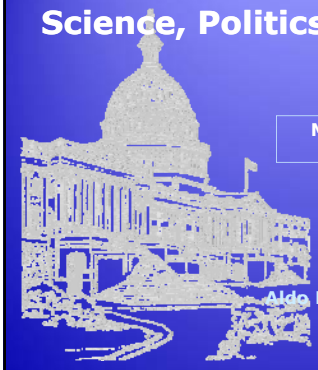
# Science, Politics and Congress



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## Science and Congress

- How does science influence policy?
- What does Congress want from science?
- Providing context: lessons from the 1997 Clean Air Act debate
- Implications for effective interaction

## The 30-second Take Home Bottom Line

**To be effective in communicating science to Congress, scientists must:**

**1) understand the *political context* – i.e., the political consequences of the specific decisions facing Members of Congress; and**

**2) understand how science is *and is not* relevant to those decisions**

xcuse me, . oc!
.t's not ... about your science!

## How does science influence policy?

Policy makers not interested in science for its own sake, but in the *public goods* that science and technology can deliver:

- jobs and economic growth
- public health
- national security
- environmental protection

## How does science influence policy?

*Discoveries* from basic science that have policy implications:

- atmospheric chemistry → ozone hole
- genetics → disease, biomedical applications
- physics → energy, defense, technology
- biology, ecology -> environment
- technology -> new jobs, growth

*Fear and Hope*

## How does science influence policy?

*Knowledge* to identify options to achieve *politically-defined* policy goals

- acid rain, climate change
- fisheries & forestry management
- pollution and health effects
- public health
- innovation & economic growth


## How does Congress think?


Prime Directive: re-election!

- "We vote for a living."
- Risk-adverse: how will this vote be used against me?
- Elections are driven by money and values-based issues that motivate voters who VOTE
- Political interests may NOT be the same as the White House

## How does Congress think?

Information – including science -- is a political tool

Science only gets in the mix when it's put into play for a political purpose:

-- interest groups

-- lobbyists

-- Executive branch

## What does Congress want from science?

**The "Junk Science" Wars**

- Science still has power because it is seen by media and public as objective and above the political fray
- So both "sides" want to invoke its authority
- Or undermine the science by attacking:
  - certainty
  - bias and credibility
- Don't have to prove case, just raise doubt

## Case study: 1997 Clean Air Act standards

**Clean Air Act background**

Written in early 1970's, law requires a standard for ambient air quality pollutants sufficient to "protect the public health with an adequate margin of safety."

The standard is based on best available science reviewed every 5 years

Costs cannot be considered in setting standard

## Case study: 1997 Clean Air Act standards

**Clean Air Act background**

Key embedded assumption: there's a threshold below which there are no adverse health effects, and that level can be determined by science

But by 1990s, clear that no threshold existed; mostly a linear dose-response relationship to major ambient air pollutants (but no change to the law)

## Case study: 1997 Clean Air Act standards

<u>Clean Air Act background</u>

Large segments of population live in areas not in compliance with CAA standards

Reducing emissions is not cheap:

- installation of emission controls
- Monitoring and enforcement
- Restrictions and bans
- Transportation controls
- Risk of losing federal funds
- Billions of $$$

## Case study: 1997 Clean Air Act standards

By mid-90's, increasing epidemiological evidence that ambient levels of fine particles (under 2.5 microns) associated with statistically significant increases in mortality and morbidity

EPA independent Science Advisory Board recommends new standard for fine particles – though no consensus on what standard should be

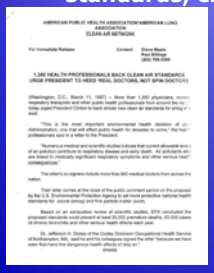
## Case study: 1997 Clean Air Act standards

EPA's Carol Browner proposes new PM standards, saying the science mandates it, citing the Science Advisory Board

Framing the issue: public health vs. jobs.

## Case study: 1997 Clean Air Act standards

Environmental and Public Health Advocacy Groups launch major campaign to support stronger PM and ozone standards, cite science



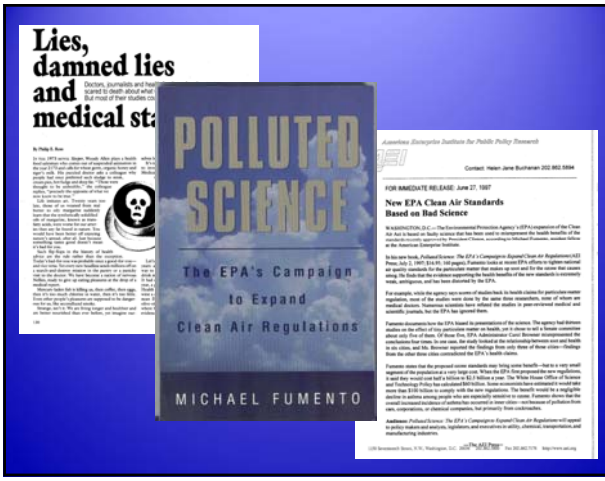

## Case study: 1997 Clean Air Act standards

**Industry strikes back, attacks science:**

- EPA analysis rushed, incomplete because of court deadline
- Alternative explanations of epi studies:
  - Could be chemical composition rather than size
  - Outdoor air ≠ Actual exposure
  - Other confounding factors
- No toxicological explanation!

## Case study: 1997 Clean Air Act standards

- Even if some association, dose-response curve unknown and impossible to know where to set the standard
- Epi studies were flawed – or even deliberately manipulated by scientists with a public health agenda
  - Industry: we demand to see the raw data, and if you say no, you're hiding something
  - (Led to whole nasty side issue)




## Case study: 1997 Clean Air Act standards

- Numerous Congressional hearings
- Congressional committees as scientific peer-reviewers
- Science fed to Congress by both sides, used by politicians to support their own predetermined positions
- But what about the genuinely undecided Member of Congress?

## Case study: 1997 Clean Air Act standards

- The dilemma: two desirable public policy goals in conflict: public health vs. economic growth.
- The politics: what are the political risks?
  - Angering well-organized, politically active economic interests who are directly impacted
  - Angering parents and others concerned about health effects on them and their families

## Case study: 1997 Clean Air Act standards

How can science help the open-minded politician solve his or her political problem?

Key question: will these actions REALLY reduce risks?

## Case study: 1997 Clean Air Act standards

Answer: Science IS too uncertain to say unequivocally

- Limits of epidemiology (may have wrong model – basic science)
- Questions about control (may have wrong standards, control methods)

Science doesn't compel a policy decision in one way or another.

So given uncertainty, how do you make policy decision?

## Case study: 1997 Clean Air Act standards

| | Act Now | Postpone |
|---|---|---|
| Science is Right | I. Lives are saved and illnesses prevented; costs were necessary to achieve | II. Deaths and illnesses that could have been prevented; costs will still need to be imposed |
| Science is Wrong | III. No public health benefit, and unnecessary costs hurt economy, jobs, welfare | IV. Unnecessary costs averted with no adverse effect on public health |

Which wrong outcome is worse will depend on politics and policy preferences!

## Case study: 1997 Clean Air Act standards

The resolution?

Despite many hearings, Congress never votes to block the EPA rules.

Republican leadership decides that they do not have the votes to override a Presidential veto, so why expose Members to a potentially politically difficult vote?

Role of science in public opinion

## Observations

- Scientists need to understand the *political* context of the problem that the science is relevant to
- Understand that politicians are risk-adverse and driven by values-based issues and policy preferences
- Science is a part of the mix, but rarely compels any policy outcome
- Scientists should be explicit about uncertainty and policy choices

## Observations

- "Certainty" is a policy decision, not a scientific one
  - Proven fact (dead certainty) vs. probabilities and confidence levels
- Policy responses to uncertainty
  - precaution vs. wait and see
- Tactic: what kind of proof would you have to see to convince you?

## Observations

A word about Science and Advocacy

- Are they mutually exclusive?
- No "right" way
- There's no cookbook

**Discussion?**