

Understanding Science and Scientific Methods:

An Overview for Lawyers

SUMMARY – 26 September 2005

Class on 19 September 2005 Covered Topics 2.c.i. and 2.c.ii. (part) on the Syllabus

I. Dioxin and Agent Orange

A. Basic Science of Dioxin –

B. The Use of Agent Orange in Vietnam

C. The Health Politics of Agent Orange and Dioxin

1. The Sample Population: Employment & Unemployment:

Very few differences between Vietnam Veterans and non-Veterans. Slight bias towards professional occupations of non-veterans.

2. The Sample Population: Vietnam Casualties: No race or ethnic bias. Very, very small income bias.

3. The Sample Population: Are Vietnam Veterans Really that Different From Everyone Else? Post-Traumatic Stress

Disorder: The Politics of Diagnosis and Disease – piece by Wilbur Scott in *Social Problems*

4. Bottom Line – Vietnam Veterans are fairly representative of the U.S. male population

II. Basic Statistics of Epidemiological Studies

A. Experimental Studies – Figure 2-1 -- Controlled trial, Clinical Trial

1. Core of the method is the *random assignment of subjects*.
2. **Problems:** a) Adherence; b) Attrition

B. Case Control Studies – Figure 2-2.

1. You Look Backward in Time.
2. **Problems:** a) are the cases a valid representation of the disease?
B) are the controls similar to the cases? C) selective recall

C. Cross-Sectional Studies – The Present – Figure 2-4

1. Very efficient
2. **Problems:** a) subject selection; b) response/participation bias; 3) Time-order relationships (what causes what?); inaccurate self-reported data

D. Cohort Studies – Figure 2-3 -- Look Forward in Time

1. Data are gathered in standardized fashion and you start with a population *that is not diseased*.
2. **Problems:** a) Sample selection; b) Loss to follow-up; c) change in habits; d) Surveillance bias.