

Investigating Community Cancer Concerns--Deer Park Community Advisory Council, 2008



David R. Risser, M.P.H., Ph.D.

David.Risser@dshs.state.tx.us

Epidemiologist

Cancer Epidemiology and Surveillance Branch

Texas Department of State Health Services

Austin, Texas

August 25, 2008

Overview

- **What is “Cancer?”**
- **Cancer in the U.S., Texas, and Deer Park**
- **Cancer Cluster Background**
- **Protocol and Methods of Investigation**
- **Deer Park Investigations**
- **How to Make a Request**



What is “Cancer?”

- **Cancer is a large group of diseases characterized by uncontrolled growth of abnormal cells.**
- **These abnormal (cancer) cells can spread to nearby tissue, as well as to other parts of the body through the bloodstream and lymphatic system.**
- **Benign tumors with the exception of certain childhood cancers are not considered cancerous because they do not invade nearby tissue or spread to other parts of the body.**

What Causes Cancer?

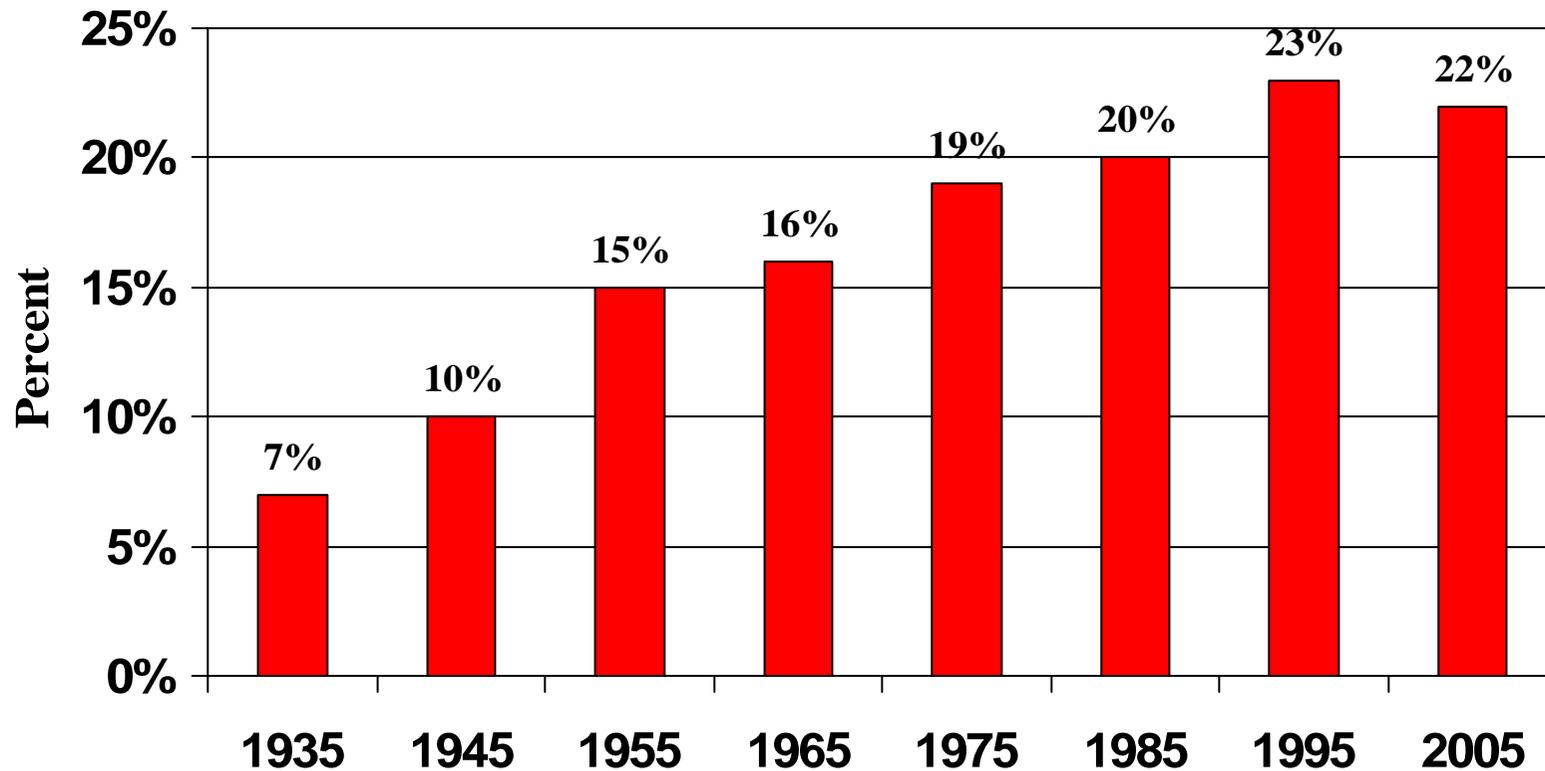
- **Cancer is caused by a combination of external and internal factors.**
- **Most experts believe that fewer than 10 percent of cancer cases are caused by pollution and occupational hazards.**
- **Lifestyle and other controllable risk factors are linked to over two-thirds of cancer deaths.**
 - tobacco, nutrition, physical activity, alcohol**

Source: Cancer: What Causes it and What Doesn't From the Experts at the American Cancer Society, 2003.

Cancer in U.S. and Texas

- **The American Cancer Society estimates that in 2008 over 1.4 million people will be diagnosed with cancer in the U.S..**
- **In Texas, approximately 97,000 people are estimated to be diagnosed with cancer in 2008, and another 38,000 people die from the disease.**
- **Cancer is the second leading cause of death in both Texas and the U.S. First leading cause in those under 85.**
- **In 2005, cancer accounted for 22% of all deaths in Texas.**
- **In Texas, cancer incidence rates are higher for men than women.**
- **In Texas, Blacks have higher rates than non-Hispanic whites or Hispanics for total cancer and most cancer types.**
- **The University of Texas LBJ School of Public Affairs estimated that Texas cancer costs in 1998 were \$13.9 billion.**

Cancer as a Percentage of All Deaths, Texas, 1935-2005.



Prepared by the Texas Cancer Registry, Texas Department of State Health Services
Source: Center for Health Statistics, Texas Department of State Health Services

Five Leading Cancer Sites Texas, 2001-2005

	Males	Females
1	Prostate	Breast
2	Lung	Lung
3	Colorectal	Colorectal
4	Bladder	Corpus & Uterus NOS
5	NHL	NHL

NHL=Non-Hodgkin's Lymphoma

**Five Leading Cancer Sites,
Deer Park, Zip Code 77536, Texas, 2001-2005**

	Males	Females
1	Prostate	Breast
2	Lung	Lung
3	Colorectal	Colorectal
4	Melanoma	NHL
5	Bladder	Kidney

NHL=Non-Hodgkin's Lymphoma

Five Leading Sites of Cancer Mortality Texas, 2001-2005

	Males	Females
1	Lung	Lung
2	Colorectal	Breast
3	Prostate	Colorectal
4	Pancreas	Pancreas
5	Liver/Intrahepatic Bile Duct	Ovary

**Five Leading Sites of Cancer Mortality
Deer Park, Zip Code 77536, Texas, 1996-2005**

	Males	Females
1	Lung	Lung
2	Pancreas	Breast
3	Colorectal	Colorectal
4	Prostate	Pancreas
5	Leukemia or Brain	Ovary

Most Common Texas Cancer Concerns

- **“A large number of people on my block have cancer. Is there something wrong in my neighborhood?”**
- **Concern about possible environmental exposures in the community (e.g., the air, water, soil)**
- **Concern about occupational exposures**
- **Concern about childhood cancers, particularly leukemia and brain tumors**
- **Common cancers (e.g., breast, lung, colorectal, prostate) are those most often perceived and reported by the public as being a part of a cancer cluster concern.**

Some Basic Definitions of a “Cluster”

■ Cluster

- What Webster says:**
 - “a number of persons, animals, or things gathered or situated close together”**

- What epidemiologists mean:**
 - “a greater than expected number of cancer cases or deaths that occur in a group of people in a specific geographic area over a specific period of time”**

- What everyone else is usually thinking:**
 - “There’s way too much cancer in my neighborhood/school/town and what is the state going to do about it?”**

How Does the Texas Cancer Registry Try to Address Cancer Cluster Concerns?

- Maintain a statewide, population based cancer registry
- Conduct investigations of suspected cancer clusters
 - Participate in national meetings and surveys regarding cancer cluster investigations
 - Maintain regular reviews of the scientific literature
 - Review what other states are doing to try and address these concerns
- Provide data to other federal, state, and local government officials and researchers
- Provide data to researchers for occupational and other studies

Examples of Federal, State, and Local Partners

- **Centers for Disease Control and Prevention**
 - **Agency for Toxic Substances and Disease Registry (ATSDR)**
 - **National Center for Environmental Health**
 - **National Institute for Occupational Safety and Health**
- **Environmental Protection Agency**
- **Texas Commission for Environmental Quality**
- **DSHS Environmental Epidemiology, Toxicology, and Injury Branch**
- **City of Houston Health Department**
- **Corpus Christi/Nueces County Health Department**
- **San Antonio Metropolitan Health District**

About the Investigation...

The primary purpose of the study is to pursue the epidemiologic and public health issues that the suspected cluster generates – not to prove or attribute a cause for a particular person or community's cancer.

What Questions Can a Cancer Cluster Investigation Answer?

- A cancer cluster investigation shows whether or not cancer excesses have been observed using our latest available data.
- A cluster investigation may be useful for generating theories, helping determine whether or not additional study is needed, or providing support for a public health intervention.
- It is *not* designed to establish that exposure X causes Y cancer.
- Historically, there have been very few successful cancer cluster investigations.

Some Reasons Why the Investigation of Clusters is so Difficult

- Cancer is a term for many diseases with a variety of causes.
- Cancer generally takes some time to develop (long latency period). - Ten or more years often pass between environmental exposures or the existence of other risk factors and detectable cancer.
- Cancer is complex and caused by both external factors (e.g. tobacco, radiation) and internal factors (e.g., inherited genetic mutations, hormones).
- Inadequate control of confounding variables (e.g. liver cancer and hepatitis/cirrhosis or HPV and cervical cancer).
- Cancer clusters can occur by chance and may not necessarily be due to any common cause.
- Population too small, hard to define.
- Exposure poorly characterized, heterogeneous, low in concentration
- Incomplete or no residential history
- Publicity precludes unbiased data collection

**So if it is seldom successful and so
difficult, why bother?**

The Public Health Perspective

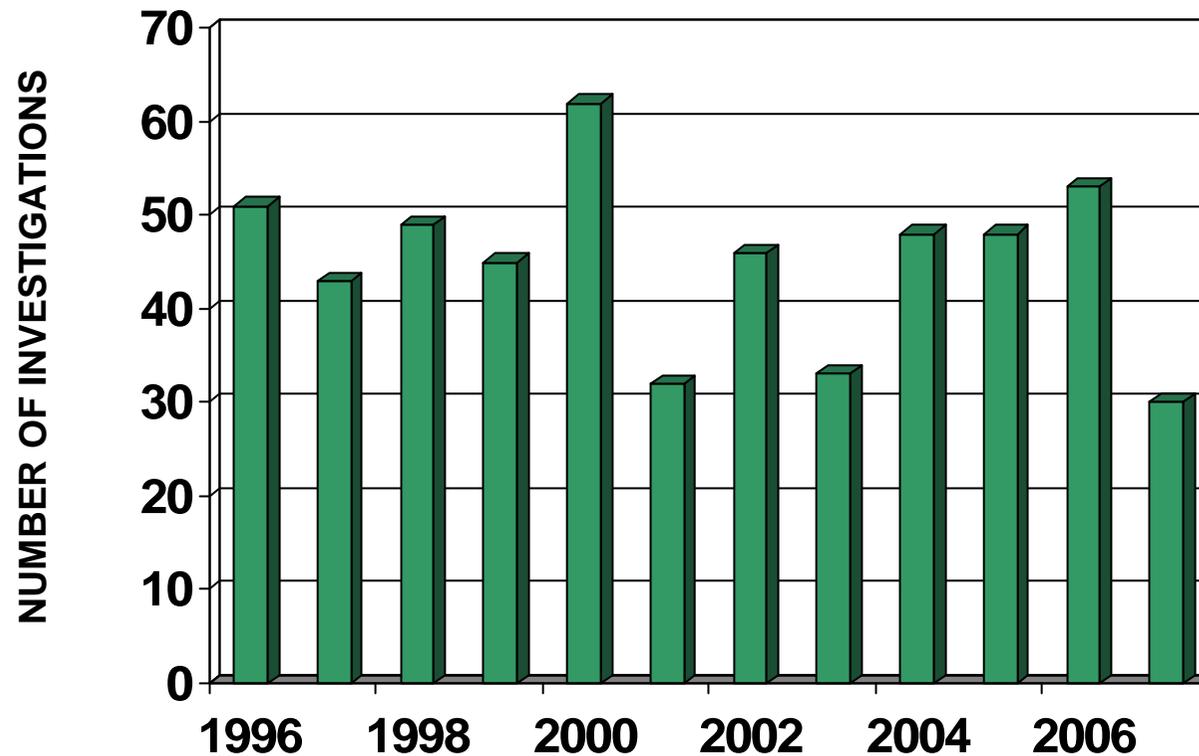
Rule #1:

A concerned citizen doesn't care about
esoteric epidemiology arguments.

Rule #2:

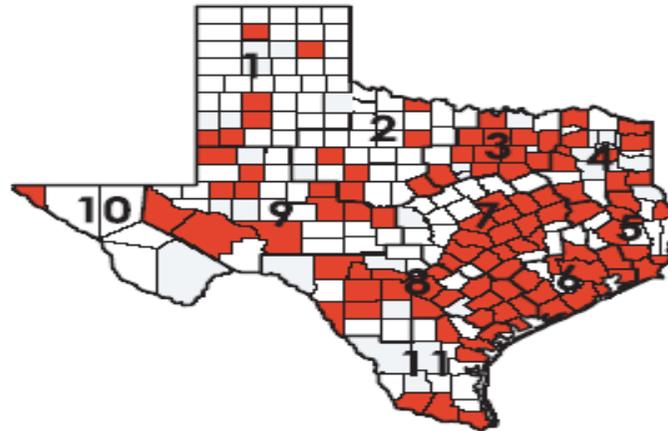
A prompt response is good public health
practice.

Cancer Cluster Investigations by Year 1996 – 2007



Total = 540

Distribution of Cancer Cluster Investigations by County, 2004-2007



Investigated Texas Counties

Anderson
Angelina
Bastrop
Bell
Bexar
Bowie
Brazoria
Brazos
Burleson
Calhoun
Cameron
Cass
Chambers
Coke
Collin
Colorado
Comal

Concho
Dallas
Denton
Ector
Ellis
El Paso
Erath
Falls
Fannin
Fayette
Freestone
Gaines
Galveston
Goliad
Gonzales
Hardin
Harris

Hays
Hidalgo
Hopkins
Houston
Hunt
Jackson
Jefferson
Johnson
Kaufman
Lavaca
Lee
Liberty
Live Oak
Lubbock
McCulloch
McLennan
Medina

Midland
Milam
Montgomery
Nueces
Orange
Panola
Parker
Pecos
Polk
Rains
Robertson
Runnels
Rusk
San Patricio
Tarrant
Terry
Tom Green

Travis
Upshur
Van Zandt
Victoria
Walker
Waller
Wharton
Williamson
Wise
Yoakum
Zavala

As of December 31, 2007
Source: Texas Department of State Health Services
Cancer Registry Division



Cancer Cluster Investigation Protocol

STAGE 1. Initial Contact

Purpose: Collect information from person or group reporting possible cancer cluster



STAGE 2. Assessment

Purpose: To determine whether a) an excess has actually occurred and b) whether the excess can be linked etiologically to some exposure

Stage 2a. Preliminary Evaluation

Purpose: To provide an estimate of the statistical likelihood that an important excess has occurred

Stage 2b. Exposure Evaluation

Purpose: To identify a biologically plausible environmental exposure(s) and assess probable exposure pathways(s)

Meets Criteria

YES



NO



Summary report distributed. May recommend additional follow-up as more data becomes available.

STAGE 3. Major Feasibility Study

Purpose: To determine the feasibility of performing an epidemiologic study linking the health event and a putative exposure



STAGE 4. Etiologic Investigation

Purpose: To perform an etiologic investigation of a potential disease-exposure relationship

How the Texas Cancer Registry Responds to a Cancer Cluster Concern

– Stage 1: Customer calls or e-mails...

Gather information about the cancer(s) of concern, suspected environmental exposure(s), time period, and people affected

Provide basic information and education about cancer and its causes

Describe when cancer cases are more likely to represent a true cancer cluster

- **assess and describe whether the description of the concern meets this basic definition**

When Cancer Cases are More Likely to Represent a Cancer Cluster

- A large number of cases of one type of cancer, rather than several different types
- A rare type of cancer, rather than common types
- A number of a specific type of cancer in age groups not usually affected by that type of cancer

**These situations are likely to indicate a common source or mechanism of carcinogenesis, which is the process by which cancer develops.*

How the Texas Cancer Registry Responds to a Cancer Cluster Concern

- Stage 2: Assessment of Concern...**
 - Review scientific literature about the documented risk factors for the cancers of concern**
 - Review any documented exposures and possible pathways of exposure (air, drinking water, etc.)**
 - Review the number of observed cancers of concern, both diagnosed cases and deaths**

How the Texas Cancer Registry Responds to a Cancer Cluster Concern

- **Stage 2: Assessment of Concern...**
- **Compare observed numbers of type of specific cancer cases/deaths to expected numbers for geographic areas of concern**
 - » **Expected numbers based on Texas rates for respective cancer types and time periods**
 - » **Adjusted for age and race/ethnicity**
 - » **Test for statistical significance**

How the Texas Cancer Registry Responds to a Cancer Cluster Concern

- **Stage 2: Assessment of Concern...**
- **Consider the magnitude of any excesses**
- **Sufficient latency period**
- **Consistency of findings over time**

How the Texas Cancer Registry Responds to a Cancer Cluster Concern

Stage 3: Major Feasibility Study...

- Fewer than 5% of our investigations reach this stage**
- Consistent with national findings**

Stage 4: Etiologic Investigation...

- None of our investigations have reached this stage**
- Also consistent with other state findings**

Investigation for Deer Park

August 25, 2008

- Investigated cancers of the oral cavity, colon/rectum, liver and intrahepatic bile duct, pancreas, lung, prostate, breast, bladder, kidney and renal pelvis, multiple myeloma, Hodgkin's lymphoma, non-Hodgkin's lymphoma, selected leukemia subtypes, and total childhood cancer.**
- Evaluated 1996-2005 incidence data for zip code 77536.**
- Deer Park: No excess found for Deer Park.**
- Two prior investigations in Deer Park between 2003 and the present.**

Prior Investigations for Deer Park, 2003-2007

- Deer Park (zip code 77536) – Analyzed 1995-2002 incidence and 1993-2002 mortality data for multiple myeloma. No excess found. Completed 07/06/05.**
- Deer Park (zip code 77536) – Analyzed 1995-2000 incidence data, and 1992-2001 mortality data for cancers of the oral cavity, colon and rectum, pancreas, liver and intrahepatic bile duct, lung, bladder, breast, prostate, Hodgkin's lymphoma, non-Hodgkin's lymphoma, and selected leukemia subtypes. No excess found. Completed 08/08/03.**

Conclusion

- No significant excess of cancer cases were observed for sixteen cancer sites in the city of Deer Park based on 1996-2005 incidence data.
- There was also no significant excess of cancer cases reported among children (0-19 years) in Deer Park for 1996-2005 incidence data.

Other Cancer Cluster Investigation Resources

- **Centers for Disease Control and Prevention:**
- <http://www.cdc.gov/nceh/clusters/>
- **National Cancer Institute:**
- http://cis.nci.nih.gov/fact/3_58.htm
- **National Institute for Occupational Safety and Health (NIOSH):**
- <http://www.cdc.gov/niosh/homepage.html>
- **Cancer and the Environment**
- Publication from Department of Health & Human Services:
- <http://www.cancer.gov/newscenter/benchmarks-vol4-issue3/page1>

**For more information on cancer in Texas or to
make a data request, please contact:**

- **Cancer Epidemiology and Surveillance**
- **Texas Department of State Health Services**
- **1100 W. 49th Street**
- **Austin, Texas 78756**
- **(512) 458-7523 –or- (800) 252-8059**
- **Cancerdata@dshs.state.tx.us**

- **Visit us on the Web:**
- **<http://www.dshs.state.tx.us/tcr>**