REGULATORY CHECKBOOK

Oral Testimony

Committee on Environment and Public Works
U. S. Senate

"Oversight Hearing on
Disease Clusters and Environmental Health"

March 29, 2011

Chairman Boxer:

Thank you for the invitation to testify today. My written testimony covers my background and several important scientific and technical issues. I wish to focus on four of them in my limited time.

I. FIRST, HOW IS THE TERM "DISEASE" DEFINED?

1. Without a clear definition, almost anything could be included a "disease."
2. We have experience with this. The term "adverse health effect" is used hundreds of times in law, but it is either defined circularly or not defined at all. This causes enormous grief and unnecessary conflict.
3. S. 76 does not include a definition of disease. In one place, it uses the term "adverse health effect," but like existing law, it does not define the term.

II. SECOND, HOW IS THE TERM "DISEASE CLUSTER" DEFINED?

1. A good scientific definition would be both sensitive and selective.
   a. Sensitivity is needed to ensure that we miss very few real cases—what statisticians call "false negatives."
   b. Selectivity is needed to minimize the number of random cases incorrectly classified as part of a cluster—what statisticians call "false positives."
2. False negatives are obviously costly. But false positives are costly, too. They create significant fear and anxiety. They may lead to the closure of parks, schools, and

PO Box 319
Mount Vernon, VA 22121
(703) 780-1850

drinking water wells. They depress the market price of people's homes.

a. This also creates a serious problem for scientists who would investigate petitions alleging a disease cluster.

b. The less sensitive the definition, the greater will be the proportion of investigations that come up dry because there isn't anything to find no matter how hard they look.

c. When scientists come up dry, people often are more angry than relieved. Their trust in the government is damaged, sometimes beyond repair.

3. The conventional definition—the definition in S. 76—has really good sensitivity but really poor selectivity.

   a. It is very unlikely to miss a real disease cluster. That means it has a low rate of false negatives.

   b. However, it is very likely to misclassify a lot of random cases as disease clusters. That means it has a high rate of false positives.

4. In my written testimony, I show how the conventional definition results in a majority of random cases of disease getting misclassified as "disease clusters." In my example, 27% of fixed geographical zones have a greater than expected number of cases, so they would be legislatively deemed to be "disease clusters." Another 37% of cases easily could be deemed by regulation to be "disease clusters." But my data were randomly generated. That means all of my data are false positives. Every dollar spent investigating them is wasted.

5. This does not help those who belong to a bona fide disease cluster. Substantial resources will be spent searching for environmental linkages that do not exist. That takes resources away from trying to understand real disease clusters.

III. THIRD, HOW IS THE TERM "POTENTIAL CAUSE OF A DISEASE CLUSTER" DEFINED?

1. The definition in S. 76 is narrow in some respects but very broad in others.
   a. It is narrow because it focuses on anything subject to regulation by EPA.
   b. It is broad because it demands no scientific evidence.
      i. A chemical is a "potential cause" just by being present.
      ii. No evidence is required that this chemical causes the disease of interest.
      iii. No evidence is required that any exposure to the chemical actually occurred.
      iv. No evidence is required of a dose-response relationship at environmentally relevant doses.
2. In short, the definition does not follow the scientific risk assessment model.

IV. FINALLY, I AM WORRIED ABOUT SUBORDINATING SCIENCE TO LAW AND POLITICS

1. When Congress attempts to legislate science, science is compromised.
2. That science would be compromised is evident especially in the way EPA would be directed to bias its risk assessments "in a health-protective way" (§ 6(b)(4)).
3. This is not science, and it damages the credibility and integrity of risk assessment. Scientists should never be told what conclusion to reach and invited to conduct research in order to support it.
4. To be credible, risk must be estimated objectively. This is a core scientific value. Responsible scientists will not participate in a system in which core scientific values are compromised like this.

Thank you again for the opportunity to testify today.