

HEALTH CONSULTATION

**LINCOLN PARK COMPLEX
BLOOD LEAD TESTING**

FT. LAUDERDALE, BROWARD COUNTY, FLORIDA

EPA FACILITY ID: FLN000407550

Prepared by:

**Florida Department of Health
Bureau of Environmental Epidemiology
Under Cooperative Agreement with the
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry**

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Foreword

This health consultation summarizes public health concerns arising from the Lincoln Park Complex in Ft. Lauderdale, Florida. A site evaluation prepared by the Florida Department of Health (DOH) provides the basis for this health consultation. A site evaluation involves a number of steps:

Evaluating exposure: Florida DOH scientists begin by reviewing available information about environmental conditions at the site. The first task is to find out how much contamination is present, where it is on the site, and how people might be exposed to it. Usually, Florida DOH does not collect its own environmental sampling data. We rely on information provided by the Florida Department of Environmental Protection (DEP), the U.S. Environmental Protection Agency (USEPA), and other government agencies, businesses, and the public.

Evaluating health effects: If evidence is found that people are being exposed—or could be exposed—to hazardous substances, Florida DOH scientists will take steps to determine whether that exposure could be harmful to human health. Their assessment focuses on public health; that is, the health impact on the community as a whole, and is based on existing scientific information.

Developing recommendations: In an evaluation report—such as this health consultation—Florida DOH outlines its conclusions regarding any potential health threat posed by a site, and offers recommendations for reducing or eliminating human exposure to contaminants. The role of Florida DOH in dealing with hazardous waste sites is primarily advisory. For that reason the evaluation report will typically recommend actions to be taken by other agencies—including the EPA and Florida DEP. If, however, the health threat is immediate, Florida DOH will issue a public health advisory warning people of the danger and will work to resolve the problem.

Soliciting community input: The evaluation process is interactive. Florida DOH starts by soliciting and evaluating information from various government agencies, the organizations or individuals responsible for cleaning up the site, and from community members who live near the site. Any conclusions are shared with the organizations and individuals who provided information. Once an evaluation report has been prepared, Florida DOH seeks feedback from the public. *If you have questions or comments about this health consultation, we encourage you to contact us.*

Please write to.

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Summary and Statement of Issues

This health consultation evaluates blood lead test results collected in Spring of 2004 from 43 residents (40 children and 3 young adults) living near the Lincoln Park Complex site in Ft. Lauderdale, Florida. In 2003 and 2004, due to strong community concerns, the Broward County Health Department (CHD) offered blood lead testing to residents (mainly children) living near the site. The Lincoln Park Complex consists of three properties: a former municipal incinerator, Lincoln Park properties, and the former Lincoln Park Elementary School. The Elementary School was demolished in May of 2003, but children still live near the area, and in the past attended the after-school program held on the former Elementary School Property. Surface soil testing conducted by the Florida Department of Environmental Protection (DEP) of the Lincoln Park Complex in 2003 showed lead at levels below the state target cleanup level of 400 parts per million (ppm). However, soils with elevated lead were found deeper than 6 inches below the land surface. Due to strong community concern about lead exposures in and around the Lincoln Park Complex and because the CHD usually tests blood leads of children for lead paint, soil and dust exposures, the Florida Department of Health (DOH) recommended that the Broward County Health Department (CHD) test children who live in the Lincoln Park area. The Florida DOH coordinated the testing, while the Broward CHD collected and paid for blood lead samples for children and adults ranging from 1 to 20 years old. The measured blood lead levels in the 43 participants were within normal range and are not likely to cause illness. It should be noted that these results are applicable to only the 43 participants in this investigation, and not to the general population.

Background Information

Site Description

The Lincoln Park Complex is on the northern side of Sistrunk Boulevard (NW 6th Street) between NW 18th Avenue and Interstate 95 (I-95) in Fort Lauderdale, Broward County, Florida (Figures 1 and 2). The complex includes three properties: the adjacent former municipal incinerator, the Lincoln Park properties along Sistrunk Avenue, and the former Lincoln Park Elementary School property directly north of the park.

The 9-acre former municipal incinerator property has chain-link fencing on all sides. Access is through a lockable gate on Sistrunk Boulevard. The City of Fort Lauderdale ("the City") uses the western two-thirds of the property as a recyclable residential waste separation and transfer station. Trash transfer began in the mid-1990s. The eastern third of this property is a grassy field that was the site of a municipal incinerator (late 1920s to mid-1950s) and later a municipal wastewater treatment plant (1969 to mid-1990s).

Archival aerial photographs of the 2.5-acre Lincoln Park property show that from 1946 to 1969 a house occupied the southeast corner and in 1946 apparently two equipment buildings were located in the west (center). Before 1958, most of the Lincoln Park property was used to stage and landfill municipal waste and incinerator ash; therefore, whether the mounds present on the park property in 2003 were the result of park construction or former landfill activities is unknown. Although the aerial photos show a park at this location from 1958 to 1969, the park was re-landscaped between 1984 and 1992. The City closed the park in early 2003.

Aerial photography of the 5-acre former school property shows buildings, possibly residences, on the site in 1959, but not in 1946. These aerial photos and file information do not indicate incinerator or landfill activities were conducted on the school property. Lincoln Park Elementary School was built in the 1960s and operated until the 1980s. Until recently, the school facilities and property were used for an after-school program and to operate a small print shop. The property had chain-link fencing on all sides, but gates on NW18th and 19th Avenues were unlocked and the property was apparently accessible at all times. In May 2003, the City demolished the school.

In 2000, about 19,643 persons lived within a 1-mile radius of the site, and approximately 88% were black/African American (Bureau of the Census 2000). Although properties along Sistrunk Avenue (NW 6th Street) are commercial and light industrial, much of the area north and south of Sistrunk is residential. The nearest residences are north of the former incinerator site, west, north, and east of the former Lincoln Park Elementary School, and east of Lincoln Park. Interstate 95 borders the site on the west, and residential and industrial areas are west of I-95. According to aerial photographs, most of the residential development occurred after 1946 (E&E 2003).

Site History

In 1997, the City's contractor, EE&G, found buried debris including broken glass fragments (melted and charred), metal fragments and concrete in the upper 2 to 3 feet of soil in the southwest corner of the schoolyard. The City's contractor found three soil samples exceeded the screening value for arsenic and one soil sample exceed the screening value for Polycyclic Aromatic Hydrocarbons (PAHs) Total Equivalents (TEQ). EE&G looked for an underground storage tank on the east side of the school because there were no records of it being removed. They found a vent pipe but not the tank. This tank was discovered and removed in the summer of 2003 when the "One Stop" Permit Shop was being built.

According to Karl Schallenberger—who has worked for the City for many years—fill was spread and sod was grown on Lincoln Park before it was used for a park in 1958. Florida DOH has not seen any documentation of how much fill was applied and when it was applied. Nor can we verify that the fill was never breached. Nevertheless, the sampling results available to Florida DOH show this sandy fill probably prevented direct contact with concentrated incinerator wastes.

On January 27, 2003, Florida DEP held a Lincoln Park Site Assessment meeting at the former Lincoln Park Elementary School. They held the meeting to inform the community about their plans for upcoming environmental testing. Nearly 50 persons attended. During this meeting, several community members expressed concerns whether the school grounds and park are safe for children (or were safe in the past when some of them attended the school). One resident commented that children attending the after-school programs included children of all ages and included more children during the summer.

The Florida DOH asked the Broward CHD to test the drinking water at the school for lead—leaded solder in older plumbing can be a source of lead exposure. Even though the school is hooked up to city water, the Florida DOH wanted to be sure there was no lead in the drinking water before coordinating blood lead testing. Broward CHD water samplers took water samples from the workshop drinking fountain, restroom faucet, and office. None of the drinking water results contained lead above the current Primary Drinking Water Standard for lead.

In summer 2003, during construction activities on the former Lincoln Park Elementary School property, City contractors removed soils containing visible debris. Florida Department of Environmental Protection (DEP) took photographs of the construction site. No trash or debris was shown in areas other than the southern part of the site where debris-containing soil was removed. After being on the construction site, DEP staff did not report seeing buried trash or debris in other parts of the former elementary school site. However, Joe McGarrity of DEP spoke with residents who reported having found buried trash in their yards.

In January 2003, Florida DEP determined the surface soil samples containing lead from the school property had levels less than the state target cleanup level of 400 parts per million. However, soils with elevated lead were found deeper than 6 inches below the land surface.

In October 2004, Florida DOH released an initial draft Public Health Assessment (a report including evaluation of soil, air and water from the site).

Discussion

Eating and drinking are the principal routes by which most lead enters the body. Some lead can also enter the body from breathing in lead-containing dust or chemicals. Shortly after lead gets into the body, it travels in the blood to the “soft tissues” such as the liver, kidneys, lungs, brain, spleen, muscles, and heart. After several weeks, most of the lead moves into the bones and teeth. In adults, about 94% of the total amount of lead in the body is contained in the bones and teeth.

In children, about 73% of the lead is stored in their bones; some of that lead can remain in their bones for decades. However, under certain circumstances, some lead can leave the bones and reenter the blood and organs. This can occur when a woman is pregnant or while she is breast-feeding. It can also occur after one breaks a bone or as one reaches advanced age. The half-life of lead in the blood is 28–36 days. This means after 28–36 days, the amount of lead in the blood is 1½ the amount it was on the first day of exposure. This also means that higher blood-lead levels will generally reflect more recent exposures (ATSDR 1999).

Centers for Disease Control and Prevention (CDC) studies show that since the late 1970s blood-lead levels of U.S. children have dropped dramatically. This is because lead has been banned from gasoline, residential paint, and the solder used for food cans and water pipes. Still, about 900,000 U.S. children between the ages of 1 and 5 are believed to have blood-lead levels equal to or greater than 10 micrograms per deciliter ($\mu\text{g}/\text{dL}$)—the CDC guideline (ATSDR 1999).

All children with blood-lead levels equal or greater than 20 $\mu\text{g}/\text{dL}$ should receive medical evaluation, an environmental investigation, and remediation. If the lead concentration in blood is higher than 45 $\mu\text{g}/\text{dL}$, medical treatment might be necessary (ATSDR 1999).

Biological Sampling – Blood Lead Testing

During the January 27, 2003 Florida DEP community meeting, Florida DOH told parents who were worried about their children’s possible lead exposures that lead exposures can be measured from blood-lead levels. Due to strong community concern about lead exposures in and around the Lincoln Park Complex and because the CHD usually tests blood leads of children for lead paint, soil and dust exposures, the Florida Department of Health (DOH) recommended that the

Broward County Health Department (CHD) test children who live in the Lincoln Park area. Florida DOH asked Broward CHD to facilitate blood lead testing for children in the former Lincoln Park Elementary School after-school program.

From January to May 2003, the Broward CHD and the Florida DOH worked together coordinating blood lead testing for the children attending or playing at the Lincoln Park School. The Florida DOH recommended only children 0-6 years old have blood lead testing done, as this is the most susceptible age for lead poisoning (more hand-to-mouth behavior). In January 2003, the Florida DOH sent a draft letter to the Broward CHD regarding blood lead testing to parents of children to be blood lead tested. In March/April 2003, DOH received the list of names and was told by residents that children from pre-kindergarten through high school attended the Lincoln Park after school program. The school staff also informed DOH a teen club meets at the school in the evenings and over 100 families have their children there – some with more than one child attending.

On May 15, 2003, the Broward CHD mailed letters (dated April 29, 2003) to the parents or caregivers of 90 after-school participants (Appendix A). As of late August 2003, the Broward CHD received about 10 inquiries regarding blood lead testing, but no one went to the CHD for testing.

Again, in March 2004, the Broward CHD issued a press release offering blood lead testing and sent letters to the parents of the children who attended or played at the school (Appendix B). They offered testing on April 7, 2004 from 8:00 a.m. to 11:00 a.m. and on April 8, 2004 from 4:00 p.m. to 7:00 p.m. Forty-six children/teens (1-17 yrs old) and three young adults (18-20 yrs old) went to the CHD for blood lead testing. The participants lived in zip codes 33311, 33312, 33313 and 33024 with most residing within zip code 33311. The Broward CHD paid for the blood lead testing for all the participants.

Blood Lead Results

The blood lead test results are shown in Table 1. Six of the 49 participants' blood lead results were unsatisfactory (i.e. not enough blood drawn, mishandling or clotting). In May 2004, the Broward CHD sent the parents of those six participants a letter asking them to be re-tested. To date, these six participants (five children and one young adult) have not been re-tested for blood lead at the Broward CHD. Therefore, the Florida DOH evaluated 43 blood lead test results.

The 43 participants with blood lead results were all within the normal range (below CDC's guideline of 10 micrograms per deciliter (ug/dL)).

Child Health Considerations

ATSDR recognizes that developing young people, infants, or children, have unique vulnerabilities. Children are not small adults; the effects of a child's exposure and an adult's exposure to hazardous substances are different in many ways. First, a child's diet often differs from an adult's, and in ways that can affect exposure. Children drink more fluids, eat more food, and breathe more air per kilogram of body weight than do adults. Children also have a larger skin surface area in proportion to their body volume. Further, a child's behavior and lifestyle influence exposure. Children are close to the ground—they crawl on the floor, they put things in their mouths and they can ingest inappropriate substances such as dirt or paint chips. Children

also spend more time outdoors than adults do. Finally, children do not have the judgment of adults in avoiding hazards (ATSDR 1999).

Through hand-to-mouth behavior, children can absorb more lead from soils than adults would normally absorb. The 40 children who were tested and attended or played at the Lincoln Park School near the Lincoln Park Complex do not have blood lead levels that would likely cause illness.

Conclusions

The measured blood lead levels of the 40 children and 3 young adults attending or playing at the Lincoln Park School are within acceptable ranges and are not likely to cause illness. Therefore, the blood lead levels measured during this sampling event for the Lincoln Park Complex site are categorized as no apparent public health hazard.

Recommendations

The Florida DOH does not have any recommendations for this health consultation.

Public Health Action Plan

Past Actions:

Florida DOH released an initial draft Public Health Assessment for the Lincoln Park Complex on October 12, 2004.

Planned Actions:

If the five participants want to confirm their initial results, the Broward CHD will re-test them.

References

[ATSDR] Agency for Toxic Substances and Disease Registry. Toxicological profile for Lead.1999. Atlanta: US Department of Health and Human Services.

Bureau of Census. 2000. Web site available at <http://www.census.gov/>. Last viewed September, 2004.

[E&E] Ecology and Environment. 2003. Site inspection report, Lincoln Park Complex/former City of Fort Lauderdale incinerator site, Fort Lauderdale, Broward County, Florida. Tallahassee, Florida: Florida Department of Environmental Protection, Site Screening Superfund Subsection.

National Center for Environmental Health. Second National Report on Human Exposure to Environmental Chemicals. Last checked 2004. Available from <http://www.cdc.gov/exposurereport/pdf/SecondNER.pdf>.

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Figures, Tables and Photos

Figure 1 – Florida Counties Map

Figure 2 –Lincoln Park Complex Property Street Map

Table 1 – Blood Lead Results by Age

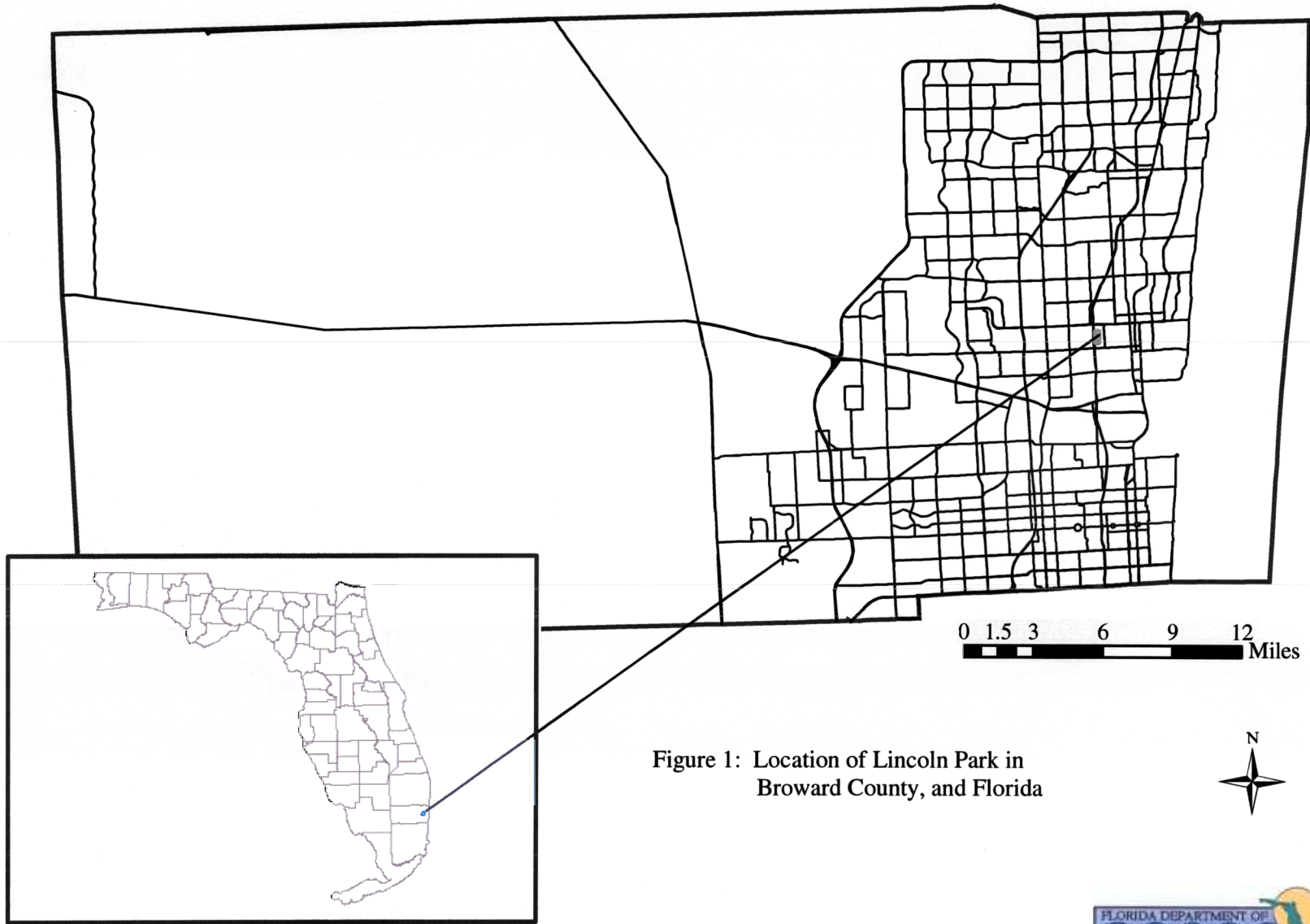


Figure 1: Location of Lincoln Park in Broward County, and Florida





Interstate 95

Lincoln Park Complex

NW 18th Street

NW 6th Street, also known as Sistrunk Boulevard



1995 aerial photograph

0 0.04 0.08 0.16 0.24 0.32 Miles

Figure 2: Location of Lincoln Park Complex in Ft. Lauderdale, Florida



Table 1. Blood lead results by age.

Age	Range of Blood Lead Results	CDC Guideline	NHANES Guidelines by age*	# of participants w/test results
1-5 yrs old	<2 - 4 ug/dL	10 ug/dL	7.0 ug/dL	6
6-11 yrs old	<2 - 5 ug/dL	10 ug/dL	4.5 ug/dL	19
12-19 yrs old	<2 - 3 ug/dL	10 ug/dL	2.8 ug/dL	17
20 yrs old & older	<2 ug/dL	10 ug/dL	5.2 ug/dL	1

*Note: The national lead level average for males of all ages is 6 ug/dL. For females, the average is 4 ug/dL.

ug/dL= micrograms per deciliter

**APPENDIX A – Letter to residents dated April 29, 2003
April 29, 2003**

Dear Parent/Guardian,

The Florida Department of Environmental Protection (DEP) has tested samples of soil deep under the grass in Lincoln Park. Lead was found in some of the samples that were tested. Lead is a heavy metal that can cause health problems if too much enters your child's body. In order to be sure that this is not a problem to our community, more testing is being done.

Lead is everywhere in our environment and can be found in soil, gasoline, paint and certain types of pottery. Although all children are exposed to some lead from food, air, dust, and soil, lead based paint remains the most common source of lead exposure for children.

Children younger than 6 years of age have more "hand-to-mouth" behavior and therefore are more at risk for exposure to lead. If you are concerned that your child has had exposure to lead from Lincoln Park and would like your child tested, your child's doctor can order a simple blood test for lead. Some insurance companies pay for this test and some do not. Please check with your insurance company or you may contact the Broward County Health Department at (954) 467-4944 to schedule an appointment. The Broward County Health Department will bill your insurance company. If you do not have insurance, we will arrange for your child to be tested. You will be notified of the test results and of any follow-up that your child may need.

The Florida Department of Health and the Broward County Health Department are working together to assure the health and safety of our community. Please call us at (954) 467-4822 if you have any questions.

Sincerely,

Tammy L. Blankenship, M.D.

APPENDIX B – Press Release dated March 2004 and Letter to Residents dated April 2004

FOR IMMEDIATE RELEASE
March 31, 2004

CONTACT: Steve Livesay
954-467-4784

THE BROWARD COUNTY HEALTH DEPARTMENT TO CONDUCT LEAD TESTING FOR CHILDREN SIX YEARS AND UNDER IN THE LINCOLN PARK AREA

FORT LAUDERDALE - The Florida Department of Environmental Protection has tested samples of soil deep under the grass at Lincoln Park in Fort Lauderdale. Some of the samples contained lead, the metal that causes lead poisoning. Due to these findings, the Broward County Health Department (BCHD) will offer lead testing for children, ages 6 and under, who live in the immediate Lincoln Park area.

Lead testing will be available on Wednesday, April 7, 2004, from 8:00 a.m. to 11:00 a.m. and Thursday, April 8, 2004, from 4:00 p.m. to 7:00 p.m. at the BCHD Sunrise Health Center - Edgar P. Mills Multipurpose Center located at 900 NW 31st Avenue in Fort Lauderdale, (954) 467-4807. You will be notified of the test results and of any follow-up that your child may need.

Because exposure to lead may be harmful to children, especially those ages 6 and under and depending on the amount of exposure, it is important to have children 6 and under screened for lead. Lead poisoning can damage a child's kidneys, nervous system, and other organs. High levels of lead poisoning can cause seizures and coma. Even children with mild lead poisoning should be checked and followed by a doctor.

Children can develop lead poisoning from exposure to lead in paint chips, dust and soil. Small paint chips may be swallowed when children chew on lead painted objects. Dust and soil containing lead can get on children's hands and toys and be swallowed as they play. Food and water may also contain lead.

Lead can be found in homes painted prior to 1978, and especially in homes built prior to 1950, particularly if your house has visible areas of peeling or flaking paint. If your water system contains lead pipes or copper pipes with lead solder, you may be exposed to elevated levels of lead. Soil next to roads, which had high traffic prior to 1978, when most gasoline contained lead, may have elevated lead levels.

If you have further questions about lead exposure, please contact the Broward County Health Department at (954) 847-3567. We are working to assure the health and safety of our community.

APPENDIX C – Letter to Residents dated May 2004

May 11, 2004

Dear Parent:

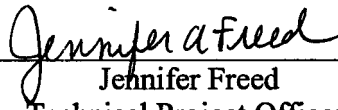
Because children less than 6 years of age are more sensitive than older individuals to lead exposure, current guidelines recommend lead screening of children less than 6 years of age who are at increased risk of high lead levels (example: children who live in older homes in which lead paint may have been used).

Your child was recently screened for lead due to low levels of lead that were found in soil samples at Lincoln Park. However, the results are *unsatisfactory* and a re-test is needed. We have enclosed a copy of the results for your records. *Unsatisfactory* results mean that the blood sample that was taken was not of sufficient quantity or the sample clotted before the test could be run.

Please call the Sunrise Health Center at (954) 327-6000 to arrange for your child to be re-tested. The re-test will be done by venipuncture (taken from the child's arm) to make sure that we receive a good sample.

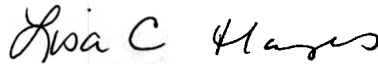
Certification

The Lincoln Park Complex Blood Lead Health Consultation was prepared by the Florida Department of Health, Bureau of Community Environmental Health, under a cooperative agreement with the Agency for Toxic Substances and Disease Registry. It is in accordance with the approved methods and procedures existing at the time the health consultation was begun. Editorial review was completed by the Cooperative Agreement partner.



Jennifer Freed
Technical Project Officer,
CAT, SPAB, DHAC

The Division of Health Assessment and Consultation, ATSDR, has reviewed this health consultation, and concurs with its findings.



for Roberta Erlwein
Team Lead,
CAT, SPAB, DHAC, ATSDR