes closest to the former Jewett White Lead property is 626 (mg/kg). Five properties sampled in the 2-6 inch interval had an average lead concentration of 706 mg/kg. For soil samples collected in the 6-12 inch interval, the average concentration is 1096 mg/kg. All averaged intervals exceeded the 400 mg/kg lead hazard standard. The results for lead in soil are located in Appendix A, Table 1

Four soil samples, three with the highest levels of lead (2340 mg/kg, 2440 mg/kg and 3510 mg/kg), were not considered in this evaluation because they were collected within the dripline boundaries where water runs off the roof and/or sides of structures treated with lead-based paint. USEPA defines a drip-line as the area surrounding and extending out approximately three feet from the perimeter of a structure. Soils adjacent to homes painted with lead based paints typically contain elevated levels of lead. USEPA, through use of measurements from field instruments (XRF) confirmed that three samples were from properties, with homes, where lead-based paint was present, the potential exists for residents to be exposed to the lead in soil at these locations, the measures recommended in this document to reduce their exposure should also be considered in the drip-line of the structures.

The USEPA conducted attribution tests to determine if Jewett was a significant contributing source to the lead levels. Based upon the USEPA's review of multiple lines of evidence, including radioisotope ratios, elemental correlations, statistical analysis of near site samples, and samples collected 0.25 mile predominantly upwind of the site spatial distribution of lead in the soil, and a comparison of sampling results to studies of

lead in other industrialized urban areas, USEPA concluded that the Jewett site was not a significant contributing source to the lead levels found in the backyards or in the community. Other sources of lead in the community could include weathered lead-based exterior paint, leaded gasoline emissions or industrial emissions.

Observations made during site visits indicate that exposure to lead contaminated soils is likely in the neighborhood. Residents maintaining gardens and flower beds or using their yards for seasonal recreational purposes could be exposed to lead from incidental ingestion of lead contaminated soils and/or inhalation of lead-containing soil or dust. This may include eating fruits and vegetables grown in the soil and household dust derived from lead-contaminated soils.

USEPA carried out additional sampling in an area approximately a quarter mile to the southwest of the Jewett site and determined that lead levels elsewhere in the Port Richmond area may be found at concentrations comparable to those described above.

## **B. Toxicological and Epidemiological Evaluation for Adult and Children's Health Issues**

People can be exposed to lead by ingesting lead in paint chips or dust, by breathing in lead dust, by ingesting lead in soil, and by drinking water that contains lead. Lead can be harmful to health (ATSDR 2001). Young children are at greater risk of health effects from lead than older children and adults because they are smaller, their bodies are still developing, and they have a greater ability to absorb lead into their bodies once it is ingested. The developing fetus is also sensitive to the health effects of lead. In children, exposure to elevated levels of lead before or after birth can impair the normal development of the central nervous system, and can lead to learning or behavioral problems. In adults, exposure to high levels of lead can cause effects on the nervous system and blood (anemia or blood pressure changes). The risk for these and other health effects increases as the amount of lead and the duration of exposure increases.

The elevated levels of lead detected in bare surface soil areas above the NYS and USEPA standards for lead in soil on the residential properties could increase the exposure to this contaminant for the people (particularly young children), through routine play and garden activities. In addition, exposure to lead on the residential properties could increase through incidental ingestion or inhalation of lead-containing dust.

## **Conclusions**

For the community living in Port Richmond, near the former Jewett White Lead property, NYSDOH and ATSDR give a high priority to making sure that the citizens have the opportunity to be educated and understand the risks associated with the exposure to soils in their neighborhood that contain elevated concentrations of lead. NYSDOH and ATSDR conclude that long-term contact with residential soils

contaminated with lead in the Port Richmond community could harm people's health (see Appendix C) and actions are recommended to prevent or reduce these exposures. This is because many of the properties have lead levels in residential surface soils that exceed the New York State cleanup objective for residential use and USEPA lead standard for bare surface soil in children's play areas, both of which are 400 mg/kg.

USEPA concluded that the Jewett site was not a significant contributing source to the levels of lead found in the backyards of the Port Richmond community.

Property owners/occupants who participated in the June 2009 investigation have been notified of their individual results. Additional community outreach will be conducted to answer questions and concerns that members of the community may have.

### **Recommendations**

Because the increased potential exists for exposure to lead through contact with lead bearing soil, which could harm people's health, NYSDOH and ATSDR recommend that residents and/or property owners take measures to reduce exposure to contaminated soil. These measures could include maintaining a cover of grass, adding clean soil, gravel, or mulch over bare soils (especially in children's play areas) and having children wash their hands after playing in the yard. Additionally, these measures may include the removal of the contaminated soil and replacement with clean soil, depending on the lead levels of the individual property and the actual potential for human exposure, particularly with respect to young children.

Residents should take steps to minimize exposure to the lead in garden soils. These can include adding organic matter such as compost or manure to garden soil and peeling and washing crops prior to eating them.

The urgency to take these or other measures increases as the lead level in soil increases over 400 mg/kg. Regardless of the levels of lead in soil, keeping bare soil covered and using normal hygienic practices such as washing hands after playing or working outside can help reduce exposure to any chemicals and microorganisms that may be contained in soil.

NYSDOH and ATSDR are prepared to provide assistance to residents, property owners, and the New York City Department of Health in disseminating information about these measures.

USEPA has determined it will be appropriate to take permanent measures to eliminate the potential for future human exposures to soils contaminated with high levels of lead on the former Jewett White Lead property. Such permanent measures will ensure the site remains protective should the use of the land change or the temporary measures taken by the current property owner deteriorate over time. NYSDOH and ATSDR concur with USEPA's determination that such measures should be taken.

If you have any questions regarding this letter health consultation, please contact me at 518-402-7860.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Doroski". The signature is fluid and cursive, with the first name "Chris" and last name "Doroski" clearly distinguishable.

Christopher Doroski  
Public Health Specialist  
Bureau of Environmental  
Exposure Investigation

ec: G. Litwin/S. Bates/D. Miles/file - NYSDOH BEEI  
E. Wilson - USEPA  
G. Ulirsch - ATSDR  
L. Graziano/R. Stephenson - ATSDR  
D. Luttinger/T. Johnson - NYSDOH BTSA  
I. Bielby - NYSDEC  
N. Clark/N. Graber - NYCDOH  
B. Devine - MARO

## **References**

ATSDR (Agency for Toxic Substances and Disease Registry) 1999. Toxicological Profile for Lead (Update). U.S. Department of Health and Human Services. Atlanta, Georgia: Public Health Service.

USEPA (United States Environmental Protection Agency) 2001. Lead: Identification of Dangerous Levels of Lead, Final Rule. Federal Register 66: 1206-1240.

NYSDEC (New York State Department of Environmental Conservation) 2006. Division of Environmental Remediation 6NYCRR Part 375 Environmental Remediation Programs.

## Appendix A

### Figure 1



## Appendix B

Table 1. Residential Block Soil Sample Results

## Appendix B

**Table 1. RESIDENTIAL BLOCK SOIL SAMPLES**

| Location | Sample Depth<br>(INCHES) | Lead Result* | Sample Depth<br>(INCHES) | Lead Result* | Sample Depth<br>(INCHES) | Lead Result* |
|----------|--------------------------|--------------|--------------------------|--------------|--------------------------|--------------|
| 1        | 0-2                      | 565          |                          |              |                          |              |
| 2        | 0-2                      | 180          |                          |              |                          |              |
|          | 0-2                      | 214          |                          |              |                          |              |
| 3        | 0-2                      | 91.3         |                          |              |                          |              |
|          | 0-2                      | 701          |                          |              |                          |              |
| 4        | 0-2                      | 1130         |                          |              |                          |              |
| 5        | 0-2                      | 469          |                          |              |                          |              |
|          | 0-2                      | 579          |                          |              |                          |              |
| 6        | 0-2                      | 584          |                          |              |                          |              |
| 7        | 0-2                      | 800          |                          |              |                          |              |
|          | 0-2                      | 1200         |                          |              |                          |              |
| 8        | 0-2                      | 1050         |                          |              |                          |              |
|          | 0-2                      | 834          |                          |              |                          |              |
|          | 0-2                      | 1060         |                          |              |                          |              |
|          | 0-2                      | 1130         |                          |              |                          |              |
|          | 0-2                      | 550          |                          |              |                          |              |
| 9        | 0-2                      | 450          |                          |              |                          |              |
|          | 0-2                      | 505          |                          |              |                          |              |
|          | 0-2                      | 338          |                          |              |                          |              |
|          | 0-2                      | 480          |                          |              |                          |              |
|          | 0-2                      | 278          |                          |              |                          |              |
|          | 0-2                      | 794          |                          |              |                          |              |
|          | 0-2                      | 683          |                          |              |                          |              |
|          | 0-2                      | 1110         |                          |              |                          |              |
| 10       | 0-2                      | 840          |                          |              |                          |              |
|          | 0-2                      | 11.4         |                          |              |                          |              |
| 11       | 0-2                      | 190          |                          |              |                          |              |
|          | 0-2                      | 1310         |                          |              |                          |              |
| 12       | 0-2                      | 249          |                          |              |                          |              |
|          | 0-2                      | 221          |                          |              |                          |              |
|          | 0-2                      | 1250         |                          |              |                          |              |
| 13       | 0-2                      | 198          |                          |              |                          |              |
| Average  |                          | 626          |                          | 706          |                          | 1096         |

\* All results in MG/KG

Figure 1. Jewett White Lead Site and Neighborhood sampled for Lead in Soil



## Appendix C

### Conclusion Categories and Hazard Statements

## ***Conclusion Categories and Hazard Statements***

ATSDR has five distinct descriptive conclusion categories that convey the overall public health conclusion about a site or release, or some specific pathway by which the public may encounter site-related contamination. These defined categories help ensure a consistent approach in drawing conclusions across sites and assist the public health agencies in determining the type of follow-up actions that might be warranted.

### **1. Short-term Exposure, Acute Hazard “*ATSDR concludes that...could harm people’s health.*”**

This category is used for sites where short-term exposures (e.g. < 1 yr) to hazardous substances or conditions could result in adverse health effects that require rapid public health intervention.

### **2. Long-term Exposure, Chronic Hazard “*ATSDR concludes that...could harm people’s health.*”**

This category is used for sites that pose a public health hazard due to the existence of long-term exposures (e.g. > 1 yr) to hazardous substance or conditions that could result in adverse health effects.

### **3. Lack of Data or Information “*ATSDR cannot currently conclude whether...could harm people’s health.*”**

This category is used for sites in which data are insufficient with regard to extent of exposure and/or toxicologic properties at estimated exposure levels to support a public health decision.

### **4. Exposure, No Harm Expected “*ATSDR concludes that...is not expected to harm people’s health.*”**

This category is used for sites where human exposure to contaminated media may be occurring, may have occurred in the past, and/or may occur in the future, but the exposure is not expected to cause any adverse health effects.

### **5. No Exposure, No Harm Expected “*ATSDR concludes that...will not harm people’s health.*”**

This category is used for sites that, because of the absence of exposure, are not expected to cause any adverse health effects.