



# Before You Dig - Radioactive Thorium and Construction Activities in the Streeterville Area

Chicago, Illinois

November 2006

## INTRODUCTION

The purpose of this update is to provide basic background information on the history of thorium within the Streeterville area and basic procedures when uncovering or intruding into subsurface soils within the potentially contaminated area.

## BACKGROUND

In the 1990's, U.S. EPA became involved in Streeterville due to the discovery and excavation of approximately 40,000 tons of radioactive thorium-contaminated soils that were located during property development and utilities installation and maintenance. Additional subsurface thorium contamination has been found in other Streeterville locations. This radioactively contaminated material must be managed in accordance with State and Federal environmental requirements. U.S. EPA believes that radioactive thorium waste from the Lindsay Light and Chemical Company (Lindsay Light) was disposed of in the Streeterville area, but there are no historic records describing where Lindsay Light disposed of its waste.

Our historical research indicate that beginning in about 1904 and continuing through the mid 1930's, Lindsay Light manufactured thorium mantles impregnated with thorium in the City of Chicago. The Lindsay Light operation reportedly originated at 22 W. Hubbard and later moved to 161 E. Grand and 316 E. Illinois in Chicago, Illinois. Thorium-containing ore apparently was processed at 316 E. Illinois into liquid thorium nitrate which was

used to make gas light mantles at 161 E. Grand. Details regarding Lindsay Light operations at 22 W. Hubbard are sketchy. From the early 1900s until the early 1920s, Lindsay Light occupied the five-story building at 22 W. Hubbard, however, it is not known which operations took place at this location. Lindsay Light moved to the City of West Chicago, Illinois and closed its Streeterville operations by about 1936. The Lindsay Light operations in West Chicago resulted in four Superfund sites including over 670 residential properties which were cleaned up pursuant to U.S. EPA orders.

## PROCEDURES

If subsurface thorium wastes are uncovered without proper environmental controls, workers and the public may be exposed to elevated radiation levels. Also, if not managed properly, the radioactive materials may be spread to other locations. The City of Chicago has prepared a generic health and safety work plan for the Streeterville area that is available at the City's Department of Environment. If your work involves removing the asphalt, concrete or other materials covering subsurface soils or tunneling, digging or otherwise intruding into subsurface soils, the following radiation survey testing procedures performed by a qualified person under the direction of a radiation health physicist must be followed. The results should be presented in a written report sent to U.S. EPA. This report should be detailed enough that someone not present would be able to determine that these radiation surveillance procedures were followed. Please call U.S. EPA 48 hours prior to performing a walkover survey so that we may observe. This report

should be given to U.S. EPA prior to breaking ground in Streeterville.

## Taking Radiation Measurements

- **Determine the site radiation level.**  
Hold a gamma-ray survey probe (sodium iodide detector) about 6 inches off the ground and walk the entire area along parallel lines about 3 - 4 feet apart. The site background level is determined by looking at the lowest count rate readings and looking for spots and regions of elevated radiation levels. If background readings appear to be elevated over expectations, U.S. EPA may ask for an off-site determination of background for the area.
- **Quantify exposure environment.**  
Take readings of 30 second counts, on contact with the ground, at intervals of 10 feet along parallel lines five feet apart to quantify the exposure environment (these include background levels). Next, take readings at selected spots where initial readings were over twice the background level.
- **Assess an anomaly.**  
If readings indicate anomalies, then subsurface gamma-ray count rate readings and soil samples will need to be collected. These samples will need to be analyzed for radionuclide identification and quantification. However, gathering samples may generate hazardous waste and may contaminate workers and equipment, so this phase should not be done without a U.S. EPA reviewed health and safety plan and a means of disposing of contaminated soil, protective clothing, etc.

## FOR ADDITIONAL INFORMATION

If you have questions about these procedures, equipment specifications, or thorium contamination in Streeterville, please contact:

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**24-hour response number  
(312) 353-2318**

Lindsay Light site-related information is available at the following location:

**Harold Washington Public Library  
400 South State  
Chicago, Illinois**

Monday: 9:00 a.m. to 7:00 p.m.  
Tues. and Thurs.: 11:00 a.m. to 7:00 p.m.  
Wed., Fri., and Sat.: 9:00 a.m. to 5:00 p.m.

## WEB SITE

This and additional updates can be found at the following web site:

**[www.epa.gov.region5/sites/](http://www.epa.gov.region5/sites/)**

Scroll down through the list to find the Lindsay Light II/RV3 North Columbus Drive site.

Additional information about thorium is available at:

**[www.epa.gov.superfund/resources/radiation/pdf/thorium.pdf](http://www.epa.gov.superfund/resources/radiation/pdf/thorium.pdf)**