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Agency for Toxic Substances and Disease Registry

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Florida Department of Health and Rehabilitative Services,
Environmental Toxicology

Date: January 26, 1995

Subject: Health Consultation: Cancer Cluster Study, Hipps Road Landfill Superfund Site
Jacksonville, Duval County, Florida

Background and Statement of Issues

The Hipps Road Landfill is in the Jacksonville Heights area of Jacksonville, Florida. From 1967 to 1970, several hauling companies reportedly disposed of airplane parts, wire, electric cable, paint, solvents, grease, and oils from two nearby naval air stations at this seven acre site. The property owner then covered the landfill and subdivided it for residential lots. Six homes on the site as well as other nearby homes used private wells as their drinking water source. In 1983, the Duval County Public Health Unit discovered contamination in nearby residential drinking water wells and EPA added the site to the Superfund National Priorities List. From 1988 to 1990, contractors for Waste Control of Florida, a Potentially Responsible Party, purchased and demolished or moved the six on-site houses and constructed a landfill cover. In a 1990 amended record of decision, EPA selected extraction and air stripping as the method for ground water cleanup.

In 1995, the Florida Department of Health and Rehabilitative Services (FHRS), under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR), published a public health assessment for the Hipps Road Landfill Superfund Site. The public health assessment found there could be a moderate (1 in 1,000) increase in cancer risk from the resident's past exposure to the human cancer-causing agents arsenic, benzene, and vinyl chloride. In addition, there might be a low to moderate increase in cancer risk from the residents' past exposure to four other suspected cancer-causing agents. Although FHRS epidemiologists attempted to evaluate the cancer rates in the 32222 zip code surrounding the site during preparation of the public health assessment, problems with the population data made it impossible to calculate valid cancer rates for this zip code. FHRS epidemiologists also reviewed a 1991 epidemiology report prepared for the Hipps Road residents' lawsuit against the U.S. Navy and found it to be inconclusive because of flaws in its methodology.

Still, residents around the Hipps Road Landfill are concerned that cancer rates are and will continue to be elevated in their community. In addition, because FHRS recommended ATSDR perform a follow-up health study in the community, ATSDR's Division of Health Studies asked the department to attempt another analysis of cancer data from the Hipps Road area. In this health consultation, we present the results of FHRS' evaluation of these data.

Public Meeting and Site Visit

On November 17, 1994, FHRS held a public meeting to present the findings of the draft public health assessment and to gather the public's comments on the draft document. To announce this meeting, FHRS included a meeting announcement/health assessment fact sheet in the front of each document copy the department distributed, and community leaders delivered 900 fact sheets to nearby residences. In addition, FHRS' public information staff contacted media representatives in Jacksonville and, on November 17, the Florida Times-Union (Jacksonville) published a story about the draft health assessment and announced the meeting. Approximately 80 adults attended the public meeting, 24 of whom gave comments on both health-related and nonhealth-related issues. FHRS also solicited public comments by mail through December 16, 1994. FHRS received nine written responses, mostly from area residents.

FHRS staff most recently visited the site on November 18, 1994. During this visit, the air stripper was not in operation. Staff observed water being pumped from the back pond (closest to the air stripper) to the front pond, and from the front pond onto the front of the site, reportedly because of a filtration problem in the back pond. The hole in the fence along Exline Road still existed. From the back yard of a home on Camfield Road, a hole in the side of the air stripper was visible.

Discussion

Attachment 1 presents the results of FHRS' preliminary analysis of cancer cases observed in the Hipps Road Landfill area. The Hipps Road Landfill area is defined as the 1990 census tracts 137.21 and 137.22, in Attachment 2, which was one census tract in 1980. The data come from the Florida Cancer Data System (FCDS), an HRS program operated by the University of Miami School of Medicine that covers all cancer occurrences, except basal cell and squamous cell skin cancers, reported in Florida hospitals from 1981 - 1992. Because basal and skin cell cancers are not recorded in the FCDS data base, this analysis cannot examine the relationship between the residents' past ingestion of arsenic and possible incidences of arsenic-induced skin cancer.

The first page of the attachment describes the assumptions used in the analysis, and the following pages present the results for 81 cancer sites recorded in FCDS. The analysis compares reported

cases of cancer in the two census tracts of interest (the observed population) with reported cancer cases in Duval County, exclusive of the two census tracts (the reference population). The ratio of (the observed cases X 100) : (the reference population) is the SIR (standard incidence ratio) number used in the analysis. SIR numbers greater than 100 mean there are more cancer cases in the observed population than in the reference population; SIR numbers less than 100 mean there are fewer cancer cases in the observed population than in the reference population. From the SIR numbers, FHRS epidemiologists calculated a 95% confidence interval for the distribution of SIR numbers at each cancer site; this interval is the quantity of interest. All of the lower confidence limits are less than 100, and all of the SIR values fall within the 95% confidence interval. This indicates the number of cancer cases in the observed population is not statistically different from the number of cancer cases in the reference population. In other words, this analysis did not find a significantly greater incidence of cancer in the Hipps Road area compared to the rest of Duval County. Nevertheless, this analysis does not indicate the cancer rates are the same between the two populations. The analysis simply means epidemiologists cannot determine if the cancer incidences differ between the Hipps Road area and the rest of Duval County because of the small number of people and small number of reported cancer cases in the observed population.

FHRS epidemiologists say they can remove the other census tracts in Duval County containing Superfund sites from the reference population (see assumption #4), and rerun the analysis when time permits. However, given the semi-rural location of the other Superfund sites in the county and the low number of recorded cancer cases in the Hipps Road census tracts, it seems unlikely the results of a new analysis will differ greatly. FHRS epidemiologists also point out that this analysis covers only a 10-year period, which doesn't allow adequate latency time for some cancers. They suggest rerunning this analysis in five years to allow evaluation after a more reasonable 15-year latency period.

Conclusions

FHRS epidemiologists did not find significantly different incidences of cancer between the Hipps Road area and the rest of Duval County for the 81 cancer sites reviewed in FCDS. The study results are indeterminate because the numbers of cancer cases for the observed population are very low, and the SIR confidence intervals are very wide.

The interpretation and conclusions in this health consultation are based upon the referenced data and information, and are specific to FHRS' 1995 review of the FCDS cancer data for the area around the Hipps Road Landfill Superfund Site. Additional data could alter the conclusions presented. When indicated by public health needs, and as resources permit, FHRS will evaluate additional, relevant data or respond to additional requests if received.

Recommendations

After five years, or another time deemed appropriate by FHRS epidemiologists, re-examine the FCDS data to determine if cancer rates in the Hipps Road area appear elevated. Continue these periodic reviews until reasonable disease latency times are exceeded.

The recommendations and advice in this health consultation are based upon the referenced data and information, and are specific to FHRS' 1995 review of the FCDS cancer data for the area around the Hipps Road Landfill Superfund Site. Additional data could alter this recommendation presented.

Documents Reviewed

ATSDR. 1993. Update Toxicological Profile for Arsenic (April). Atlanta, GA: U.S. Public Health Service, Agency for Toxic Substances and Disease Registry. ATSDR/TP-92/02, 48-49.

FHRS. 1995. Background Information on the Analyses of Hipps Road Site Cancer Cluster (January 24). Florida Department of Health and Rehabilitative Services, Tallahassee, FL.

FHRS. 1995. Health Assessment for Hipps Road Landfill, Jacksonville, Duval County, Florida (submitted for publication). Prepared by the Florida Department of Health and Rehabilitative Services under Cooperative Agreement with the Agency for Toxic Substances and Disease Registry. Florida Department of Health and Rehabilitative Services, Tallahassee, FL.

Wilson JD, et al. 1991. Harrison's Principles of Internal Medicine. 12th ed. New York: McGraw-Hill, Inc., 1633.

Attachments





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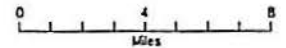
Background information on the analyses of Hipps Road Site cancer cluster

- 1) The cancer information is from FCDS commercial file from 1981 to 1990.
- 2) The population information is from census report on 1980 and 1990. Since there is no population information available for census tracts between the two census years, we assume that average annual population for the ten year period is 1980's population plus 1990's population divided two [average annual population = (1980's population + 1990's population)/2].
- 3) Study group is cases from census tract 137.21 and 137.22 between 1981 and 1990.
- 4) Reference group is cases with census tract code from Duval County except census tract 137.21 & 137.22 between 1981 and 1990. 2020 cases out of 23694 cases from Duval County are deleted for the analyses because they do not have a census tract code. Since there are five more NPL sites in Duval County, this reference may underestimate the cancer risk in the study area.
- 5) The Standardized Incidence Ratio (SIR) is used in this analyses. The SIR is calculated as the ratio of the observed number of cause-specific cases in the study area to the expected number, multiplied by 100. The expected number is based on the cause-specific incidence rate in the reference group, stratified by race (white or non-white), gender (male or female) and age (five-year group). The expected number is computed by multiplying the rates for each race-gender grouping and age-specific categories in the reference group by the corresponding population categories in study area. The resulting quantities are summed over the stratifying factors to obtain the expected number. Ninety-five percent confidence interval (95% CI) for SIR is calculated under the assumption that the observed cancer incidence followed a Poisson distribution. A SIR is designated as statistically significant if the 95% CI does not include the null value of 100.
- 6) The site category of cancer is based on CDC standard (category table is enclosed).

Census Tracts

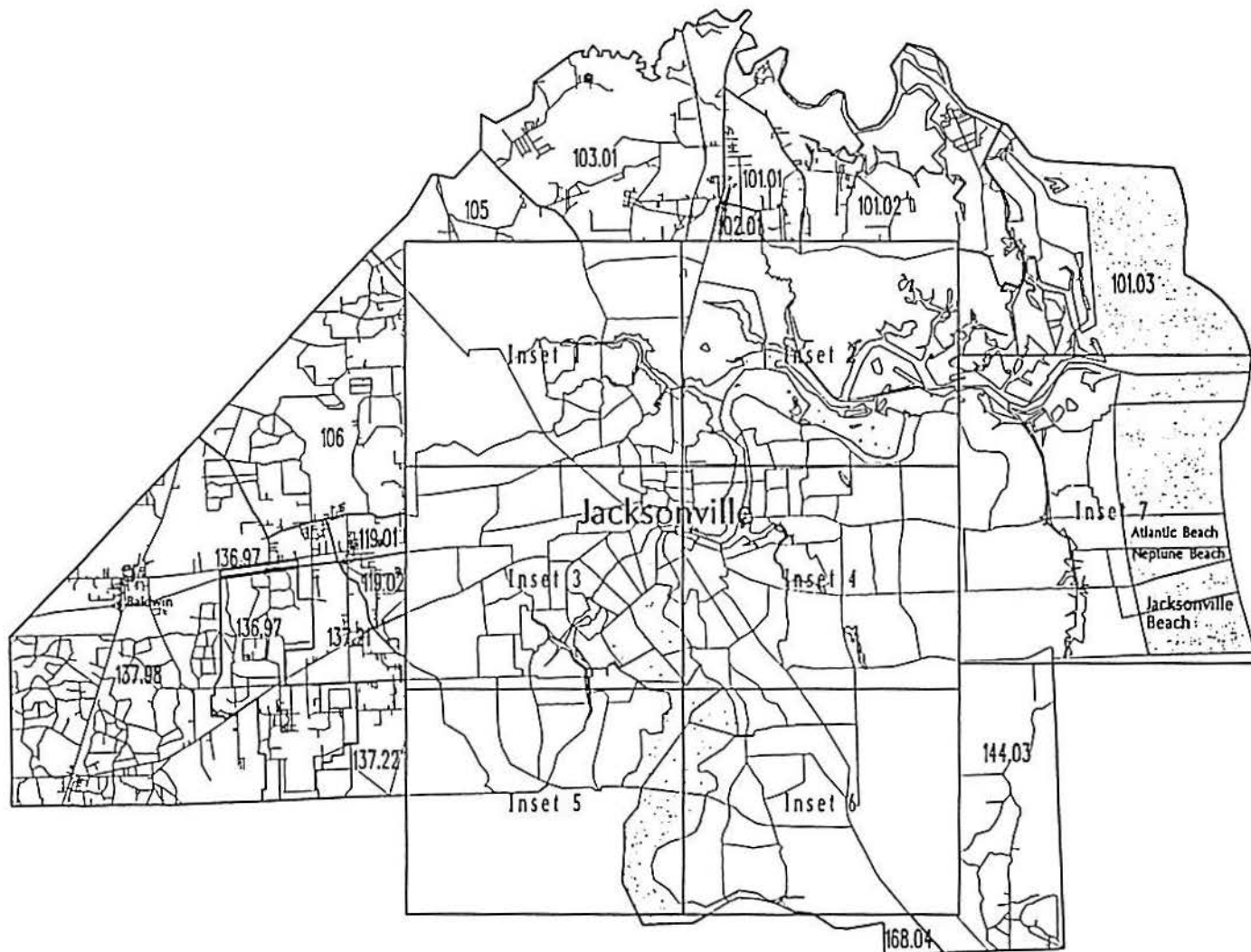
Duval County

-  Water Features
-  Tract Boundary
-  Road Features
- 123.01 Tract Number
-  Vessel Tract



The Florida Legislature

Source: U.S. Census Bureau's TIGER/Line Files.
Albers Equal-Area Projection
July, 1991








STANDARDIZED INCIDENCE RATIOS FOR
CANCERS IN CENSUS TRACT 137.21 & 137.22, 1981--1990

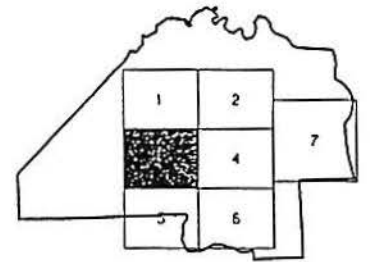
Primary site of cancer	Obs	SIR	95% CI of SIR
All Sites	155	84	71 - 98
Buccal Cavity & Pharynx			
Lip	0	0	0 - 368
Tongue	1	66	0 - 259
Salivary Glands	0	0	0 - 206
Floor of Mouth	0	0	0 - 137
Gum & Other Mouth	0	0	0 - 94
Nasopharynx	1	293	0 - 1148
Tonsil	1	116	0 - 456
Oropharynx	0	0	0 - 457
Hypopharynx	0	0	0 - 179
Other Buccal Cavity & Pharynx	0	0	0 - 263
Digestive System			
Esophagus	1	56	0 - 220
Stomach	4	175	46 - 389
Small Intestine	0	0	0 - 339
Colon Excluding Rectum			
Cecum	1	47	0 - 186
Appendix	0	0	0 - 430
Ascending Colon	1	50	0 - 198
Hepatic Flexure	1	217	0 - 851
Transverse Colon	0	0	0 - 86
Splenic Flexure	1	233	0 - 913
Descending Colon	2	161	15 - 460
Sigmoid Colon	2	41	4 - 117
Large Intestine, NOS	2	81	8 - 232
Rectum & Rectosigmoid			
Rectosigmoid Junction	0	0	0 - 56
Rectum	7	174	69 - 328
Anus, Anal Canal & Anorectum	0	0	0 - 245
Liver	1	114	0 - 446
Intrahepatic Bile Duct	0	0	0 - 1503
Gallbladder	0	0	0 - 379
Other Biliary	1	295	0 - 1158
Pancreas	1	31	0 - 121
Retroperitoneum	1	685	0 - 2684
Peritoneum, Omentum & Mesentery	0	0	0 - 1307
Other Digestive Organs	0	0	0 - 1236
Respiratory System			
Nasal Cavity, Ear & Sinuses	1	201	0 - 787
Larynx	2	69	6 - 198
Lung & Bronchus	39	110	78 - 148
Pleura	0	0	0 - 426
Trachea, Mediastinum & Other Respiratory Organs	0	0	0 - 479
Bones & Joints	0	0	0 - 143
Soft Tissue (Including Heart)	0	0	0 - 77
Skin (Excluding Basal & Squamous)			
Melanomas-Skin	4	85	22 - 189
Other Non-Epithelial Skin	0	0	0 - 130
Breast	26	98	64 - 139

Census Tracts

Duval County

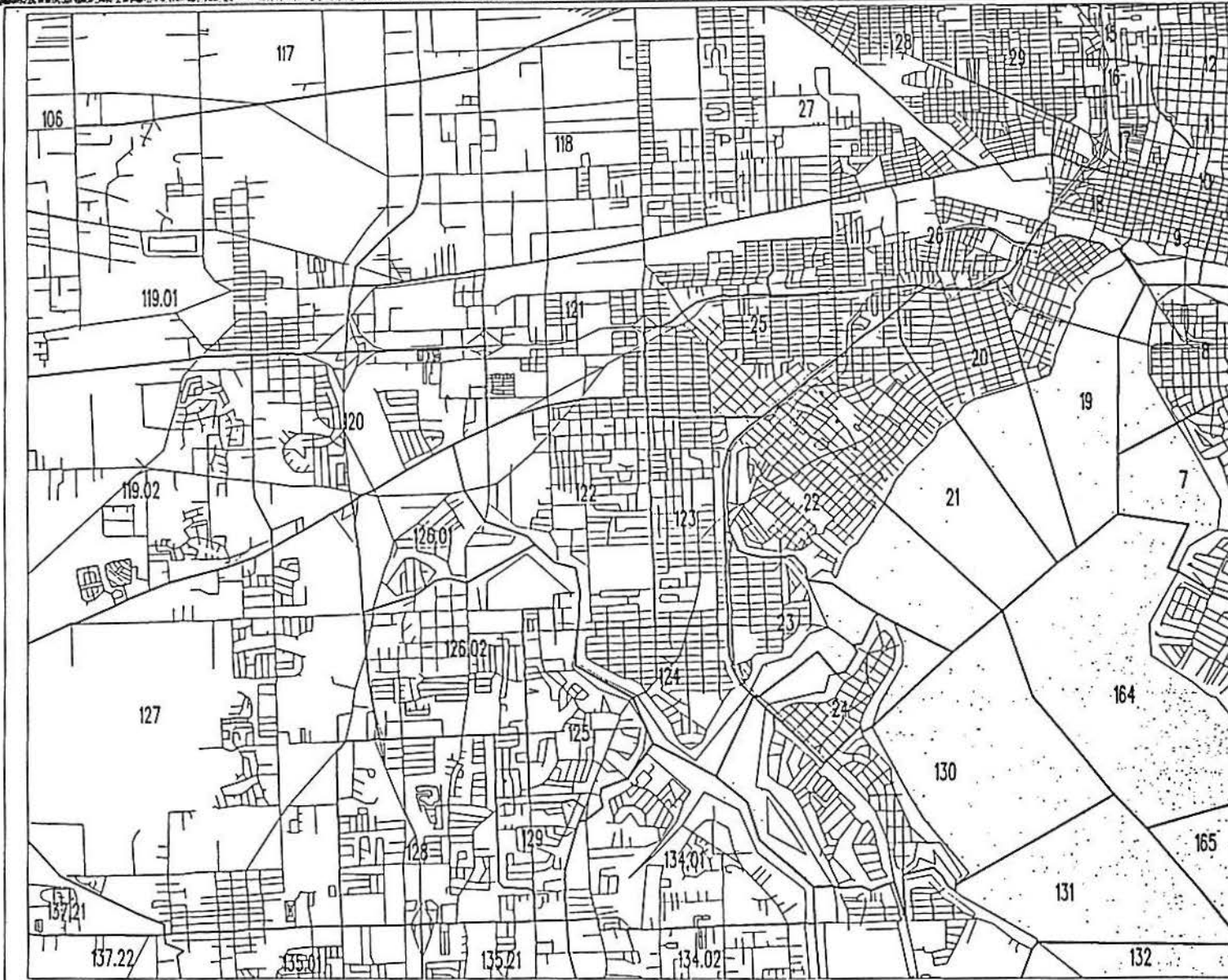
Inset 3

-  Water Features
-  Tract Boundary
-  Road Features
-  123.01 Tract Number
-  Vessel Tract







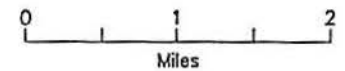
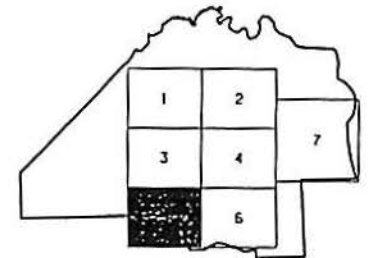
The Florida Legislature

Source: U.S. Census Bureau's TIGER/Line Files.
 Albers Equal-Area Projection
 July, 1991



Census Tracts Duval County Inset 5

-  Water Features
-  Tract Boundary
-  Road Features
- 123.01 Tract Number
-  Vessel Tract



The Florida Legislature

Source: U.S. Census Bureau's TIGER/Line Files.
Albers Equal-Area Projection
July, 1991

