

Understanding Science and Scientific Methods:

An Overview for Lawyers

SUMMARY – 17 October 2005

Class on 10 October 2005 Covered 2.d. (part) and 3.a.i. on the Syllabus

A. Agent Orange in the Courtroom:

1. *U. S. Veterans vs. Dow Chemical*, 1984 "Settlement"? (*In Re "Agent Orange" Product Liability Litigation*, 597 F. Supp. 740 (E.D.N.Y. 1984), LEXIS 23337).

2. *Dow Chemical vs. Stephenson* (2003)

- a. **Can people who are unaware of their involvement in a class-action suit later argue that they were not properly represented?**
- b. **What standard should be used if those lawsuits are allowed?**

B. Lessons for How Science Achieves Consensus

1. **Early consensus that TCDD was extremely dangerous based on animal studies (1960s and 1970s)**
2. **Long period of additional studies of humans exposed to high levels of TCDD (1980s and 1990s)**
3. **Emergence of consensus about danger to humans (late 1990s and early 2000s) – Appears to raise overall rate of cancer; if**

you develop chloracne, the chances of further disease are much higher.

II. Bendectin and the *Daubert* (1993) Decision

A. **What is *Scientific Knowledge* and when is it *reliable*? – (F & H p.1) --**

1. **Observation** and quantitative **measurement** → formation of a **hypothesis** through **inductive reasoning** → testing the **predictions** of the hypothesis (e.g., experiments) → development of a **theory** that **explains** facts already known and **predicts** facts not yet known. **Traditionally, Observation, Experiment, Explanation, Prediction.** (Rudolf Carnap: “prediction is...as essential to everyday life as it is to science. Even the most trivial acts we perform during the day are based on predictions.”)
2. **Goal – Universal Laws**
3. **Inductive Reasoning** – “**reasoning from particular facts to a general rule or principle.**” [Deduction -- “A logical inference from a general rule or principle”]
4. **Creative Leaps** – **One cannot simply follow a mechanical procedure based on fixed rules** to devise a new system of theoretical concepts, and with its help a theory. **Creative ingenuity** is required....**there cannot be an inductive machine.**