Indian River Cancer Cluster Investigation

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About Cancer Clusters

◆ What is a cancer cluster?
◆ How do you investigate a cancer cluster?
◆ Why are the causes of a cancer cluster hard to identify?
◆ Have the causes of a cancer cluster ever been identified?
What is a Cancer Cluster?

A greater-than-expected number of cancer cases that occurs within a group of people in a specific geographic area during a specific time period.
How Do You Investigate a Cancer Cluster?

- **Step 1**: Specify the population at risk and the time period in question.
- **Step 2**: Determine if the number of cases that actually occurred is significantly greater than the number that is expected.
- **Step 3**: Interpret the data to determine if the cluster could be the result of an unusual external cause.
- **Step 4**: If there is reason to believe that there is an unusual external cause, perform follow-up studies to prove causality.
Why are the Causes of a Cancer Cluster Hard to Identify?

- Clusters of any disease occur by chance
- Time between “exposure” and the development of cancer can be decades
- Mobility of the population
- In the community setting (as opposed to a work setting), exposure to environmental agents is difficult to measure
- Cancer almost always caused by a combination of factors not yet fully understood
- Risk factors having nothing to do with an “external” cause are common
Have the Causes of a Cancer Cluster **Ever** been Identified?

- **Yes, when:**
  - A large number of one type of cancer rather than several different types
  - A rare type of cancer rather than common types
  - An increased number of cases of a certain type of cancer in an age group that is not usually affected by that type of cancer

- Research has shown that unless these conditions are met the causes of a cancer cluster are not identified
Have the Causes of a Cancer Cluster *Ever* been Identified?

**Example:** BF Goodrich: Polyvinyl Chloride and Angiosarcoma

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Step 1: Specify the population at risk and the time period in question.

- 2000-2004 age adjusted rates
- 1995-2004 number of cases
Step 2: Determine if the number of cases that actually occurred is significantly greater than the number that is expected.
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**Indian River**

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Step 4: If there is reason to believe that there is an unusual external cause, perform follow-up studies to prove causality.

- The data does not suggest that there is an unusual external cause. Nevertheless, the Cancer Council asked us to recommend that the Environmental Committee of the Consortium:
  - Consider the value of additional environmental monitoring
  - Consider the value of additional epidemiologic studies

- “Consider” means:
  - Are the benefits of further study likely to produce results that would justify the diversion of time and money from other cancer efforts?
Conclusions

- Lung cancer incidence rates are elevated in the Indian River area.
- The elevated rate is due to a common cancer (lung) which is occurring in the age group we would expect.
- Because tobacco causes 85% of all lung cancer, the elevated cancer rate in Indian River is most likely due to tobacco use.
- Based on research documenting many years of cancer cluster investigations, further investigation of this cancer cluster is unlikely to shed additional light on an environmental cause.