

Health Consultation

REVIEW OF LOUISIANA TUMOR REGISTRY DATA
FROM 1999-2000
FOR CAMERON PARISH, LOUISIANA

APRIL 29, 2005

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

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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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Prepared by:

Louisiana Department of Health and Hospitals
Office of Public Health
Section of Environmental Epidemiology and Toxicology
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INTRODUCTION

At the request of a member of the Hackberry community, a small area in Cameron parish, who had concerns about potentially elevated rates of cancer, the Louisiana Department of Health and Hospitals, Office of Public Health, Section of Environmental Epidemiology and Toxicology (LDHH/OPH/SEET) reviewed available cancer incidence data (from the Louisiana Tumor Registry (LTR)), pertaining to residents living in Cameron Parish, Louisiana. Cancer incidence data was not restricted to Hackberry, Louisiana due to the small population and therefore, providing more stability in analyzing the cancer incidence rates. The cancer incidence data examined in this health consultation include data recorded by the LTR during the ten-year period including of 1991-2000. Cancer incidence rates indicate how frequently a particular cancer occurs in a population living in a certain area. This health consultation serves as a screening tool to determine the presence of unusual patterns of cancer incidence. This type of review cannot be used to determine a cause-and-effect relationship between the occurrence of cancer and environmental exposure. OPH/SEET will utilize this information to help decide what further public health actions, if any, are needed, and to provide the residents of Cameron parish with a way to compare the cancer incidence in their area with the population of the state of Louisiana.

BACKGROUND AND STATEMENT OF ISSUES

Site History

The city of Hackberry is located in northwest Cameron Parish, Louisiana, which is bordered by Calcasieu Lake to its east and by Louisiana Highway 27 (LA 27) to its west. Calcasieu Parish borders Cameron Parish to the north, Vermillion Parish to the east, the Gulf of Mexico to the south, and Orange County, Texas and Jefferson County, Texas to the west (See Figure 1). There is no significant industrial activity in Cameron Parish.

In April 2003, at a Community Meeting in Lake Charles, Louisiana, sponsored by the Agency for Toxic Substance and Disease Registry (ATSDR), residents of the Hackberry community brought to the attention of LDHH/OPH/SEET staff, community concerns regarding proposed elevated cancer in their town. Currently there are no known environmental hazards in the community, and the cancers noted by Hackberry residents varied among cases of breast, colon and lung cancer. There was also a non-cancer related health concern about an elevation of systemic lupus erythematosus (SLE or lupus) cases.

METHODS

Data Review

Census Data

For this review, OPH/SEET evaluated cancer incidence data for the entire Cameron Parish instead of just the city of Hackberry (population 1,669) in order to maintain confidentiality and

statistical stability. Cancer incidence was chosen for this review since cancer mortality (death) rates are affected by how advanced the cancer was at the time of diagnoses, access to health care, and other factors not related to any possible exposure. In order to compare the cancer incidence data in Cameron Parish with state cancer incidence data, specific population data is necessary. Population data, categorized by age, race, and cancer incidence are available at the parish level.

The total population for Cameron Parish is 9,991 persons, according to the 2000 census data (3). Table A in the appendix summarizes the 2000 Census information for the United States (U.S.), Louisiana, and Cameron Parish. A review of the census data suggests that Cameron Parish has a higher percentage of whites (93.6%) and a lower percentage of African-Americans (3.9%) than the state (63.9%, 32.5% respectively) and the U.S. (75.1%, 12.3% respectively) as a whole. Cameron Parish has a slightly higher median age (35 years) than that of the state (34 years). Because of the small number of African Americans represented in Cameron Parish, a cancer incidence review for this population demographic will not be reviewed or reported. The per capita income in Cameron Parish is lower than the per capita income of Louisiana as well as the United States.

Louisiana Tumor Registry (LTR) Data

Cancer incidence data were obtained for the ten-year period of 1991-2000 from the LTR, which is run by the Louisiana State University Health Sciences Center. These are the most recent cancer data that are available at the Parish levels. Cancer incidence data before 1988 were not collected for the northern section of Louisiana. Because the Hackberry community has expressed concern about cancer in general, and because a source of environmental contamination has not been identified, OPH/SEET reviewed all of the types of cancers that were observed within Cameron Parish.

In order to evaluate whether Cameron Parish had an elevated rate of cancer incidence, an appropriate comparison population was chosen. In general, a comparison population should be large enough so that its cancer rates are stable (that is, the rates do not fluctuate greatly). Furthermore, a comparison population should be small enough so that it is similar to the population being studied in factors, which affect disease rates over time, such as socioeconomic factors and racial distribution. For this evaluation, the state of Louisiana was chosen as the comparison population and not the United States because Louisiana is more comparable to the Hackberry community (i.e. dietary factors, lifestyle, etc.).

The period of time selected for evaluation of cancer incidence data was 1991-2000, which was the most recent data available at the time of this analysis. Cancer incidence was chosen for this review. An incident case was defined as an individual residing within Cameron Parish, who was diagnosed with a new primary malignant cancer of the specific sites during the evaluation period. The variables analyzed included: address at time of diagnosis, parish of residence, primary cancer site, histology type, date of diagnosis, age at diagnosis, date of birth, race, and sex. Information on other risk factors such as occupational exposures or personal lifestyle habits is not available in the abstracted medical data used in this review.

Because cancer can affect people differently and at various rates, cancer incidence was calculated accounting for age group, sex, and race separately. For example, as we get older, our chance of getting cancer increases; therefore an older population would be expected to have a higher rate of cancer incidence than a younger population. In making comparisons, the number of cancers for a certain age group is compared to the number of cancers expected for that certain age group.

Data Analysis

Once the rates are calculated for specific age groups, and sexes, the standard incidence ratio (SIR) is calculated. The SIR estimates the occurrence of cancer in a study population (in this case, Cameron Parish) relative to what might be expected if the Parish had the same cancer rate, as the comparison population (Louisiana). Specifically, a SIR is the ratio of the actual number of cases observed to the expected number of cases.

The SIR tells us how much higher or lower Cameron Parish's cancer incidence rate compared to the cancer incidence rate for Louisiana. If the observed number of cases equals the expected number of cases, the SIR will equal one. If more cases occurred than are expected, then the SIR will be greater than one. If fewer cases were diagnosed than expected, then the SIR will be less than one. For example, if 10 cases are observed in the study population, but 5 cases were expected, then the $SIR = 10/5 = 2$ and the area has 2 times the cancer rate than expected, but if 20 cases were expected, then the $SIR = 10/20 = 0.5$, and the area has half the rate expected.

SIRs were calculated for each type of cancer when five or more cases were observed in the Parish in the ten-year period. Calculating SIRs with fewer than five cases may contribute to statistical instability. For Cameron Parish and Louisiana, the following types of cancers were evaluated: prostate, lung, colon, and breast.

Ninety-five percent confidence intervals (95% CIs) were calculated to assess statistical significance. A confidence interval is a range of possible values for the SIR that is considered consistent with the normal variation in disease over time in a geographic area. The confidence interval consists of two numbers -- the lower bound and the upper bound of the range of normal SIR values. If both the lower and upper bound numbers of the confidence interval are less than 1, then the conclusion of the statistical test is that a disease is occurring less frequently in the specific parish than it is in the U.S. population. This is called a "statistically significant decrease" or a "statistically significant deficit". If the lower bound number is less than 1 and the upper bound number is greater than 1, then the conclusion of the statistical test is that a disease is occurring in the specific parish at the same frequency as in the U.S. population (or cannot be distinguished from normal fluctuations using this statistical technique). This is called "not statistically significantly different". Lastly, if both of the numbers in the confidence interval are higher than 1, then the conclusion of the statistical test is that a disease is occurring more frequently in the parish than it is in the rest of the country. This is called a "statistically significant increase," or a "statistically significant excess."

Table 1. Cancer Incidence for Cameron Parish Compared with Louisiana, 1991 – 2000.

CANCER TYPE	OBSERVED CASES	EXPECTED CASES	SIR	CONFIDENCE INTERVALS (CI)*
All Cancers, White Females	215	164	1.662	1.166 – 1.459
All Cancers, White Males	233	215	1.081	0.968 – 1.201
Breast Cancer, White Females	71	37	1.897	1.546 – 2.284
Colon Cancer, White Females	17	29	0.584	0.375 – 0.84
Colon Cancer, White Males	14	41	0.338	0.206 – 0.503
Lung Cancer, White Females	5	24	0.212	0.085 – 0.396
Lung Cancer, White Males	20	44	0.457	0.256 – 0.657
Prostate Cancer, White Males	54	32	1.664	1.313 – 2.056

*at p=0.05 level

RESULTS

As indicated in Table 1, all cancers combined in males, colon cancer in males and females, and lung cancer in males and females was statistically less than expected. Breast cancer in females and prostate cancer in males was statistically elevated or higher than expected. Breast cancer risk increases with age and every woman is at risk until after age 30 or never becoming pregnant, early menstruation (before age 12), late menopause (after age 55), current use or use in the last ten years of oral contraceptives, and daily consumption of alcohol. All cancers overall in females was also statistically elevated. Risk factors for breast cancer include a family history, atypical hyperplasia, delaying pregnancy.

Prostate cancer is the most common cancer among American men, excluding skin cancers risk. According to the American Cancer Society, one out of every five men will develop prostate cancer at some point during his life. Prostate cancer is the second leading cause of cancer death in men after lung cancer, accounting for 11 percent of male cancer-related deaths.

In Cameron Parish, cancer incidence for men, all races from 1991 -2000, revealed 26% had prostate cancer, 8% had colon cancer, 25% had lung cancer, 5% had bladder cancer, and 36% had other types of cancers. For women during this same time period, all races showed 34% had breast cancer, 15% had lung cancer, 11% had colon cancer, 5% had ovarian cancer, and 35% had other cancer types. There are elevated rates of breast cancer in white females and elevated rates of prostate cancer in white males.

Currently, environmental data is not available indicating if contamination is present in the area.

Therefore, OPH/SEET cannot evaluate if exposure to contaminants associated with past operations of refineries or factories are occurring. Based on EPA's Envirofacts Data Warehouse Report, there was no evidence of any known contamination in water, soil, sediment or air (4).

In November 2003, LDHH/OPH Region V staff, along with LDHH/OPH/SEET staff, and staff from the LTR joined together to present specific cancer information for Cameron Parish to the residents of Hackberry, Louisiana during a community meeting. The residents suspected that they had elevated rates of lung, breast, and colon cancer but could not provide OPH with any environmental factors.

CHILDREN'S HEALTH

SEET and ATSDR recognize that infants and children may be uniquely vulnerable to the effects of toxic chemicals; and that any such vulnerabilities demand special attention. Unique childhood vulnerabilities result, at least in part, from the fact that at birth many organs and body systems, including the lungs and the immune, endocrine, reproductive, and nervous systems, have not achieved structural or functional maturity; these organ systems continue to develop throughout childhood and adolescence. Children may also differ from adults in absorption, metabolism, storage, and excretion of toxicants, any of which could result in higher biologically effective doses to target organs. Children's exposures to toxicants may be more significant than adult's because children consume more food and liquids in proportion to their body weight than do adults. Due to cancer latency periods and the elevated cancer types found in this analysis, it is assumed children will not be affected by the cancers reviewed.

CONCLUSIONS

1. For Cameron Parish, all cancers in white females, breast cancer in white females, and prostate cancers in white males were statistically higher than what was expected as compared to Louisiana rates. Breast cancer and prostate cancer are relatively common types of cancer in the United States. This statistical elevation in the number of cancers is slight, and given the size of the population, this elevation could be related to chance occurrence.
2. Currently, environmental data are not available indicating if contamination is present in the area.

RECOMMENDATIONS

1. The information in the health consultation should be presented to residents of Cameron Parish and any other interested parties. General health education fact sheets on cancer will be available.

2. LDHH/OPH/SEET and ATSDR should review environmental data and any additional health information for the Parish, as it becomes available, to address public health concerns.

PUBLIC HEALTH ACTION PLAN

OPH/SEET attended a meeting in Calcasieu Parish that was sponsored by ATSDR. During this meeting, a concerned citizen asked if her community could be reviewed for elevated cancer rates. This later led to the community petitioning ATSDR to conduct a cancer incidence analysis for Cameron Parish, Louisiana. OPH/SEET performed this analysis, with the assistance of the LTR, and in November 2003 presented the information contained in this report to the community of Hackberry, Louisiana.

At the present time, there are no future activities planned for this community.

REFERENCES

1. U.S. Environmental Protection Agency, Texaco, Inc. Site Log, Dallas, Texas, 1983.
2. U.S. Census Bureau, A1990 Census of Population and Housing@, Summary Tape File 1, Technical Documentation.
3. U.S. Census Bureau, A1990 Census of Population and Housing@, Summary Tape File 1 and Summary Tape File 3.
4. www.epa.gov

PREPARERS OF THE HEALTH CONSULTATION

Louisiana Department of Health and Hospitals
Office of Public Health
Section of Environmental Epidemiology and Toxicology
Telephone Number: (504) 568-8537 or toll-free (888) 293-7020

Zoe= Wilson, MPH
Environmental Epidemiologist

Calondra D. Tibbs, MPH
Environmental Health Scientist Supervisor

ATSDR Senior Regional Representative
George Pettigrew
Regional Operations, Regions VI

ATSDR Technical Project Officer
Alan Yarborough
Environmental Health Scientist

APPENDIX

Table A. 2000 Census Data Comparing United States (U.S.), Louisiana, and Cameron Parish

	U.S.	LOUISIANA	CAMERON PARISH
Population	Population (%)	Population (%)	Population (%)
All Persons	281,421,906 (100)	4,468,976 (100)	9,991 (100)
Black	34,614,898 (12.3)	1,451,944 (32.5)	388 (3.9)
White	211,347,851 (75.1)	2,856,161 (63.9)	9,357 (93.6)
Other	35,459,160 (12.6)	160,871 (3.6)	246 (2.5)
Gender	Population (%)	Population (%)	Population (%)
Male	138,178,156 (49.1)	2,162,903 (48.4)	5,015 (50.2)
Female	143,243,750 (50.9)	2,306,073 (51.6)	4,976 (49.8)
Age Group	Population (%)	Population (%)	Population (%)
<5 Years	19,175,798 (6.8)	317,392 (7.1)	667 (6.7)
5-14 Years	41,077,577 (14.6)	684,692 (15.3)	1,628 (16.3)
15-24 Years	39,179,891 (13.9)	691,516 (15.5)	1,484 (14.9)
25-44 Years	85,040,251 (30.2)	1,293,126 (28.9)	2,962 (29.6)
45-64 Years	61,952,636 (22)	965,319 (21.6)	2,192 (21.9)
>64 Years	34,991,753 (12.4)	516,929 (11.6)	1,058 (10.6)
Median Age	35.3	34	35
Number of Families	71,787,347	1,156,438	2,703
Number of Households	105,480,101	1,656,053	3,592
Income			
Median Family	\$50,046	\$39,774	\$39,663
Median Household	\$41,994	\$32,566	\$34,232
Per Capita	\$21,587	\$16,912	\$15,348
Median Year Housing Built	1971	1972	1972



Date April 29, 2005

From Division of Health Assessment and Consultation, ATSDR

Subject Health Consultation
Cameron Parish – Tumor Registry

To George Pettigrew
Senior Regional Representative, ATSDR, Region VI

Enclosed please find four copies of the April 29, 2005, Health Consultation on the following site prepared by the Louisiana Department of Health and Hospitals under Cooperative Agreement with the Agency for Toxic Substances and Disease Registry.

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The Division of Health Assessment and Consultation requires copies of all letters used to transmit this document to the agencies, departments, or individuals on your distribution list. The copy letters will be placed into the administrative record for the site and serve as the official record of distribution for this health consultation.

Please address correspondence to the Division of Health Assessment and Consultation, Agency for Toxic Substances and Disease Registry, ATTN: Cameron Parish – Tumor Registry Site, 1600 Clifton Road, NE (E60), Atlanta, Georgia 30333.

Aaron Borrelli
Manager, Records Center

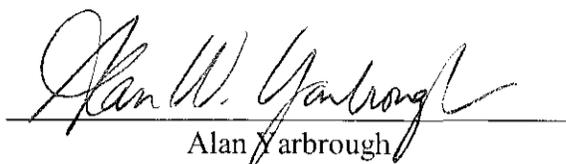
Enclosures

cc: B. Rogers R. Gillig L. Daniel W. Cibulas, Jr.
D. Murphy

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Certification

This Review of Louisiana Tumor Registry Data from 1991-200 for Cameron Parish, Louisiana health consultation was prepared by the Louisiana Department of Health and Hospitals under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures at the time the health consultation was begun.



Alan Yarbrough

Technical Project Officer, Cooperative Agreement Team, Superfund and Program Assessment Branch (SPAB), Division of Health Assessment and Consultation (DHAC)

The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health consultation and concurs with the findings.



Roberta Erlwein

Cooperative Agreement Team Leader, SPAB, DHAC, ATSDR

Hackberry, LA City Limits

