

Memorandum



Date: September 18, 2012

To: Honorable Chairman Joe A. Martinez
Board of County Commissioners, District 11

From: Carlos A. Gimenez
Mayor 

Subject: Notice of Environmental Contamination in Commission District 11

On March 3, 2009, the Board of County Commissioners adopted Resolution No. R-227-09 requiring that when environmental contamination is identified by the Department of Regulatory and Economic Resources (RER), the Commissioner in whose District the environmental contamination is located shall be notified of such.

Pursuant to R-227-09, please be advised that the attached memo was sent to the Department of Parks, Recreation and Open Spaces (PROS) as the party responsible for site rehabilitation on September 10, 2012 due to documented soil impacts. The Department of Regulatory and Economic Resources (RER) is working closely with PROS to implement measures to eliminate the risk of exposure to the impacted soils. Groundwater impacts have not been documented at the site. Additionally, the site is on municipal water; therefore, their drinking water is not at risk. PROS must perform site rehabilitation action in order to bring the site into compliance with Chapter 24 of the Code of Miami-Dade County.

The summary of this case is noted below:

Subject	Environmental Contamination
Facility Name:	Hammocks Community Park
DERM File #:	HWR-747
Facility Address:	151 Hammocks Blvd, Miami, Florida in Miami-Dade County
Folio Number:	30-5904-008-0020
Description/Nature of Violation:	Environmental contamination requiring site rehabilitation action pursuant to Division 3, Contaminated Site Cleanups, Chapter 24, Code of Miami-Dade County, Florida.

Should you have any questions or require additional information, please contact Mr. Lee N. Hefty, Assistant Director – Environmental Resources Management - Department of Regulatory and Economic Resources at (305) 372-6754 or by email at heftyl@miamidadegov.

Attachment: Site Rehabilitation Order for Environmental Contamination

c: Jack Osterholt, Deputy Mayor/Director – Department of Regulatory and Economic Resources
Lee Hefty, Assistant Director, Environmental Resources Management - RER

Memorandum



Date: September 10, 2012

To: George Navarrete
Deputy Director, PROS

From: Wilbur Mayorga, P.E., Chief
Environmental Monitoring and Restoration Division, ERM-RER

Subject: Contaminated Soils at Hammocks Community Park

A handwritten signature in black ink, appearing to read "W. Mayorga", positioned to the right of the "From:" field.

The Department of Regulatory and Economic Resources (RER) has concluded the investigation of the soils within the boundaries of the Hammocks Community Park (HCP) and the surrounding offsite areas. The investigation revealed arsenic concentrations above the screening criteria in the upper 2 feet of soils across the turfed areas of the entire park (see attached concentration distribution map). The laboratory analytical results (received on August 27, 2012) for the offsite locations reported no arsenic impacts.

To determine if the elevated arsenic concentrations documented in the soils at the park represented an acceptable public health risk to the park's patrons and if immediate risk mitigation action was required, RER requested a health consultation from the Miami-Dade County Health Department/Florida Department of Health (FDOH).

The findings of the health consultation dated August 29, 2012 (copy attached), indicated that the arsenic concentrations documented at the HCP represented a very low increase in potential cancer risk and that "Normal activities in the grass covered areas of the park should pose very little risk."

However, in the abundance of caution and to eliminate any potential risk to the park users RER requires a minimum of 12 inches of clean fill covering over the arsenic impacted soils. Recognizing that there is not an imminent public health risk, and to ensure minimum disruption to park operations, the required cover may be installed in phases with the fill being placed in incremental lifts.

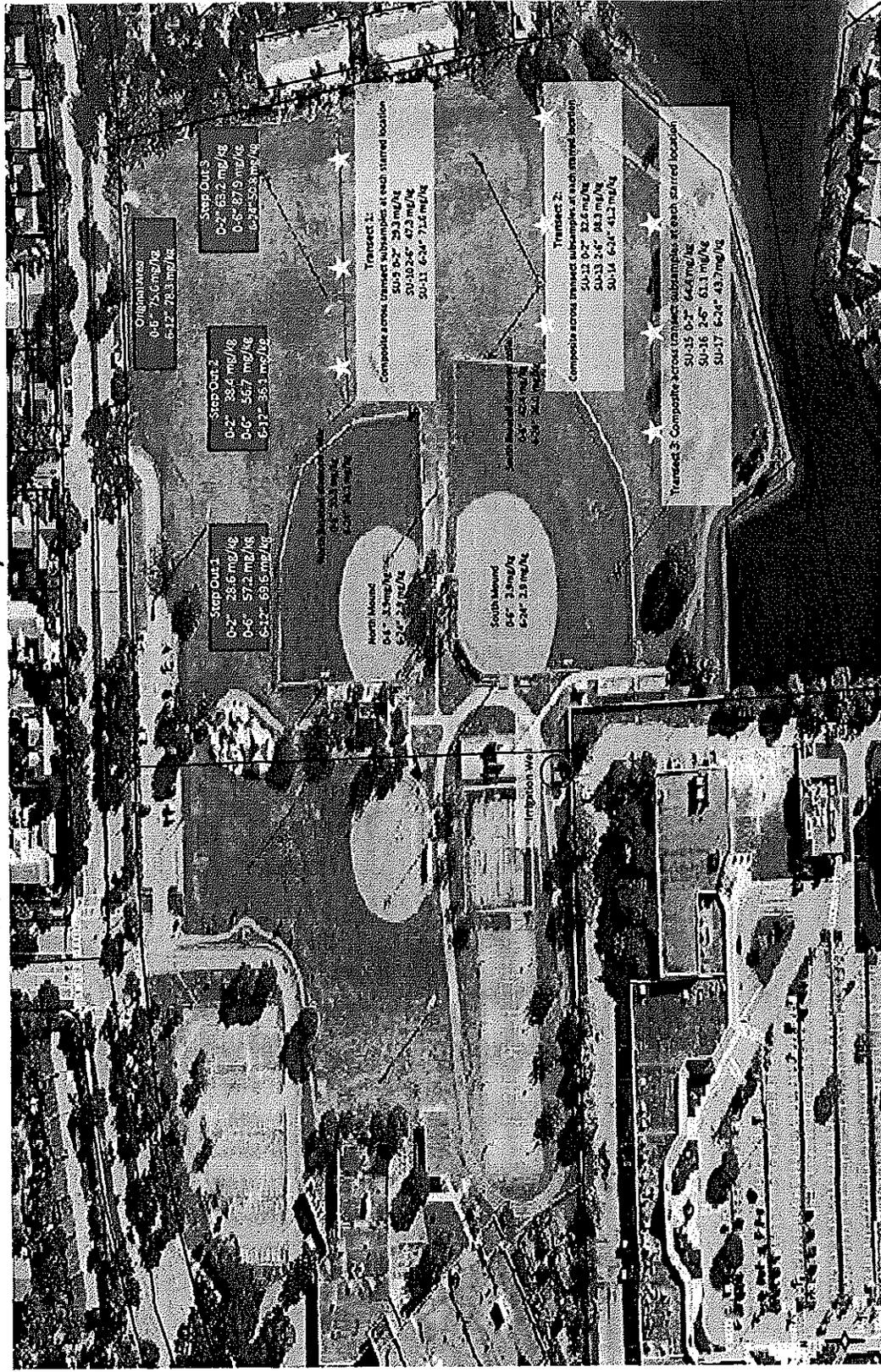
Additionally, to ensure that the material meets the clean fill criteria, RER requires sampling of any material to be used as fill at the site. The sampling requirement may be waived if it is clearly documented that the material is clean fill (e.g. from a rock mining quarry in Miami-Dade County), provided such documentation is submitted to RER for review and acceptance prior to the material being transported to the site.

Based on the above, within thirty (30) days of receipt of this memo, a Corrective Action Plan (CAP) that addresses the above requirements shall be submitted to RER for review and approval. The CAP shall include an implementation timeline and a protocol for sampling the incoming fill material.

If you have any questions concerning the above please contact me via email at mayorw@miamidade.gov or via telephone at (305) 372-6700.

pc: Lee Hefty, Assistant Director, DRER
Kevin Asher, PROS
Jorge Mora, PROS
Li Gurau, PROS

Hammocks Community Park





Toxicology Consult
Florida Department of Health, Division of Disease Control & Health Protection
Bureau of Epidemiology

Date: August 29, 2012

To: Samir Elmir, PhD, PE, DEE, CEHP
Director of Environmental Health & Engineering Services
Miami-Dade County Health Department

From: Joseph Mark Higginbotham, MS, PhD
Deputy State Toxicologist

Kendra F. Goff, PhD
State Toxicologist

Consult Requested by: Miami-Dade County Health Department

PURPOSE

The Miami-Dade County Health Department (MDCHD) monitors local public health and often answers questions regarding environmental health and safety of county citizens. Recreational areas such as outdoor ball parks are important, shared areas frequented by the local public. As with any high use outdoor area the public can potentially be exposed to environmental contaminants. Hammocks Community Park (HCP, 9885 Hammocks Boulevard) is adjacent to Hammocks Middle School and is used by students and community members for outdoor recreational activities. Recently, the HCP soil was sampled and analyzed for metal contaminants, including arsenic, as part of a comprehensive environmental effort by Miami-Dade Department of Regulatory and Economic Resources to sample older parks in the county. Elevated arsenic levels were present in the soil samples. No other elevated metals were reported. The source of arsenic in the soil may be the result of historical use of monosodium methanearsonate (MSMA); an organic arsenical herbicide applied to turf grass. The MDCHD requested toxicological consultation assistance from the Florida Department of Health (FDOH), Public Health Toxicology Section regarding potential cancer and non-cancer risk to residents using the HCP.

METHODS

FDOH Toxicologists reviewed all analytical reports and schematics provided by the MDCHD with regards to arsenic levels found in HCP soils. Eleven sample locations were tested. Each sample represented a composite of twelve subsamples. Samples included locations on the clay of two baseball fields, in the outfield of two baseball fields, and various locations to the north, east, and west of the baseball fields within the community park. All samples were measured at both 0 to 6 inches and 6-12 inches depth. Three samples to the south and east of the baseball diamonds were also measured at 0 to 2 inches. A total arsenic concentration was measured. For this consultation, all arsenic was considered to be inorganic (most toxic form).

Risk to human health was calculated using risk assessment guidance from U.S. Environmental Protection Agency and the Agency for Toxic Substances and Disease Registry. The following inputs and calculations were used [ATSDR 2005; US EPA 1989].

Inputs for Child non-cancer calculations for soil ingestion exposure

Arsenic concentration	98.3 mg/kg (highest measured soil arsenic concentration)
Ingestion rate	50 mg/day
Exposure frequency	250 day/year
Conversion factor	0.000001 kg/mg
Exposure duration	14 years
Body weight	15 kg
Averaging time	5110 days

Inputs for Adult non-cancer calculations for chronic soil ingestion exposure

Arsenic concentration	98.3 mg/kg
Ingestion rate	50 mg/day
Exposure frequency	250 day/year
Exposure duration	30 years
Conversion factor	0.000001 kg/mg
Body weight	70 kg
Averaging time	10950 days

Inputs for Adult Cancer risk calculations for soil ingestion exposure

Arsenic concentration	98.3 mg/kg
Ingestion rate	50 mg/day
Exposure frequency	250 day/year
Exposure duration	30 years
Conversion factor	0.000001 kg/mg
Body weight	70 kg
Averaging time	25550 days
Arsenic cancer slope factor (CSF)	1.5 per mg/kg/day

Dose equation

$$D = (C)(IR)(EF)(ED)(CF)/(BW)(AT)$$

Cancer risk equation

$$\text{Cancer Risk (unitless)} = (\text{CSF})(D_{\text{adult}})$$

CONCLUSIONS

Non-cancer risk to children

The estimated exposure dose (0.00002 mg/kg/day) was well below ATSDR's acute minimum risk level (MRL) of 0.005 mg/kg/day. Non-cancer health effects would not be expected from exposure to soil containing MSMA and inorganic arsenic at HCP.

Chronic Non-cancer risk to adults

The estimated exposure dose (0.00005 mg/kg/day) was well below ATSDR's chronic MRL of 0.00013 mg/kg/day. Non-cancer health effects would not be expected from exposure to soil containing MSMA and inorganic arsenic at HCP.

Cancer risk to adults

The estimate of predicted increased risk was 3.1E-05 (three extra cancer cases in every 100,000 people) which is considered a very low increase in risk.

UNCERTAINTY

Composite samples were analyzed which does not allow one to evaluate a maximum exposure level but rather an "average" exposure. This may underestimate risks to exposure to arsenic.

Exposure to soil typically occurs in the top two inches of soil, the depths measured (0-6 inches, 6-12 inches) may underestimate the exposure. However, the three samples which analyzed concentrations of arsenic in the top 0-2 inches of soil did not exceed the highest measured value of 98.3 mg/kg in lower depths.

Because all the risk calculations were based upon the assumption that arsenic concentrations were in the inorganic form, risk may have been overestimated.

RECOMMENDATIONS

- Follow prudent public health guidelines when applying pesticides/herbicides to public parks.
- Assure proper application and notification of recent product application on park grounds.
- Always practice good hygiene by washing your hands after playing in the soil. Normal activities in the grass covered areas of the park should pose very little risk.

REFERENCES

[ATSDR 2005]. Public Health Assessment Guidance Manual. Appendix G: Calculating Exposure Doses.

[US EPA 1989] Risk Assessment Guidance for Superfund Volume 1. Human Health Evaluation Manual (Part A). Interim Final.