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*How do we go about studying environmental health in our neighborhoods?*

**The Medical Perspective**

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## *Case Study*

*In 1974, a plant doctor in Louisville diagnosed 3 cases of a very rare form of liver cancer (hemangiosarcoma). All 3 persons with this tumor worked in the same factory, where vinyl chloride monomer was used to make PVC. Nationwide there were only a total of 25 cases.*

*The doctor suspected there could be a relationship between the work environment and the cancer. This astute observation was later confirmed by more detailed studies.*

## *Case Study*

*A 10 year old previously healthy boy comes to you with a 3 week history of headaches, mild nausea and no vomiting. The headache is dull, and not relieved by acetaminophen, lasting anywhere from 30 minutes to all day. Last Sunday, shortly after awakening, he woke up with the headache. His physical examination and routine blood tests are normal.*

# ***JUST THE FACTS!***

- Most environmental diseases present either as common medical problems or have nonspecific symptoms.
- It is the ETIOLOGY (cause) that distinguishes a disorder as an occupational/environmental illness.
- Most persons with environmental disease present initially to non-specialists.
- If an exposure history is not taken, the cause may be missed, the exposure can continue, and treatment may be inappropriate.

## *When should you suspect an environmental disease?*

### **In academic primary care practices:**

- **76% of charts fail to mention patient occupation**
- **Only 2% of charts have information on exposures.**
- **Adolescents are rarely questioned about work exposures**

## *What suggests an environmental cause?*

- Is the condition *biologically plausible* (does it make sense)?
- Is there a confirmed *disease or diagnosis*?
- Is the *temporal relationship* of exposure and disease clear?
- Do fellow workers or neighbors with similar exposure have *similar* problems?
- Was (is) there a *confirmed exposure*?
- Is *epidemiologic evidence* available to support a cause and effect relationship?

# *Epidemiology*

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## *Basic Concepts*

1. Human disease doesn't just happen.
2. There are causal and protective/preventive factors identifiable through systematic investigation of different populations, and subgroups within a population, in different places and/or at different times.

# *What is epidemiology?*

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The study of the distribution and determinants of disease frequency in human populations....

or

the relationship between “exposure” and “disease”



# *Epidemiology: The 2 x 2 Table*

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	$E^+$	$E^-$
$D^+$	a	b
$D^-$	c	d

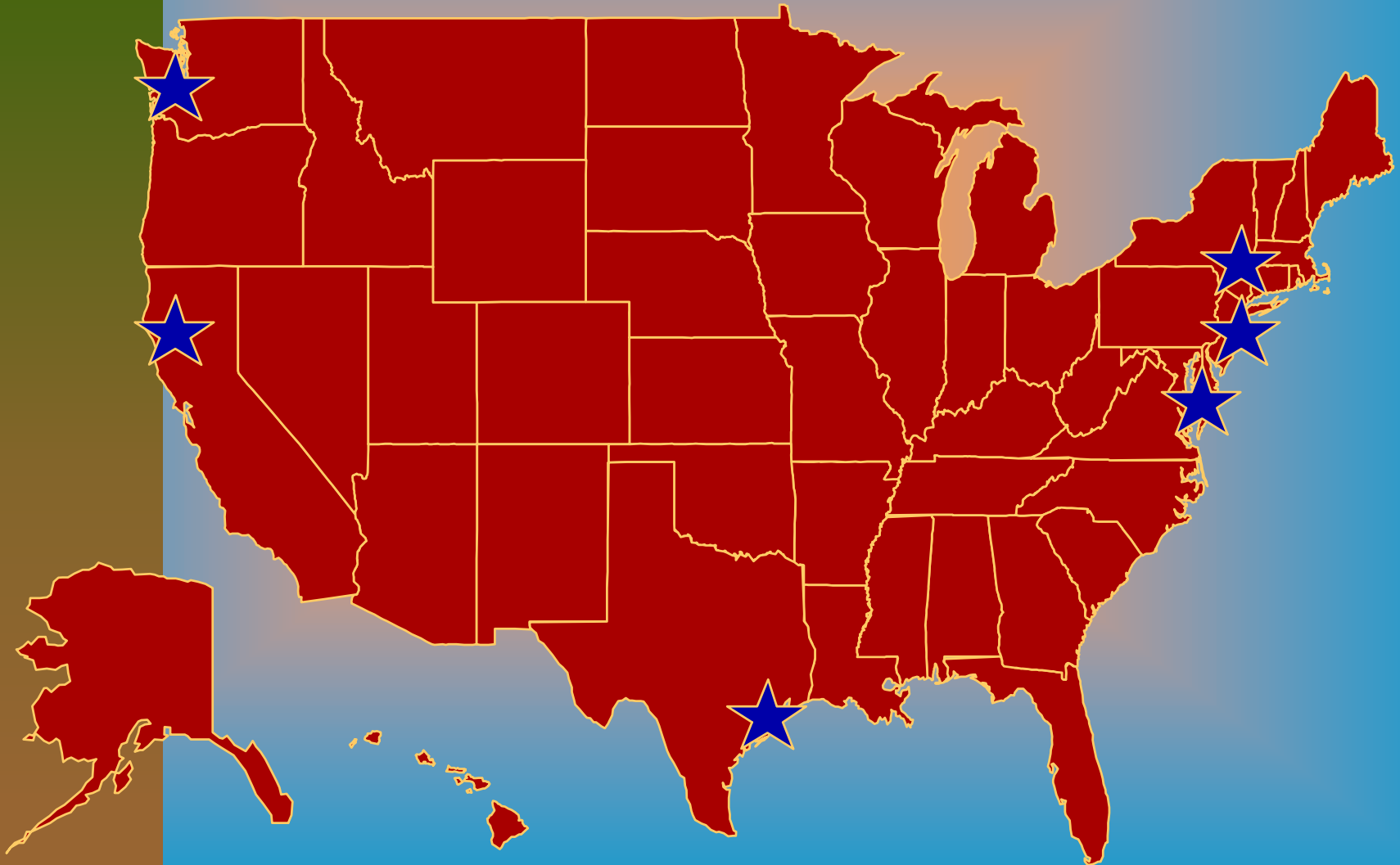
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## *Epidemiology: Basic Study Designs*

- ◆ **Case series/Case reports**
- ◆ **Case-control**
- ◆ **Cohort**
- ◆ **Ecological**

# *Epidemiology: Study Designs*

## Ecological



# Environmental Epidemiology

## Characteristics

**Non-disease effects**  
**Numerous variables**  
**Community-specific**

## Limitations

**Low sample size**  
**Uncontrolled confounders**  
**Exposures are low and difficult to estimate**

## Strengths

**Real world**  
**Basis for action**





*Thank you!*