



STATE OF FLORIDA  
DEPARTMENT OF HEALTH AND REHABILITATIVE SERVICES

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Date: August 15, 1995

To: Carolyn E. Voyles  
Environmental Toxicology Section

From: Ningyi Huang *NH*  
Environmental Epidemiology

Subject: Cancer incidence around Wingate Road Landfill

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In response to a request from your office, we examined the incidence rates and standardized incidence ratios (SIRs) of selected types of cancers in residents around Wingate Road Site. I have enclosed Appendix I which explains the background information on these analyses. Appendices II to V display the SIRs of four race-gender groups of selected types of cancers. Appendices VI to IX show age specific incidence rates of selected cancer types. Although several SIRs of cancers are suspiciously high in the area, we can not link these high ratios to the site at this moment since exposure information is not available in our data. Further studies are necessary to distinguish the relationship between hazard exposure and cancer incidence in this area.

Enclosures

cc: Raul Quimbo, HSEE  
Sharon Heber, HSEE

## Appendix I

### Background information on the analysis of Wingate Road Landfill Site cancer cluster

1) The cancer information is from FCDS commercial file from 1981 to 1990.

2) Study group is cases from census tract 409, 410, 411, 412, 413, 414, 503.04 and 508 between 1981 and 1990.

3) Reference group is all cases in the state with census tract code between 1981 and 1990.

4) The population information is from census report for census years 1980 and 1990.

Because detailed race and gender information are not available for some census tracts in 1980's census, we assumed that the age distribution of these race-gender groups is the same as the age distribution of the gender group in that census tract.

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 by two [average annual population=(1980's populatio+1990's population)/2].

5) The Standardized Incidence Ratio (SIR) is used in this analysis. 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 site-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).

## Appendix II

WHITE MALE STANDARDIZED INCIDENCE RATIOS FOR  
 CANCERS IN EIGHT CENSUS TRACTS AROUND WINGATE ROAD SITE, 1981--1990  
 (Reference group is Florida State white male)

Primary site of cancer	Obs	SIR	95% CI of SIR
All Sites	328	160	143 - 177
Salivary Glands	4	612	159 - 1360 *
Nasopharynx	1	336	0 - 1319
Tonsil	2	287	27 - 822
Oropharynx	0	0	0 - 419
Hypopharynx	1	124	0 - 487
Other Buccal Cavity & Pharynx	1	249	0 - 975
Digestive System			
Esophagus	6	248	89 - 487
Stomach	9	190	86 - 335
Colon Excluding Rectum			
Cecum	4	99	26 - 221
Appendix	0	0	0 - 788
Ascending Colon	7	191	76 - 359
Hepatic Flexure	1	108	0 - 423
Transverse Colon	4	205	53 - 455
Splenic Flexure	2	227	21 - 649
Descending Colon	6	296	107 - 580 *
Sigmoid Colon	9	105	48 - 185
Large Intestine, NOS	6	228	82 - 447
Liver	3	283	53 - 693
Intrahepatic Bile Duct	0	0	0 - 492
Gallbladder	1	279	0 - 1094
Other Biliary	0	0	0 - 158
Pancreas	10	224	107 - 385 *
Respiratory System			
Nasal Cavity, Ear & Sinuses	0	0	0 - 211
Larynx	14	296	161 - 472 *
Lung & Bronchus	62	153	117 - 193 *
Pleura	0	0	0 - 156
Trachea, Mediastinum & Other Respiratory Organs	0	0	0 - 527
Soft Tissue (including Heart)	0	0	0 - 79
Prostate	71	151	118 - 188 *
Urinary System			
Bladder	25	141	91 - 201
Kidney & Renal Pelvis	6	118	43 - 232
Eye & Orbit	4	1023	266 - 2271 *
Thyroid	1	152	0 - 598
Lymphomas			
HodgKins Disease			
Nodal	0	0	0 - 113
Extranodal	0	0	0 - 4196
Non-HodgKins Lymphoma			
Nodal	9	215	97 - 378
Extranodal	0	0	0 - 59
Multiple Myeloma	4	205	53 - 455
Monocytic			
Acute Monocytic	0	0	0 - 1855
Chronic Monocytic	0	0	0 - 10537
Other Monocytic	0	0	0 - 6042

\* The analyses were based on FCDS Commer8190.dat data file.

\*\* Obs: Observed cases.

\*\*\* SIR: Standardized Incidence Rate.

\*\*\*\* CI: Confidence Interval.

## Appendix III

WHITE FEMALE STANDARDIZED INCIDENCE RATIOS FOR  
 CANCERS IN EIGHT CENSUS TRACTS AROUND WINGATE ROAD SITE, 1981--1990  
 (Reference group is Florida State white female)

Primary site of cancer	Obs	SIR	95% CI of SIR
All Sites	320	156	139 - 174
Salivary Glands	1	242	0 - 950
Nasopharynx	0	0	0 - 499
Tonsil	0	0	0 - 232
Oropharynx	0	0	0 - 908
Hypopharynx	0	0	0 - 278
Other Buccal Cavity & Pharynx	0	0	0 - 464
Digestive System			
Esophagus	1	86	0 - 338
Stomach	6	192	69 - 376
Colon Excluding Rectum			
Cecum	9	175	80 - 309
Appendix	0	0	0 - 724
Ascending Colon	9	213	97 - 375
Hepatic Flexure	3	293	55 - 718
Transverse Colon	5	197	62 - 407
Splenic Flexure	1	122	0 - 478
Descending Colon	3	160	30 - 391
Sigmoid Colon	10	125	60 - 214
Large Intestine, NOS	6	238	86 - 467
Liver	1	154	0 - 604
Intrahepatic Bile Duct	0	0	0 - 582
Gallbladder	0	0	0 - 116
Other Biliary	1	154	0 - 605
Pancreas	11	222	110 - 373 *
Respiratory System			
Nasal Cavity, Ear & Sinuses	0	0	0 - 291
Larynx	1	86	0 - 337
Lung & Bronchus	35	138	96 - 187
Pleura	0	0	0 - 648
Trachea, Mediastinum & Other Respiratory Organs	0	0	0 - 1065
Soft Tissue (including Heart)	1	109	0 - 428
Breast	92	163	131 - 198 *
Urinary System			
Bladder	12	195	100 - 320 *
Kidney & Renal Pelvis	9	277	126 - 487 *
Eye & Orbit	0	0	0 - 290
Thyroid	1	65	0 - 254
Lymphomas			
HodgKins Disease			
Nodal	1	140	0 - 548
Extranodal	0	0	0 - 2185
Non-HodgKins Lymphoma			
Nodal	7	165	65 - 310
Extranodal	1	57	0 - 223
Multiple Myeloma	5	262	83 - 542
Monocytic			
Acute Monocytic	0	0	0 - 2169
Chronic Monocytic	0	0	0 - 18824
Other Monocytic	0	0	0 - 18950

\* The analyses were based on FCDS Commer8190.dat data file.

\*\* Obs: Observed cases.

\*\*\* SIR: Standardized Incidence Rate.

\*\*\*\* CI: Confidence Interval.

## Appendix IV

NONWHITE MALE STANDARDIZED INCIDENCE RATIOS FOR  
 CANCERS IN EIGHT CENSUS TRACTS AROUND WINGATE ROAD SITE, 1981--1990  
 (Reference group is Florida State nonwhite male)

Primary site of cancer	Obs	SIR	95% CI of SIR
All Sites	435	112	102 -- 123
Salivary Glands	0	0	0 -- 83
Nasopharynx	1	61	0 -- 241
Tonsil	6	169	61 -- 332
Oropharynx	1	84	0 -- 330
Hypopharynx	6	152	55 -- 298
Other Buccal Cavity & Pharynx	0	0	0 -- 60
Digestive System			
Esophagus	17	107	62 -- 164
Stomach	25	164	106 -- 235 *
Colon Excluding Rectum			
Cecum	4	97	25 -- 215
Appendix	0	0	0 -- 387
Ascending Colon	3	85	16 -- 207
Hepatic Flexure	2	164	15 -- 470
Transverse Colon	2	76	7 -- 217
Splenic Flexure	0	0	0 -- 58
Descending Colon	2	76	7 -- 219
Sigmoid Colon	10	131	62 -- 224
Large Intestine, NOS	0	0	0 -- 26
Liver	3	64	12 -- 156
Intrahepatic Bile Duct	0	0	0 -- 288
Gallbladder	0	0	0 -- 184
Other Biliary	1	130	0 -- 509
Pancreas	12	120	62 -- 197
Respiratory System			
Nasal Cavity, Ear & Sinuses	0	0	0 -- 71
Larynx	18	155	92 -- 235
Lung & Bronchus	96	97	79 -- 118
Pleura	1	253	0 -- 994
Trachea, Mediastinum & Other Respiratory Organs	0	0	0 -- 161
Soft Tissue (including Heart)	3	56	11 -- 137
Prostate	107	132	108 -- 158
Urinary System			
Bladder	8	84	36 -- 152
Kidney & Renal Pelvis	15	188	105 -- 295 *
Eye & Orbit	2	334	31 -- 957
Thyroid	1	89	0 -- 348
Lymphomas			
HodgKins Disease			
Nodal	0	0	0 -- 36
Extranodal	0	0	0 -- 1376
Non-HodgKins Lymphoma			
Nodal	8	130	56 -- 236
Extranodal	3	110	21 -- 269
Multiple Myeloma	14	188	102 -- 300
Monocytic			
Acute Monocytic	1	1442	1 -- 5651
Chronic Monocytic	0	0	0 -- 4666
Other Monocytic	0	.	. -- .

\* The analyses were based on FCDS Commer8190.dat data file.

\*\* Obs: Observed cases.

\*\*\* SIR: Standardized Incidence Rate.

\*\*\*\* CI: Confidence Interval.

## Appendix V

NONWHITE FEMALE STANDARDIZED INCIDENCE RATIOS FOR  
 CANCERS IN EIGHT CENSUS TRACTS AROUND WINGATE ROAD SITE, 1981--1990  
 (Reference group is Florida State nonwhite female)

Primary site of cancer	Obs	SIR	95% CI of SIR
All Sites	437	110	100-- 121
Salivary Glands	1	121	0 -- 476
Nasopharynx	0	0	0 -- 164
Tonsil	1	74	0 -- 291
Oropharynx	1	199	0 -- 780
Hypopharynx	0	0	0 -- 126
Other Buccal Cavity & Pharynx	0	0	0 -- 178
Digestive System			
Esophagus	2	33	3 -- 95
Stomach	11	116	58 -- 195
Colon Excluding Rectum			
Cecum	3	47	9 -- 116
Appendix	0	0	0 -- 282
Ascending Colon	3	68	13 -- 166
Hepatic Flexure	0	0	0 -- 81
Transverse Colon	7	204	81 -- 383
Splenic Flexure	3	240	45 -- 588
Descending Colon	2	59	6 -- 169
Sigmoid Colon	4	39	10 -- 86
Large Intestine, NOS	3	78	15 -- 191
Liver	0	0	0 -- 45
Intrahepatic Bile Duct	0	0	0 -- 408
Gallbladder	0	0	0 -- 64
Other Biliary	2	235	22 -- 674
Pancreas	9	91	41 -- 160
Respiratory System			
Nasal Cavity, Ear & Sinuses	1	138	0 -- 542
Larynx	1	43	0 -- 167
Lung & Bronchus	26	78	51 -- 111
Pleura	0	0	0 -- 4970
Trachea, Mediastinum & Other Respiratory Organs	0	0	0 -- 1390
Soft Tissue (including Heart)	0	0	0 -- 23
Breast	125	124	103 -- 146*
Urinary System			
Bladder	4	72	19 -- 160
Kidney & Renal Pelvis	7	110	44 -- 207
Eye & Orbit	0	0	0 -- 306
Thyroid	7	171	68 -- 322
Lymphomas			
HodgKins Disease			
Nodal	5	251	79 -- 520
Extranodal	0	0	0 -- 1614
Non-HodgKins Lymphoma			
Nodal	11	204	101 -- 342*
Extranodal	1	51	0 -- 201
Multiple Myeloma	9	123	56 -- 217
Monocytic			
Acute Monocytic	0	0	0 -- 1219
Chronic Monocytic	0	.	. -- .
Other Monocytic	0	.	. -- .

\* The analyses were based on FCDS Commer8190.dat data file.

\*\* Obs: Observed cases.

\*\*\* SIR: Standardized Incidence Rate.

\*\*\*\* CI: Confidence Interval.

APPENDIX VI

AGE SPECIFIC INCIDENCE RATES OF SELECTED CANCER TYPES  
 AMONG WHITE MALE AROUND WINGATE LANDFILL SITE AND IN THE STATE OF FLORIDA

AGE GROUP	CANCER--ALL SITES		PANCREAS CANCER		PROSTATE CANCER		KIDNEY CANCER		EYE CANCER	
	WINGATE	STATE	WINGATE	STATE	WINGATE	STATE	WINGATE	STATE	WINGATE	STATE
0--4	0.00	19.23	0.00	0.00	0.00	0.07	0.00	1.69	0.00	1.22
5--9	0.00	10.92	0.00	0.00	0.00	0.04	0.00	0.39	0.00	0.25
10--14	0.00	10.02	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00
15--19	0.00	16.29	0.00	0.00	0.00	0.15	0.00	0.09	0.00	0.12
20--24	0.00	24.64	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00
25--34	82.99	50.43	0.00	0.17	0.00	0.03	0.00	0.54	0.00	0.21
35--44	230.64	99.07	0.00	1.35	0.00	0.42	0.00	3.87	65.90	0.45
45--54	660.87	298.36	0.00	7.13	34.78	12.35	0.00	12.08	0.00	1.08
55--64	1290.32	816.59	103.23	17.99	129.03	108.54	0.00	25.36	0.00	1.63
65--74	2850.63	1734.93	91.22	38.62	706.96	425.95	114.03	43.50	45.61	3.03
>75	3831.78	2559.26	62.31	56.57	1059.19	743.53	31.15	51.73	0.00	3.73

APPENDIX VII

AGE SPECIFIC INCIDENCE RATES OF SELECTED CANCER TYPES  
AMONG WHITE FEMALE AROUND WINGATE LANDFILL SITE AND IN THE STATE OF FLORIDA

AGE GROUP	CANCER -- ALL SITES		PANCREAS CANCER		BREAST CANCER		KINDEY CANCER	
	WINGATE	STATE	WINGATE	STATE	WINGATE	STATE	WINGATE	STATE
0-4	0.0	15.6	0.0	0.0	0.0	0.0	0.0	2.1
5-9	162.6	7.8	0.0	0.0	0.0	0.0	0.0	0.5
10-14	83.7	9.7	0.0	0.0	0.0	0.0	0.0	0.1
15-19	0.0	17.7	0.0	0.0	0.0	0.2	0.0	0.1
20-24	39.2	56.1	0.0	0.1	0.0	1.2	0.0	0.2
25-34	285.7	130.5	0.0	0.3	129.9	17.7	0.0	0.5
35-44	606.1	222.2	0.0	0.7	213.9	80.5	0.0	1.7
45-54	812.5	424.7	0.0	4.7	250.0	167.0	31.3	5.1
55-64	915.7	729.6	0.0	12.3	333.0	230.3	0.0	11.6
65-74	2005.2	1180.8	34.9	28.9	558.0	330.1	104.6	20.2
>75	1941.6	1417.3	169.7	47.4	471.3	341.1	37.7	23.8



APPENDIX VIII

AGE SPECIFIC INCIDENCE RATES OF SELECTED CANCER TYPES  
AMONG NONWHITE MALE AROUND WINGATE LANDFILL SITE AND IN THE STATE OF FLORIDA

AGE GROUP	CANCER--ALL SITES		PANCREAS CANCER		PROSTATE CANCER		KIDNEY CANCER		EYE CANCER	
	WINGATE	STATE	WINGATE	STATE	WINGATE	STATE	WINGATE	STATE	WINGATE	STATE
0--4	15.41	13.06	0.00	0.00	0.00	0.00	5.14	1.65	10.27	1.34
5--9	5.09	8.40	0.00	0.00	0.00	0.00	0.00	0.60	0.00	0.24
10--14	4.65	6.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15--19	8.77	12.82	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.13
20--24	31.62	17.08	0.00	0.13	0.00	0.00	0.00	0.63	0.00	0.00
25--34	31.69	34.56	0.00	0.14	0.00	0.07	0.00	0.57	0.00	0.00
35--44	73.90	99.58	0.00	2.56	0.00	0.72	0.00	2.56	0.00	0.21
45--54	457.60	367.22	10.77	9.55	32.30	18.49	32.30	10.17	0.00	0.00
55--64	1011.05	903.77	33.98	25.52	195.41	165.03	42.48	16.52	0.00	1.25
65--74	1874.04	1777.69	61.44	47.11	691.24	558.31	30.72	29.72	0.00	0.63
>75	2674.20	2060.12	75.33	56.99	1242.94	812.75	37.66	30.73	0.00	0.99

APPENDIX IX

AGE SPECIFIC INCIDENCE RATES OF SELECTED CANCER TYPES  
 AMONG NONWHITE FEMALE AROUND WINGATE LANDFILL SITE AND IN THE STATE OF FLORIDA

AGE GROUP	CANCER -- ALL SITES		PANCREAS CANCER		BREAST CANCER		KIDNEY CANCER	
	WINGATE	STATE	WINGATE	STATE	WINGATE	STATE	WINGATE	STATE
0-4	26.07	13.32	0.00	0.00	0.00	0.11	5.21	2.13
5-9	0.00	6.08	0.00	0.00	0.00	0.00	0.00	0.25
10-14	4.78	8.67	0.00	0.00	0.00	0.13	0.00	0.39
15-19	21.81	12.20	0.00	0.00	0.00	0.25	0.00	0.13
20-24	26.47	33.34	0.00	0.00	0.00	1.54	0.00	0.12
25-34	105.49	98.60	0.00	0.19	26.37	18.18	0.00	0.88
35-44	217.96	192.91	0.00	1.60	91.40	63.89	7.03	2.58
45-54	427.74	366.20	4.50	5.84	171.09	122.46	0.00	4.93
55-64	730.92	642.33	7.17	18.81	179.15	159.39	14.33	10.56
65-74	852.85	960.18	48.05	38.30	240.24	217.94	12.01	17.64
>75	1341.46	1038.14	73.17	55.98	170.73	213.66	24.39	17.11