Health Consultation

BROWN'S DUMP

JACKSONVILLE, DUVAL COUNTY, FLORIDA

CERCLIS NO. FLD980847016

OCTOBER 25, 1999

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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HEALTH CONSULTATION

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JACKSONVILLE, DUVAL COUNTY, FLORIDA

CERCLIS NO. FLD980847016

Prepared by:

Exposure Investigation and Consultation Branch
Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry

Background and Statement of Issues

The Agency for Toxic Substances and Disease Registry (ATSDR) was requested by Region 4 of the U.S. Environmental Protection Agency to review the results of surface soil samples collected from residences located on the property of the former Brown's Dump site in Jacksonville, Florida. ATSDR was asked to determine whether the levels of lead in the soil were high enough to pose a public health hazard to residents.

The Brown's Dump site is located on approximately 50 acres of land in the city of Jacksonville, Florida. From 1946 through 1955, the city disposed of incinerator ash and solid municipal waste at the site [1]. Shortly after the property was closed as a landfill, the site was developed for other uses, and an elementary school, apartments, individual houses, and an electric utility substation were built on the site.

In May of 1999 the Florida Department of Health under cooperative agreement with ATSDR released a draft public health assessment (PHA) for public comment [1]. The draft PHA concluded that contaminated surface soil in residential areas at the Brown's Dump site posed a potential public health hazard and recommended additional sampling of surface soil in residential areas [1]. EPA and the City of Jacksonville initiated temporary measures to address the contaminated soils, including restricting access and placing temporary cover in exposed areas. The City of Jacksonville, under EPA oversight, will be conducting a remedial investigation to determine the extent of contamination at the Brown's Dump and Jacksonville Ash site.

Surface soil samples (0 to 3 inches) were collected by the City of Jacksonville in August of 1999 at the request of the residents who live on or near the site. This sampling was conducted in response to community concerns. From two to four samples were collected at each of 86 private residences. Samples were collected from areas of bare ground (i.e., areas without grass cover).

The Duval County Health Department recommended covering areas that exceed 400 parts per million (ppm) lead with clean soil. The City of Jacksonville followed up by covering those areas with mulch, soil, or sod.

ATSDR reviewed the results of the City of Jacksonville soil sampling for the area. The lead levels in the surface soil samples ranged from less than 25 ppm (which was the limit of detection) to 2,500 ppm. Table 1 contains a summary of the results for the residential surface soil sampling. Thirteen of the 25 residences where surface soil was found to contain lead at levels greater than 400 ppm were located on Bessie Circle, adjacent to the Brown's Dump site.

Table 1. Maximum Lead Concentration Detected in Residential Surface Soil Samples

Lead concentration in parts per million*	Number of residences
≥2000	2
1,600–1,999	1
1199–1,599	3
799–1,199	3
400–799	16
<400	61

*Maximum concentration detected in individual surface soil samples collected at each of 86 residences.

The locations of residences that had one or more surface soil samples containing 400 ppm or more of lead are shown in Figure 1.

The Duval County Health Department also collected 18 surface soil samples from the Forest Park Head Start School. Surface soil samples collected from the school's Butterfly Garden contained lead levels of 400 to 540 ppm. One sample, collected behind the bus parking area (a non-play area), contained lead at 510 ppm. The remainder of the samples collected from the Forest Park Head Start School contained lead levels less than 400 ppm. From the city park area (Forest Park), six surface samples were collected. One sample collected near the basketball court (the sample location farthest from the school) contained 1,900 ppm of lead. Each of the five remaining samples from the park contained lead at levels less than 400 ppm.

Background soil sample results were either not collected for this investigation or not provided to ATSDR. The samples were collected to respond to residents' concerns and did not follow EPA protocol for sampling.

Discussion

Approximately one-third of the 86 residences tested had at least one surface soil sample indicating lead levels of 400 ppm or more. Because sample locations were selected based on resident requests, sampling results may not be representative of the community's exposure or define the extent of site contamination. Some of the surface soil samples that contained elevated lead levels were collected next to residences, and therefore these sample results may reflect a prior use of lead-based paint.

Lead-contaminated soil presents a health concern to children regardless of its source. Children can be exposed to lead through the ingestion of air containing lead-contaminated soil and dust. This exposure has the potential to increase blood lead levels and possibly cause harmful effects,

including developmental and hearing impairment, reductions in scores on standardized intelligence tests, and changes in enzyme function in the blood [2]. Epidemiologic studies have shown a positive correlation between lead in soil and lead in blood [2]. It has been reported by the Centers for Disease Control and Prevention (CDC) that blood levels in young children have been raised, on average, 5 micrograms per deciliter of blood for every 1,000 ppm of lead in residential soil or dust. This effect may be much greater (up to fivefold) depending on the lead source and type, size of the lead-contaminated particles, and the children's behavior and degree of contact with lead-contaminated areas. ATSDR concludes that elevated lead levels in residential soil have the potential to increase blood lead levels for some children in the future.

The Duval County Health Department measured the capillary blood lead concentration of 203 children in 1995 [1]. Eight of the 203 children had blood lead levels above 10 micrograms per decimeter (ug/dl). The location of residences of the children with blood lead levels above 10 ug/dl did not coincide with elevated soil lead levels [1].

ATSDR's Child Health Initiative recognizes that the unique vulnerabilities of infants and children demand special emphasis in communities faced with contamination of environmental media. As part of the ATSDR initiative, ATSDR health consultations must indicate whether any site-related exposures are of particular concern for children. At this site, sampling has identified lead in the surface soil of some residences and in a city park where children play. Children are uniquely susceptible to the deleterious effects of lead because they absorb lead more easily than adults do. Blood lead levels equal to or greater than 10 micrograms per deciliter have been associated with adverse health effects in children, particularly harm to the nervous system, hearing impairment, reductions in scores on standardized intelligence tests, and impaired or delayed growth development [2].

Conclusions

Environmental sampling results indicate that residential soil in the area of Brown's Dump contains elevated levels of lead. These levels of lead may present a health concern to children. ATSDR therefore classifies the Brown's Dump site as a potential public health hazard.

Before determining the appropriate public health response, additional sampling by EPA is required to assess the extent of lead contamination in the surface soil of the park and in residences in the area.

Recommendations

As interim measures to protect public health, Duval County public health officials should

- Continue to advise and assist residents to cover areas with elevated lead with soil, mulch, and sand.
- Verify that children are not currently being exposed to lead at those locations found to have lead levels greater than 400 ppm in surface soil, and
- Offer to test the blood lead levels of children residing at the residences found to have surface soil lead levels greater than 400 ppm.

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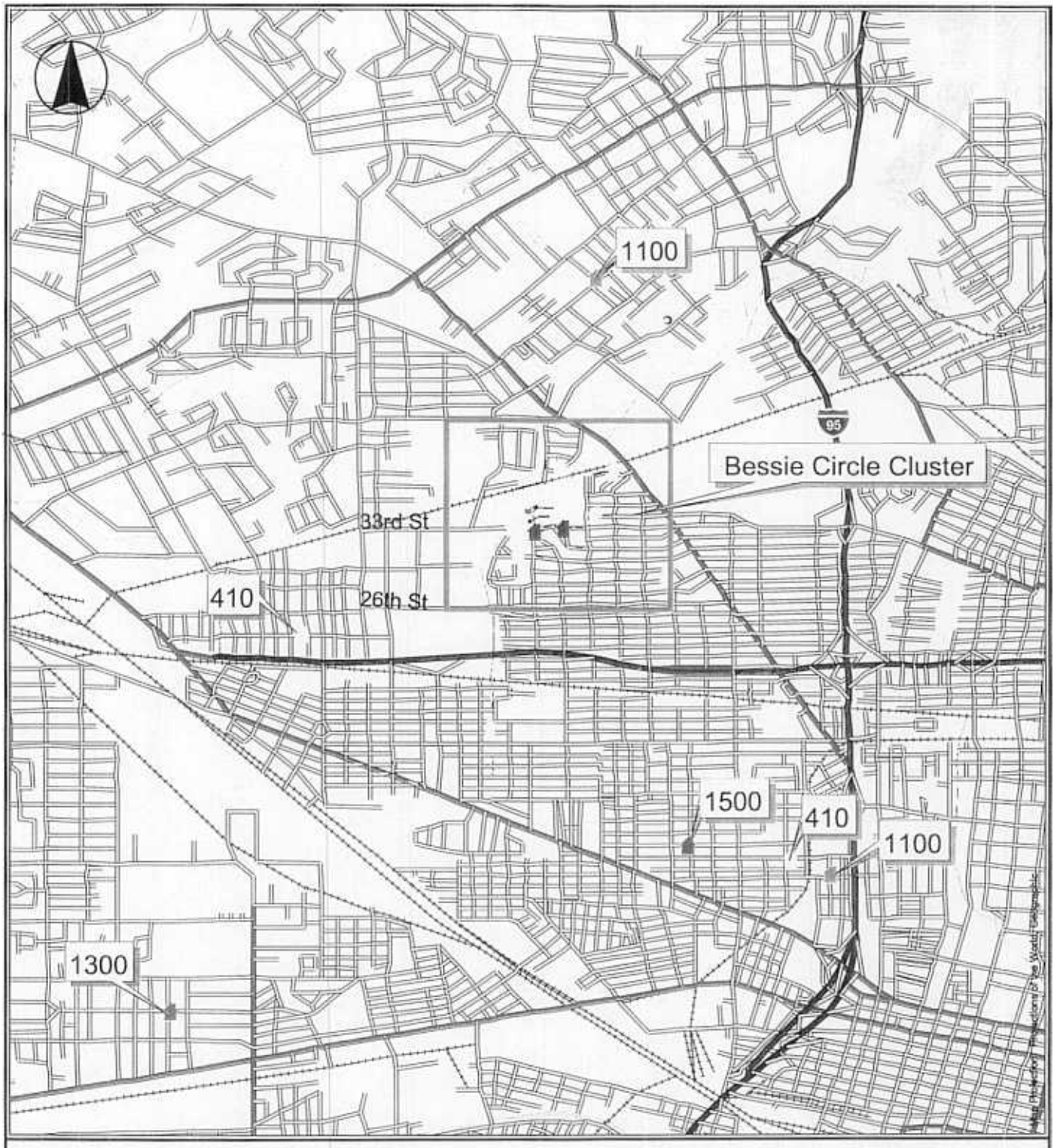
References

1 Agency for Toxic Substances and Disease Registry. Public Health Assessment for the Brown's Dump, Draft for Public Comment. U.S. Department of Health and Human Services. Atlanta; May 1999.

2. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Lead, Draft for Public Comment (Update). U.S. Department of Health and Human Services. Atlanta; August 1997.

ATTACHMENTS



Brown's Dump

Jacksonville. Florida

Sampling Locations Measured in ppm

SOIL SAMPLE LOCATIONS

Soil Sample
- 2000 or greater
- 1600 - 1999
- 1200 - 1599
- 800 - 1199
- 400 - 799

- Highways
- Interstates
- Roads
- Railroad
- Water

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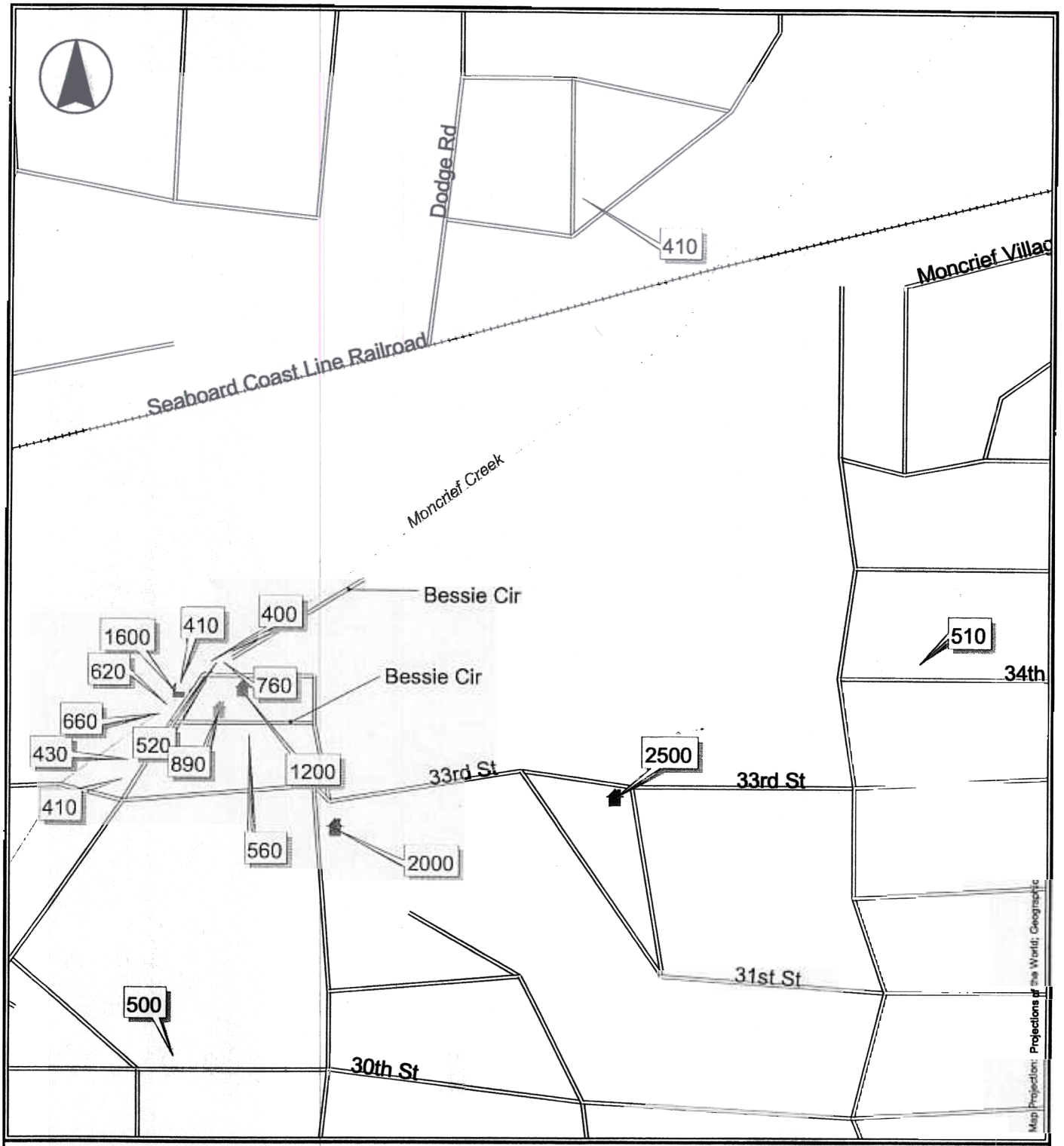

Brown's Dump

Jacksonville, Florida

Soil Samples Measured in ppm

BESSIE CIRCLE CLUSTER

Soil Sample
- 2000 or greater
- 1600 - 1999
- 1200 - 1599
- 800 - 1199
- 400 - 799

Highways
Interstates
Roads
Railroad
Water

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