



Greensboro Cancer Cluster Investigation

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Purpose

- Overview of Cancer
- Summary of Investigation and Findings
- What does this mean to me?

Overview of Cancer

- Cancer is common, more so than most people think -
 - It is estimated that 40% of North Carolinians will develop cancer; and
 - 1 in 2 men, and 1 in 3 women in their lifetime.

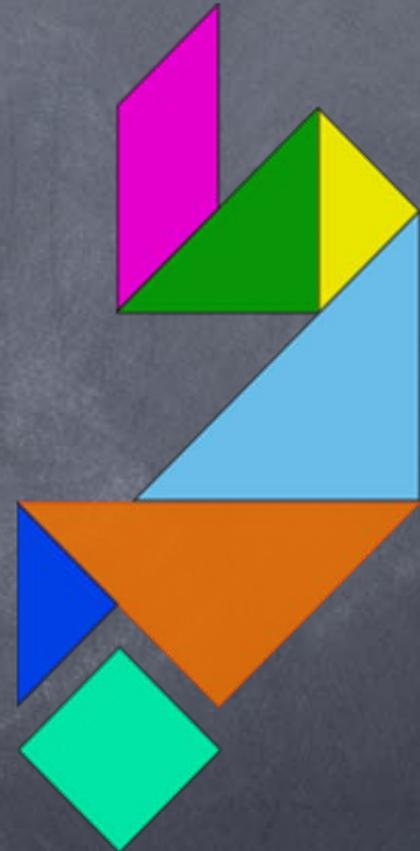


Overview of Cancer

- Cancer is more likely to occur as we get older -
 - People are living longer.
 - Larger group of older people.

Overview of Cancer

- Cancer is not a single disease.
- Different types of cancer behave differently.
- The same type of cancer can be caused by a combination of different factors.



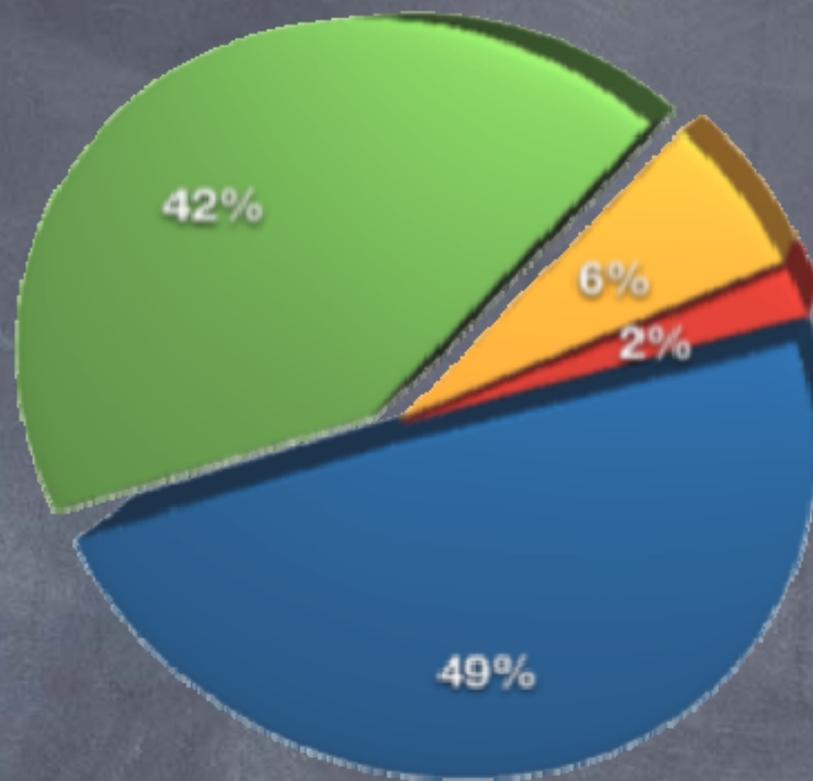
Overview of Cancer

- Cancer does not develop immediately -
 - It can take years to decades to develop after contact with a cancer-causing agent.
 - This delay between a possible contact and cancer makes it difficult to determine cause.

Overview of Cancer

- Cancer has many different causes -
 - Different factors are involved.
 - Environmental factors make up the majority (75 – 80%)* of cancer cases.
 - Environmental chemical contaminants make up a small percentage.

Percentage of Cancer Environmental Risk Factors



- Tobacco Use
- Nutrition, Physical Activity, Obesity
- Contact with Pollutants - Work
- Contact with Pollutants - Nonwork

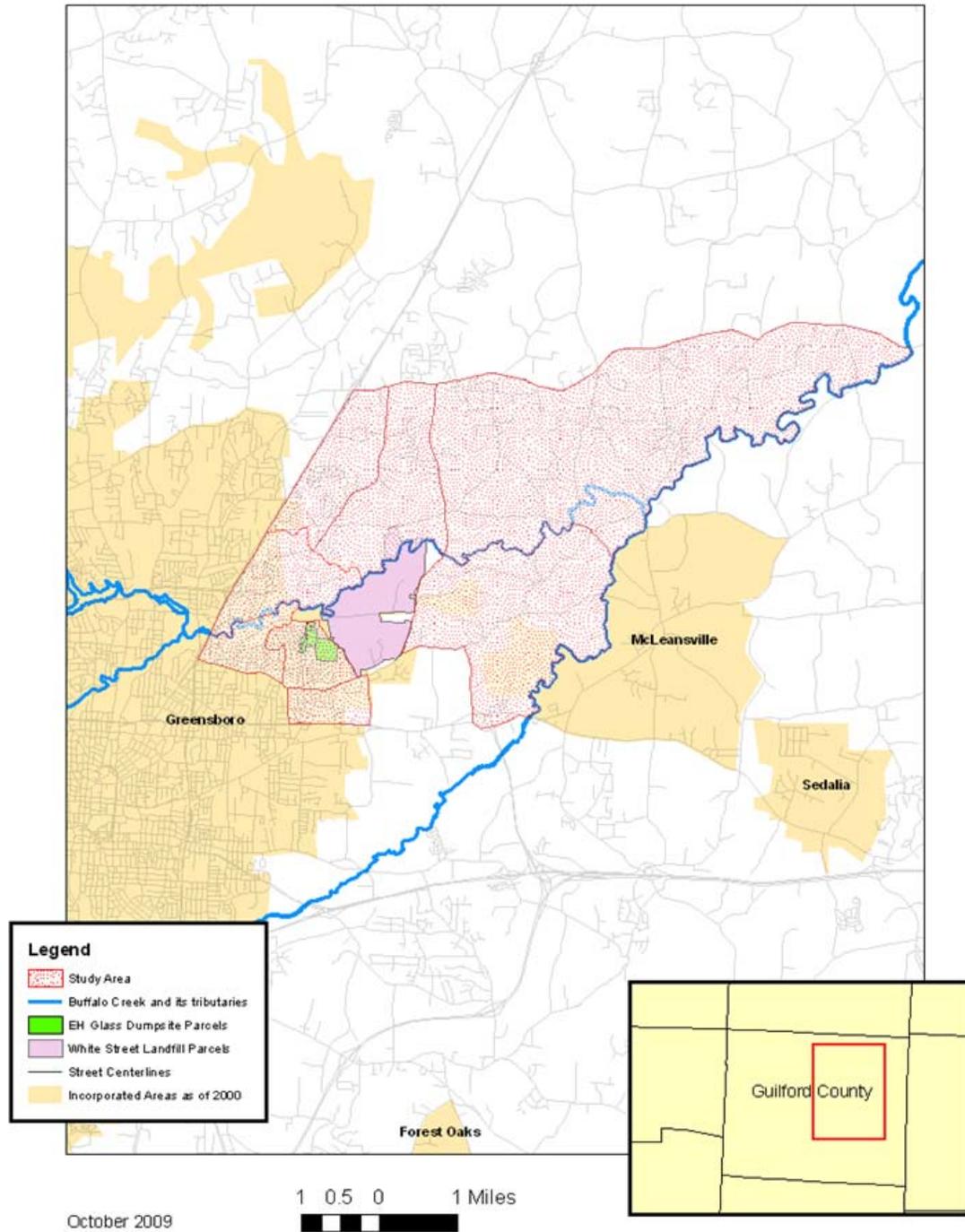
Investigation

- Cancer concerns about the landfill sites - state was asked to assist.
- Staff from the North Carolina Central Cancer Registry (CCR) and the Occupational and Environmental Epidemiology (OEE) Branch worked together to define the study area, using available environmental data.

Investigation

- The study area is comprised of the US Census 2000 block groups that are adjacent and near the EH Glass Landfill.
- White Street landfill parcels were not included, but the potential environmental impact areas of both EH Glass Landfill and White Street were taken into account.
- These block groups were chosen because they best represent the area of potential air or water exposure to any compounds released from the site.

Figure 1. EH Glass Dumpsite Study Area



Investigation

- The total number of all cancer cases in the study area ($n = 114$) was compared with the expected number of cancer cases during the same time period.
- The expected number of cases was calculated by applying the age and gender-specific cancer incidence rates for the state to the age and gender-specific populations of the census block groups.

Investigation

- The sums for the census block groups were then added to obtain the overall expected number for the study area.

Results

Observed and Expected Cases in Study Area, 1990-2006

Type of Cancer	Observed	Expected	Observed/ Expected	95% Confidence Interval (Lower, Upper)
Liver	*	*	*	*
Pancreas	27	14.90	1.81	(1.13 – 2.50)
Multiple Myeloma	13	6.39	2.03	(0.93 – 3.14)
Leukemia	17	13.85	1.23	(0.64 – 1.81)
Brain/CNS	22	16.15	1.36	(0.79 – 1.93)
Hodgkin Disease	*	*	*	*
NH - Lymphoma	27	25.98	1.04	(0.65 – 1.43)

- NOTE: Counts less than 5 and corresponding ratios are suppressed to protect confidentiality.
- The observed number of pancreatic cancer cases is 1.81 times higher than expected ($p < 0.05$).
- The observed cases for each of the other primary cancer sites are within the normal range.

What does this mean to me?

- By itself, an increase in pancreatic cancer rate does not imply causation.
- To be scientifically and biologically relevant, rates must be evaluated along with available environmental data.

What does this mean to me?

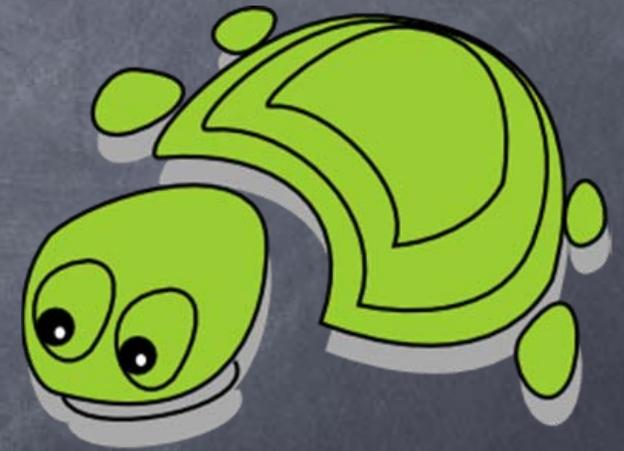
- Linking exposure to possible dump or landfill contaminants to pancreatic cancer requires:
 - Identified contaminant
 - Amount of contaminant
 - Dose
 - Duration
 - Exposure pathway

What does this mean to me?

- Establishing a definitive cause-and-effect relationship is often not possible.
- There isn't an identified or isolated single potential exposure.
- Difficult to reconstruct exposure histories.

What does this mean to me?

- Infectious disease outbreak
- Rapid
- Few agents
- Available tests
 - Cancer cluster investigation
- Slow
- Many agents
- Few tests



What does this mean to me?

- Living near the landfill is not the likely reason for the observed increase in pancreatic cancer.
- No environmental chemical contaminants normally associated with pancreatic cancer were detected.
- Acrylamide

What does this mean to me?

- The community is not located in an area where contaminants would migrate towards ground or surface waters.
- Ingestion of contaminants is the most common exposure to environmental contaminants associated with landfills.

What does this mean to me?

- Air monitoring data did not detect the type of airborne contaminants that would be associated with pancreatic cancer.
- Review of epidemiologic studies list other types of cancers than pancreatic cancer that may be associated with landfill sites, not pancreatic cancer.

What does this mean to me?

- Pancreatic cancer risk factors
 - Age (55+);
 - Gender (Men);
 - Race (African-Americans);
 - Presence of other diseases (diabetes, chronic pancreatitis, and cirrhosis of the liver);

What does this mean to me?

- Risk factors continued -
 - Family history, smoking, obesity, nutrition (red meat consumption?), and inactivity.
- Having a risk factor, or even several risk factors, does not mean that you will get the disease.

Summary

- Cancer is common and is not usually caused by environmental chemical contamination.
- The rate of pancreatic cancer in the study area is greater than what would be expected in the state and in similar communities; and
- Living near the landfill is not likely the reason for the observed increase in pancreatic cancer rate in the community.

Recommendations

- Continue community awareness activities about pancreatic cancer and ways to reduce risk factors.
- Continue Guilford County Health Department environmental monitoring of the landfill sites.
- Continue to see your health care provider for any health problems or complaints.

Recommendations

- Petition for a state health consultation of active private drinking water wells located in areas north of the landfill sites.
- Historical review of the sites;
- Documentation of past activities and technical information for any future studies; and
- Address exposure uncertainties.

Resources

- OEE Cancer and the Environment brochure.
 - http://www.epi.state.nc.us/epi/oeo/hace/pdf/Hace_Cancer_Environ.pdf
- American Cancer Society information about pancreatic cancer and environmental risk factors.
 - <http://www.cancer.org>

Questions