



# Advisory Committee on Pesticides

---

## Teaching Notes

Contents: [Aims](#) | [Organization](#) | [Teaching Contexts](#)  
[Format/Day Plans](#) | [Discussion Guide](#)

A *historical simulation* is an open-ended exercise for "recreating" a historical event by posing a particular problem in a particular historical context. Although based on real historical characters or conceptual positions, the goal is not to re-enact history. Rather, the aim is to allow participants to grapple with the problem themselves, and to experience the uncertainty and contingent dynamics of history-in-the-making. Simulations are especially valuable for exploring how many alternative perspectives interact. Participants typically learn to appreciate the complexities of historical events and the challenges of resolving problems that, in retrospect, may seem quite plain and simple.

**Aims.** The simulation on the President's Advisory Committee on Pesticides, 1963, is designed, in particular, to profile the intersection of science and public policy, as well as to portray a particular historic moment in the early 1960s when environmental attitudes began achieving greater public significance. As profiled in the [Overview](#), the case helps render the issues of: scientific credibility, science and values, scientific uncertainty, public understanding of scientific issues, and science and gender, as well as the science itself. The simulation may be used or adapted to many possible [contexts](#)-- scientific, ethical, political, historical-- but ideally fosters bridging such contexts.

**Organization.** The focus of the simulation is Rachel Carson's book, *Silent Spring*, and the concerns it raised about chemical pesticides. Participants [situate themselves in 1963](#), roughly one year after the publication the book. The occasion for discussion is the President's Science Advisory Committee, mandated by President John F. Kennedy in late 1962 to advise him on this topic. There are 12-24 [roles](#). The roles are designed to reflect the spectrum of perspectives in 1963 -- not to replicate history faithfully. Participants aim to resolve the sometimes conflicting perspectives and develop a joint policy recommendations for the President. There are many possible [formats](#) for structuring the activity -- from explicit presentations of testimony to informal discussion -- as profiled below.

## Teaching Contexts

### *Science.*

The case of pesticides is an occasion for students to learn many biological concepts: agricultural productivity and monoculture (and the role of pest control); disease transmission (and the role of pest control); predator-prey and parasite-host interactions; food chains and bioaccumulation (or concentration of elements); biodegradable v. persistent compounds; natural selection and insecticide resistance; population dynamics of introduced species; and (optionally) toxicology and the

physiology of poisons. Use of pesticides also raises important questions about ecosystem stability and the (un)predictability of complex systems. In the simulation, the scientific evidence -- its meaning and relative reliability -- can take center stage. The debate on evidence for toxicity of food and for the carcinogenicity of pesticides was particularly problematic at this time. Another important challenge is to identify and map out areas for future research -- and perhaps how much it will cost.

In addition, Carson appealed to the "balance of nature," a concept now widely discredited by ecologists. One may discuss the status of the scientific basis for this concept and thus its prospective relevance in a policy context.

Most important here, perhaps, is probing the limits of science in guiding public policy. Science cannot justify values, even when providing information relevant to forming value judgments. Assessments of risk, for example, may be quantified, but what level of risk is deemed "safe" expresses a value. This case illustrates well how science may inform policy decisions, but does not eclipse other considerations.

### *Ethics.*

While science is central to decisions about the use of pesticides, the balancing of values is also worth addressing. Some values are relatively clear: reduction of suffering from disease or from hunger; protection from health risks; long-term prudence (versus short-term expediency); property rights and personal liberties; and public versus private benefits. How such multiple values interact, however, can prove problematic. There is also opportunity to discuss several aspects of environmental ethics, a set of values that were emerging at this time. First, what is the nature of our obligation (if any) to non-human species? Do we protect wildlife only when it is convenient or serves our own aims, or are there intrinsic responsibilities? Second, what is the nature of our responsibilities to each other as mediated indirectly through the environment? What is the nature of our duties to future generations? What is the ethical role of economic "values"? (Even opting to leave events to markets -- a laissez-faire approach -- itself involves values.) Finally, what is the ethical status of "the control of nature," portrayed by Carson as inherently wrong?

### *Politics (Public Policy, Government, Social Studies)*

The case illustrates well the challenges of integrating science and values in public policy. Values may be measured in many ways -- ethically, economically or politically (say, by popular opinion, whether formally "justified" or not). Which should be deemed relevant, and why? How does the scientific information shape these values, without justifying any value itself?

Of particular interest may be the challenge for non-scientists of determining expertise and credibility, especially where scientists seem to disagree. A related issue, also central, is how to make decisions under scientific uncertainty. Is a precautionary principle warranted? In what sense?

In this case, one may also highlight how laws, policies and institutional structures in

1963 contributed to or mitigated the problem of pesticides. The recommendations of the committee may thus be framed more explicitly in terms of proposed legislation, regulatory changes, or Presidential executive initiatives (and particular administrative bodies for particular actions). There is also occasion to articulate the domains of federal versus state regulatory roles.

In this context, the simulation might well be viewed as a training exercise for persons (potentially any citizen?) who might participate in such deliberations or negotiations. The historical context can be valuable in setting important boundaries -- both in available information and in decision-making options. In an alternative decision-making scenario, one might imagine trying to simulate the power structure of the early 1960s, adding a further dimension of political challenges.

### *History.*

Another context for addressing *Silent Spring* is its role in history. Here, reviving the historical perspective of 1963 is paramount. If Carson's claims were eventually vindicated, why was there any controversy at all? Especially important here are the historical sources that help profile the cultural views of the 1950s and early 60s. To echo the politics of the period, one might elect to modify the simulation to allow the chemical companies greater voice.

One of the central lessons of history is the role of contingency. Thus, it is important to discourage tendencies to anticipate the future and to make the history come out "right."

Ideally, of course, regardless of the disciplinary context in which the simulation occurs, the relevance of the various contexts profiled above combine or merge. In all cases, too, Carson's book is a central document.

---

## **Format & Day Plans**

The historical resources assembled here may be used in many ways, of course. For example, one may simply discuss the history of the episode or the various perspectives or use documents related to some particular ethical or scientific issue. However, a simulation emphasizes experience as essential. By adopting a role, one understands a particular perspective in depth, while also coming to appreciate how and why other perspectives may differ. Each participant must be provided time to prepare his or her role, to be able to represent that particular perspective in a creative, open-ended exercise.

For each role, there is particular guidance, identifying essential chapters in *Silent Spring* and background articles--especially published reviews of *Silent Spring* (links on the [Roles](#) webpage). Everyone reads Chapters 2 and 7. There is also a list of common [resources](#), including some internet resources. A [background essay](#) -- which can also be the basis for an instructor's presentation -- introduces the history of DDT, Rachel Carson and her book. [Additional information](#) details news items, popular music and cartoons. These, too, can be used by an instructor to help set the scene in 1963 (say, at the beginning of class).

Like any case study, activities may expand to include more detail or context. The following is a guide to scheduling

---

**Introduction** (½-1 class)

(a) **History of DDT.** (~15 mins.) Possibly use text/visuals from the [background essay](#). This may be expanded with more information about agriculture as monoculture, the problems of disease and crop pests, and pesticides used before 1945.

**Optional:** Set the scene by re-enacting the 1948 Nobel Ceremony. The Instructor takes the role of a Swedish academic and presents the Nobel Prize to Paul Müller (possibly played by a teaching assistant or designated student). Use the [Nobel presentation speech](#) (online), possibly edited. **Optional:** musical fanfare.

(b) **History of Rachel Carson & *Silent Spring*.** (~15-20 mins.) Possibly use text/visuals from the [background essay](#).

**Alternate** to (a),(b): Assign background essay to be read independently by students. The aim is not to provide an exhaustive analytical history or biography, but to present information that an ordinary citizen might know about Carson and pesticides in 1962.

(c) **Task Charge.** (~15 mins.) Present the simulation scenario and the responsibilities of the Committee (see [project profile](#)). Assign roles, discuss reading and writing assignments and available resources.

**Optional:** The Instructor may adopt the role of President Kennedy and issue the charge directly to students as the Committee. This begins to establish the spirit of the simulation and demonstrates for students how role playing works. Note the brief recording of Kennedy on [CBS Reports](#).

**Optional: Preliminary Discussion** (1 class)

For added depth in reading *Silent Spring*, allow students to discuss their personal responses to Carson's book, outside a historical context. This may be based on the whole book, or selected chapters. Chapter 2, "The Obligation to Endure" features many of Carson's themes about control of nature. Chapter 7, "And No Birds Sing," is about harm to birdlife, echoing the book's title. Such discussion might be used to identify or highlight the [themes](#) that can guide the Committee's later discussion. A short "reaction essay" may be required.

**Testimony** ( 1 class)

In this phase, each student gives a presentation to the Committee based on his or her role. I have students prepare a written "position statement" in advance, which also becomes the basis for evaluating their work. The paper is to provide an assessment of Carson's claims from each role's perspective (each focusing on certain issues, as highlighted in the [role descriptions](#)). They should include any policy recommendations (new administrative rules or actions, new laws, funding requirements, etc.). I typically

preview the statements, so that students have feedback comments before presenting information to class.

**Optional:** Alternatively, such papers may be posted on a shared website and serve as either required background reading (with no presentations) or as a reference. I limit presentations to 3 minutes (no notecards) and I require a visual as part of the development of presentation skills.

**Optional:** Students may be allowed, as members of the Committee, to ask questions.

To lead the Committee, the Instructor may adopt the role of [Jerome Wiesner](#) or it may be assigned to a student as a role (fostering leadership skills).

### ***Proposals & Discussion*** (1-2 day)

If not included as part of the testimony phase, students present concrete proposals or recommendations to include in the report to the President. (More recently, to economize on time, I have delved into this activity without extended testimony.)

Discussion may be more formally organized -- using the key issues identified in the [project profile](#) and listed below as a structure. For example, discussing overall Carson's credibility is an appropriate opening. Alternatively, the structure, or agenda, may be established by the person serving as Jerome Wiesner, the PSAC chair, if that role is assigned.

Discussion may be organized around the specific topics, or around specific proposals. Students may need to decide whether they will work towards consensus (ideal, for working through all conflicts) or some other form of reaching a group decision. The most challenging topic, if adopted for discussion, is Carson's claims about "control of nature": is environmental action beyond pesticides warranted? If so, what?

Some instructors may wish students to work on the language and wording of the proposals --and hence, of a final joint report. If so, segments taken from individual position statements (including justification) may facilitate group writing.

### **Optional: *Presidential Medal of Freedom*** (½-1 class)

The Committee may consider, if charged by the President, to consider whether Ms. Carson should receive recognition (such as the Medal of Freedom) for her public service. This discussion can highlight more dramatically the role of voices and communication style in public understanding of science. Carson's information all came from published sources, yet her emotive style influenced public opinion. Is her work especially significant or deserving of merit for this reason?

### ***Epilog*** (½-1 class)

When positions in the simulation are well researched, the participants typically echo the findings of the actual 1963 Committee. That is, they likely validate most of Carson's claims, but also reaffirm the role of pesticides in modern agriculture, hardly entertaining a ban on DDT or other pesticides. You may refer to the actual report of

the President's Science Advisory Committee in May 1963, included [in the "library"](#) (but not listed among the student [resources](#), so as not to upstage the simulation).

Equally important, perhaps, may be the fact that despite such recommendations, little action was taken. The political power of agricultural business managed to suppress major action until the late 1960s. See:

- Angus MacIntyre, "Why Pesticides Received Extensive Use in America: A Political Economy of Pest Management to 1970," *Natural Resources Journal* 27(1987): 534-577.
- Zuoyue Wang, "Responding to *Silent Spring*," *Science Communication* 19(1997): 141-163.

That, too, is part of the lesson about science and politics. An epilog may also be an occasion to reflect on several warnings by scientists and scientific organizations, some in the popular press, in the late 1940s and early 1950s. See:

- Edmund Russell, "Testing Insecticides and Repellents in World War II," pp. 399-409 in *Major Problems in the History of American Technology*, ed. M. Smith & G. Clancey, Boston, MA: Houghton Mifflin.

Why did they not have a cautionary effect?

One may also wish to view and comment on many of the political cartoons inspired by Carson's work, some included [here](#).

**Optional:** One may also discuss current controversies over: (1) the use of DDT in developing nations for control of malaria; (2) the unregulated use of pesticides for individual residences.

### Optional Supplements

Various elements may help set the scene in 1963 (for example, as a prelude or opening to class):

- ["Top Billboard Hits of 1963"](#)
- Tom Lehrer's satirical song, "Pollution"
- [News Headlines](#)

---

### Discussion Guide

As noted elsewhere, discussion may be led by the Instructor or a student in the role of [Jerome Wiesner](#).

The aim is for participants to not merely express their views, but to develop a joint recommendation. Reasoning is central. Thus, one major role of the discussion leader is to ensure that comments articulate clearly the reasons for a particular claim, based on evidence, ethical principles or other shared values. A helpful standard for facilitators is a courteous journalistic tone of gathering information and seeking clarity.

Another role of the discussion leader is to ensure that all stakeholder voices are addressed

in developing the final decision(s). See table below as a general guide for where to expect, and possibly draw out, particular positions. Similarly, the leader can help clarify items of disagreement and actively engage those with contrary perspectives in fruitful exchange.

The leader may wish to clarify, possibly through group discussion, the standards for agreement -- consensus, simple majority, 2/3 majority, or other.

Where the aim is to write a collective document, language can possibly be excerpted from individual position statements or proposals, with the final document a "collage." The Wiesner role may include compiling the final report, in lieu of an original position paper.

The other major challenge for leading discussion in this simulation is helping to deepen the level of discussion, especially where participants may be underprepared. For example, policy proposals may be vague -- advocating a position, not concrete actions or remedies that embody that position. Participants may need to be encouraged and supported in developing specifics.

Also, students tend to appeal to "easy" solutions, such as "we need more research" -- thereby avoiding the "real" issues of managing any current problem. Again, one may need to offer further guidance to resolve the more challenging questions:

- Who *pays* for the research? How much? (This raises ethical questions about who benefits and who bears risks and costs. It may also help expose the historical problem of incentives.)
- Are biological controls truly practical? (Their specificity and cost, in contrast to cheap, broad-based pesticides, may be easily overlooked.)
- How long will the development of alternatives takes? What do we do in the meanwhile?
- Assuming participants document errors in the past (such as exceeding recommended dosages, or human error in safe application), why did such errors occur? What problems (and prospective regulations) should be considered at this deeper level? For example, are the problems with the system of agriculture/forestry or insect-pest control? (Here, Carson's arguments about control of nature become relevant. Bookchin may present a case for the economic system and the regulation of industry, echoing some of Carson's statements about big business.)

The following table lists the various issues and maps them to the particular roles:

	<b>Carson Supporter</b>	<b>Carson Critic</b>
<b>credibility</b> <ul style="list-style-type: none"> <li>• documentation of sources</li> <li>• reliability of facts</li> </ul>	Cole (science) Brown Cottam Bookchin (content,	Diamond Stevens Larrimer? Baldwin (bias)

<ul style="list-style-type: none"> <li>• bias/balance of presentation</li> <li>• rhetoric/tone/style</li> </ul>	style)	[Jukes, Darby]
<b>harm (non-target species)</b> <ul style="list-style-type: none"> <li>• insect pollinators</li> <li>• shared habitat</li> <li>• food chain (*fish, birds)</li> <li>• other</li> </ul>	Cole Clement Cottam [Wallace, Barker, Rudd]	Stevens Larrimer Baldwin?
<b>benefits (target species!)</b> <ul style="list-style-type: none"> <li>• crops: food/fiber/forest</li> <li>• disease control</li> <li>• nuisance/comfort</li> </ul>		Rothberg Cole? Diamond Stevens Larrimer Zavon Baldwin (incl. forestry) Freeman? [Decker, Gill, Jukes, Darby, Simmons]
<b>safety</b> <ul style="list-style-type: none"> <li>• food (carcinogens?)</li> <li>• worker safety</li> </ul>	Cole? Bookchin (Baldwin)	Rothberg? Stevens Zavon Baldwin (workers) [Bean]
<b>insecticide resistance</b>	Brown Cottam Cole?	White-Stevens (alternatives)
<b>indiscriminate use</b> <ul style="list-style-type: none"> <li>• excess/runoff</li> </ul>	Cole Cottam: aerial emulsions Freeman? [Gill]	Rothberg [Decker, Gill]
<b>alternatives:</b> <ul style="list-style-type: none"> <li>• biological (+)</li> <li>• earlier organics (-)</li> <li>• pesticide persistence</li> </ul>	*Freeman (biol.) [Gill]	Baldwin: wary until further research [Decker]

• research		
<b>balance of nature</b>	Clement	White-Stevens
<b>control of nature</b>	Clement	~Bookchin Cole White-Stevens [Decker]

---

Simulation assembled by Douglas Allchin. || *last revised May 21, 2008*