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June 16, 1983

TO: STATE RESOURCE
FROM: DEPLOYMENT T/F
AIHC
DATE: 6/27/83

TO: PUBLIC RELATIONS CANCER SUBCOMMITTEE
FROM: Richard A. Kleiner, Public Relations Coordinator

Enclosed is the final draft of the Louisiana Chemical Association cancer paper. This draft includes revisions based on suggestions supplied by Dr. Pelayo Correa, LSU Medical Center. As you will note the revisions dramatically changed whole sections of the document, but after reviewing it with Dr. Ter Haar we believe it makes a stronger statement than before. If you have any comments please contact me as soon as you can.

RAK:cj

cc: Dr. Bill Senn, Jr.
Mr. Roland Carson
Mr. Don Park
Dr. Pelayo Correa
Ms. Margaret Melady
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Cancer is the term given to a group of related diseases characterized by the unregulated growth and spread of abnormal cells. In 1983, about 14,800 Louisianians will learn they have cancer, and 7,600 will die of it, according to the American Cancer Society.

Air and water pollution and its assumed role in cancer causation has been the subject of more media attention, public concern and speculation than any other suspected factor. So much attention has focused on pollution in recent years that it is now a popular belief that pollution is causing an "epidemic" of cancer in Louisiana.

Cancer is a complex disease, and scientists have no simple answers to its cause or cure. But scientists do have a better understanding of the factors that increase the risk of cancer.

What are the major cancer risks? What are the facts on pollution? Is there a cancer epidemic in Louisiana?

In this booklet, recognized experts will examine these risks, including pollution. What you read may surprise you, but more importantly, you will learn that you have the power to minimize many cancer risks.

What is causing the cancer we have?

Most of the major factors that place you at high risk of getting cancer are "lifestyle" factors. These lifestyle factors include tobacco use, diet, alcohol use, and reproductive and sexual behavior. Two renowned British medical researchers, Sir Richard Doll and Richard Peto, summarized the avoidable causes of cancer in a comprehensive report commissioned by

the U. S. Office of Technology Assessment in 1981.¹ Their best estimates of cancer risk are shown in the following graph. As illustrated, tobacco use accounts for 30 percent of all cancer deaths, diet - 35 percent, reproductive and sexual behavior - seven percent, and alcohol use - three percent. These avoidable risks, the lifestyle factors, account for an overwhelming 75 percent of all cancer deaths. Fortunately, it is within your power to control these factors and reduce your risk. In contrast, Doll and Peto estimate pollution to cause two percent of all cancer deaths.

ILLUSTRATION #1

Is there an "epidemic" of cancer in Louisiana?

It is a popular belief that Louisiana has an epidemic of cancer. Scientists who study cancer describe an epidemic as "an increase in the frequency of a disease over time." One type of cancer in Louisiana has reached "epidemic" proportions in Louisiana -- lung cancer. Louisiana has some of the highest lung cancer rates in the nation, however, these high rates are concentrated primarily in the southern part of the state and are high only in men.

The lung cancer epidemic in Louisiana is clearly due to one primary cause -- cigarette smoking. In a study recently presented to the International Lung Cancer Update Conference in New Orleans, Dr. Pelayo Correa, LSU Medical Center, has reported that 90 percent of the state's lung cancer is caused by smoking. "These results leave no doubt that smoking is the undisputed, overwhelming major cause of lung cancer in Louisiana," states his report.²

Epidemic lung cancer rates in Louisiana reflect national trends. In Louisiana, as well as the U.S., lung cancer is skyrocketing. Oral cancer death rates are also high in Louisiana. Studies have found tobacco and alcohol use linked to oral cancers, but it is not known whether these factors apply to Louisiana.³ Other forms of cancer in Louisiana are not high and exhibit no major deviations from national trends. With the exception of lung cancer, U.S. death rates for most major types of cancer have remained relatively constant, and in the case of stomach and uterine cancer, are showing substantial declines.

ILLUSTRATION #2

The following illustration compares Louisiana and U.S. cancer mortality (death) rates by selected sites during the period 1968-1977.⁴ As illustrated, Louisiana's death rates for these sites show no major differences from U.S. rates, with the exception of lung and oral cancer. Louisiana's significantly higher lung cancer rate pushes the state's total cancer death rate much higher than the U.S. rate. However, when lung cancer deaths are removed from the total, Louisiana's overall cancer rate shows no significant difference from the U.S. rate.

ILLUSTRATION #3

Lung cancer has shown a marked increase in Louisiana and the U.S. since the 1930s, and has generally reflected smoking patterns. As long-time smokers, men have been experiencing increased lung cancer rates for the past 50 years. The lung

cancer death rate for women has been steadily rising for the past 15 years, reflecting the more recent adoption of smoking by large numbers of women.⁵

What about environmental factors?

Growing concern about the environment during the 1970s resulted in much cancer research directed at environmental factors, particularly industrial emissions and effluents. Many assumed the term "environmental factors" to mean cancer caused by industrialization.

But that is not what Dr. John Higginson had in mind during the 1950s when he declared that environmental factors were chief causes of cancer.⁶ Dr. Higginson, the founding director of the World Health Organization's International Agency for Research on Cancer, was considering the total environment when he made that statement--everything we eat, drink, smoke--essentially our entire way of life.

Today, after reviewing additional data, Dr. Higginson believes that pollution plays a relatively small role as a contributor to cancer.⁷ Similar conclusions have been reached by the American Thoracic Society, the U.S. Surgeon General and the American Medical Association Council on Scientific Affairs.⁸

Dr. Higginson has stated, "I mean, people would love to be able to prove that cancer is due to pollution. It would be so easy to be able to say, 'let us regulate everything to zero exposure and we have no more cancer.' The concept is so beautiful that it would overwhelm a mass of facts to the contrary."⁹

Does South Louisiana have a "cancer belt" due to petrochemical pollution?

Many unscientific conclusions have been voiced about pollution in Louisiana. These unsupported conclusions, attempting to show a cause and effect relationship between pollution and cancer, are usually based on misinterpretations of Louisiana cancer studies.

These misinterpretations include a popular geographic explanation, which is usually based on cancer mortality maps prepared by the National Cancer Institute.¹⁰ This assumption points to the coincidence that high lung cancer rates are located where the majority of the petrochemical industry is also located--in South Louisiana.

Not brought out in these assumptions is: (1) the mortality maps also show many of the parishes with highest cancer rates are rural and have no petrochemical plant sites. (2) As stated previously, the excessive rates in these parishes are occurring only in men. If pollution were a significant factor, it is likely that women would also be experiencing high rates.

Misinterpretation of cancer data has also led to the assumption that higher than average lung cancer rates coincide with the arrival of the petrochemical industry in Louisiana. As illustrated, Louisiana has had lung cancer rates higher than the national average since the 1930s.¹¹ The "boom years" for chemical industry growth in Louisiana were not until the 1950s and 1960s.

ILLUSTRATION #4

Popular speculation aside, there are no scientifically valid studies which demonstrate that industrial emissions are the cause of the apparently excessive cancer rates in certain Louisiana parishes. In fact, it has not been proven that the actual cancer experience in Louisiana is out of the ordinary.¹²

Do petrochemical emissions contain chemicals that cause cancer?

Some petrochemical emissions may contain substances that have been shown to cause cancer in laboratory animals under certain conditions. However, low levels of these chemicals in the air and water have not been found to be causing cancer.

Concern about petrochemical pollution has led to scientific studies examining cause and effect relationships between industrial emissions and cancer. These studies have not found any significant correlation to petrochemical pollution, however, smoking has consistently appeared as a key factor.

In April 1983, a lung cancer study was released on the Houston area, site of the nation's largest petrochemical complex. Dr. Patricia A. Buffler, University of Texas, stated, "the pollution contribution to (the cancer rate) is very small." Dr. Buffler said the study agreed with earlier research showing cigarette smoking is "by far the most important cause of lung cancer."¹³

Dr. Donald F. Austin, chief of the California Cancer Registry, studied the pollution question in California's Contra Costa County, site of another large petrochemical complex. His study was released in January 1983.

Dr. Austin concluded that cigarette smoking accounted for between 83 and 100 percent of the lung cancer cases. The report stated, "Further, there was no identified effect on lung cancer risk contributed from any measured constituent of air pollution."¹⁴

As director of the Cancer Center Institute of New Jersey, Dr. Harry Demopoulos investigated the question of petrochemical pollution in that state. New Jersey is the second largest chemical producing state (Louisiana is third) and has had a petrochemical industry since the turn of the century. After extensive analysis, Dr. Demopoulos concluded: "According to the best available data, there is no correlation between high cancer rates and the presence of heavy chemical/petroleum industry."¹⁵ This is true, he said, for New Jersey as well as for the rest of the country.

No one has been able to demonstrate a link between general water pollution and cancer. Dr. Higginson has reported that claims of cancer resulting from water pollution do not stand¹⁶ up under statistical analysis.

Age-adjusted death rates from cancer have remained nearly constant at about 140 per 100,000 population since 1935. During that same period, production of chemicals and allied products has skyrocketed to more than 100 billion pounds annually. Based on these statistics, a marked increase in cancer deaths would be expected if chemical production and industrial pollution were major risks. No such increase has been demonstrated.¹⁷

ILLUSTRATION #5

So why does South Louisiana have more lung cancer?

The best evidence to date indicates smoking habits are the primary cause of epidemic lung cancer rates in South Louisiana.

According to Dr. Correa, South Louisiana's respiratory cancer rates are double that of North Louisiana (approximately 60 deaths per 100,000 population in the South compared to 30 per 100,000 in the North). In South Louisiana a greater proportion of residents smoke, they smoke more non-filter cigarettes, and more begin to smoke before the age of 20.¹⁸

Research by Dr. Linda Pickle, National Cancer Institute, confirms these smoking patterns. Dr. Pickle found lung cancer rates to be about 30 percent higher in Acadians than in the general population.¹⁹

Other possible cancer links have been explored in Louisiana such as residence in wetlands, Acadian ancestry, occupation, air and water pollution. This research has suggested the need for further study in these areas, but as Dr. Correa notes, "In terms of the magnitude of risks...cigarette smoking overshadows all other factors..."²⁰

How important are our lifestyles in cancer causation?

The Doll-Peto report illustrates there are serious risks associated with lifestyle. According to a recent Surgeon General's report, "Cigarette smoking is the single most preventable cause of death."²¹ Experts agree that cigarettes account for at least 80 percent of all lung cancer deaths. Cancers of the mouth, throat, bladder, and to a lesser extent cancers of the pancreas and kidneys are also linked to cigarettes.

Lung cancer risk primarily depends on three factors: (1) how early in life you begin smoking, (2) how long you have smoked, (3) and how much you smoke. For example, people who begin smoking in their teens may more than double their risk of lung cancer in later years.²²

Studies have shown that non-smokers have extremely low rates of lung cancer, whether they live in urban or industrialized areas. Moreover, Doll and Peto concluded after a careful review of the evidence that the rate of lung cancer in non-smokers in the U.S. has not increased in recent decades -- a result which would not be expected if air pollution itself was a significant cause of cancer.²³

Heavy alcohol use also increases the risk of cancers of the mouth, throat, liver and lung. When alcohol use and smoking are combined, the risk of mouth and throat cancer is increased even more.

A recent National Academy of Sciences report states, "What we eat during our lifetime strongly influences the probability of developing certain kinds of cancer."²⁴ Cancers of the stomach, colon, breast and to a lesser extent cancers of the lung and prostate are linked to diet. The Academy report also included an "anti-cancer" diet which recommends reducing fat consumption by 25 percent, eating less smoked foods, consuming less alcohol, adding more fiber to your diet, and eating more vegetables.

What else can I do to combat cancer?

Learn more about the disease and its prevention. Contact your nearest American Cancer Society Unit for more information. Take a serious look at your personal habits. If you smoke, maybe its time to attend that stop-smoking clinic you have been putting off. If alcohol is a problem in your family, learn more by contacting a local Alcoholics Anonymous chapter or chemical dependency unit. Start eating right. The National Academy of Sciences has recommended an "anti-cancer" diet in their publication (# 32806) "Diet, Nutrition and Cancer." Look for it in you local library. (If they don't have it, ask them to order it from: National Academy Press, 2101 Constitution Ave., N.W., Washington, DC 20418, phone (202) 334-2000.)

Do we know enough about cancer in Louisiana?

No. Research continues, but much more is needed. The Louisiana Chemical Association is committed to the development of cancer research in Louisiana. We have advocated many measures endorsed by our state health experts, including funding for a statewide tumor registry and more funding for the state's toxic disease and cancer control section. The LCA is also an active participant in the Governor's Task Force on the Environment and Health.

Should I forget about pollution?

Certainly not. Pollution is still dirty, unattractive and may be harmful to your health in other ways. The Louisiana Chemical Association believes Louisiana can have industry, jobs and a healthy environment.

Our chemical industry is making it happen, now. LCA member companies have spent billions of dollars over the years to install and maintain the most up-to-date environmental control equipment. This technology has helped us dramatically reduce discharges to our air and water. Our goal is to insure that the environment is protected while at the same time providing you with the products you demand as a consumer. Where Louisiana's environment is concerned, we are remaining vigilant. You should too.

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(Dr. Domopoulos is now Associate Professor of Pathology at New York University Medical Center.)
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**Proportions of cancer deaths attributed to
various different factors**

Factor or class of factors	Percent of all cancer deaths	
	Best estimate	Range of acceptable estimates
Tobacco	30	25-40
Alcohol	3	2-4
Diet	35	10-70
Food additives	<1	-5-2
Reproductive and sexual behaviour	7	1-13
Occupation	4	2-8
Pollution	2	<1-5
Industrial products	<1	<1-2
Medicines and medical procedures	1	0.5-3
Geophysical factors	3	2-4
Infection	10?	1-?
Unknown	?	?

ILLUSTRATION #2

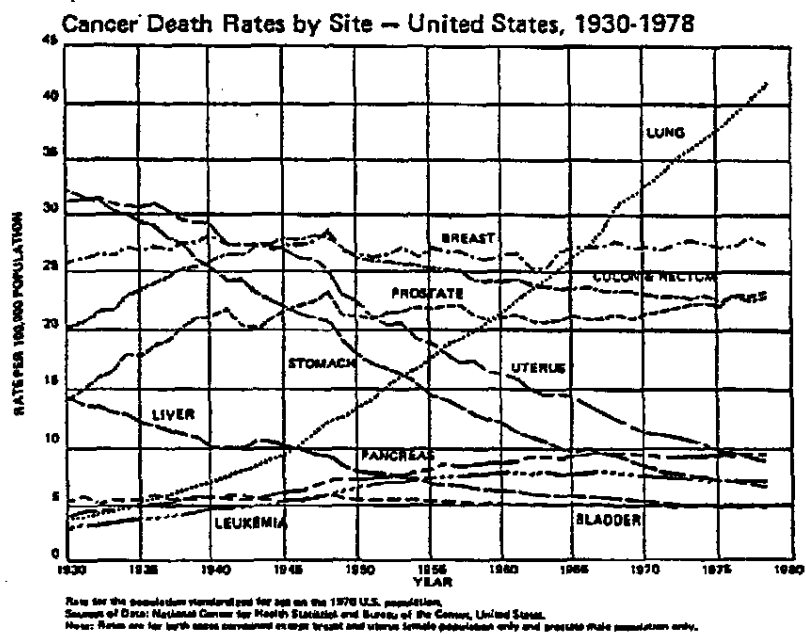


ILLUSTRATION #3

AVERAGE ANNUAL AGE-ADJUSTED (U.S. 1970) MORTALITY RATES
PER 100,000 POPULATION BY RACE AND SEX IN THE U.S. (1968-77)
AND LOUISIANA STATE (1968-78)

Primary Site		WM	WF	NM	NF	TOTAL
Buccal Cavity and Pharynx (Oral)	U.S.	2.6	0.7	3.9	1.0	8.2
	La.	7.0	2.0	8.3	2.6	19.9
Esophagus	U.S.	4.3	1.4	12.7	3.2	21.6
	La.	4.1	1.0	10.3	2.6	18.0
Stomach	U.S.	9.6	4.7	17.7	7.8	39.8
	La.	8.1	4.0	20.6	9.7	42.4
Colon	U.S.	19.5	16.4	16.5	15.7	68.1
	La.	16.3	14.0	14.0	13.6	57.9
Rectum	U.S.	6.2	3.6	5.5	3.7	19.0
	La.	4.6	2.7	4.9	4.0	16.2

WM - White Male
WF - White Female

NM - Nonwhite Male
NF - Nonwhite Female

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Primary Site	WM	WF	NM	NF	TOTAL	
Liver and Bile Ducts	U.S.	3.2	3.0	4.8	2.7	13.7
	La.	2.9	1.9	2.8	1.7	9.3
Pancreas	U.S.	11.0	6.7	12.7	8.0	38.4
	La.	12.6	7.5	12.3	6.7	39.1
Larynx	U.S.	2.8	0.3	3.8	0.5	7.4
	La.	3.0	0.4	3.9	0.5	7.8
Trachea, Bronchus and Lung	U.S.	61.2	13.4	68.7	13.4	156.7
	La.	78.6	15.5	73.0	13.9	181.0
Malignant Melanoma (Skin)	U.S.	2.2	1.4	0.6	0.3	4.5
	La.	2.1	1.4	0.6	0.3	4.4
Breast	U.S.	--	26.9	--	24.4	51.3
	La.	--	23.6	--	24.0	47.6

Primary Site		WM	WF	NM	NF	TOTAL
Uterine Cervix	U.S.	--	4.6	--	12.1	16.7
	La.	--	4.1	--	13.0	17.1
Uterine Corpus	U.S.	--	1.8	--	2.5	4.3
	La.	--	1.0	--	2.2	3.2
Prostate	U.S.	19.9	--	35.1	--	55.0
	La.	19.4	--	35.7	--	55.1
Kidney and Ureter	U.S.	4.6	2.1	3.4	1.6	11.7
	La.	4.3	2.1	3.1	1.1	10.6
Bladder and Other Urinary Organs	U.S.	7.4	2.2	5.7	3.0	18.3
	La.	6.8	2.2	5.5	3.2	17.7
Brain and CNS	U.S.	5.0	3.4	2.8	1.9	13.1
	La.	4.8	3.1	2.9	1.8	12.6
Thyroid	U.S.	0.4	0.5	0.4	0.6	1.9
	La.	0.3	0.5	0.5	0.6	1.9

Primary Site		WM	WF	NM	NF	TOTAL
Multiple Myeloma (Bone Marrow)	U.S.	2.6	1.8	4.7	3.2	12.3
	La.	2.5	1.7	4.1	3.1	11.4
Lymphoma	U.S.	7.8	5.2	5.4	3.1	21.5
	La.	7.1	5.0	4.8	2.5	19.4
Leukemia	U.S.	9.1	5.5	6.8	4.4	25.8
	La.	9.7	6.0	7.7	5.1	28.5
All sites including Lung	U.S.	201.0	131.0	239.7	143.8	715.5
	La.	219.8	125.4	248.8	147.6	741.6
All sites except Lung	U.S.	139.8	117.6	171.0	130.4	558.8
	La.	141.2	109.9	175.8	133.7	560.6

* Cancer mortality in the U.S.: 1950-1977. Monograph #59 of the National Cancer Institute, U.S. Department of Health and Human Services, April 1982.

Louisiana Department of Health and Human Resources, Public Health Statistics, New Orleans.

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Table 1
Lung cancer death rates in 3 time periods*

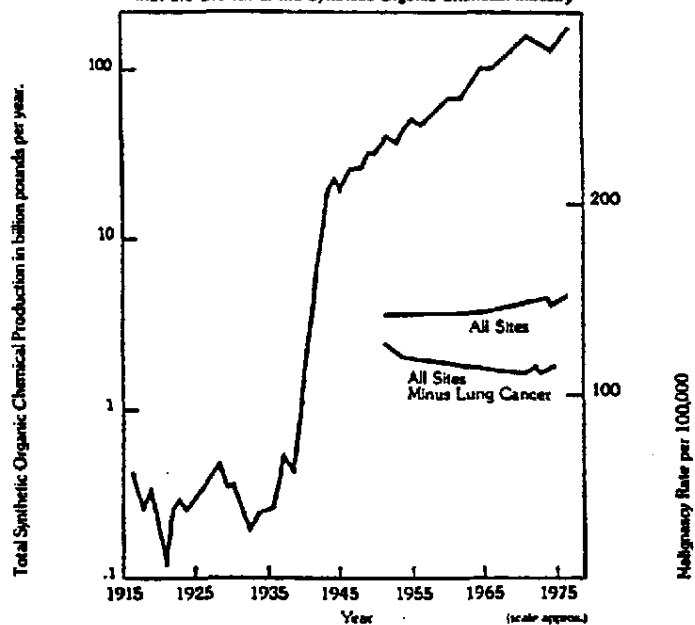
<u>Period</u>	Louisiana	U. S.
<u>1930-32</u>		
Adjusted to 1930 U.S. population		
WM	4.0	3.1
WF	1.6	1.8
BM	1.9	1.4
BF	0.5	0.8
<u>1950-67</u>		
Adjusted to 1960 U.S. population		
WM	19.3	16.3
WF	1.8	2.2
BM	14.4	16.3
BF	1.5	2.2
<u>1975-77</u>		
Adjusted to 1970 U.S. population		
WM	81.8	66.2
WF	18.9	16.6
BM	82.1	77.2
BF	16.6	15.8

* Due to differences in population adjustment, rates can only be compared to each other within each time period.

Abbreviations: WM = White males; WF = White females; BM = Black males; BF = Black females.

ILLUSTRATION #5

A Comparison of the Rate of Change of Age-Adjusted Cancer Mortality Rates
(average males and females, all races combined)
with the Growth of the Synthetic Organic Chemical Industry



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