CHAPTER 3

Research Methods

In summer 2007, UCS sent a 44-question survey to almost 5,500 EPA scientists—a large fraction of the agency's 6,000 to 8,000 scientists (see more on the sample below). The survey asked these scientists about political interference in their work, the use of science in agency decision making, the EPA's effectiveness, employee morale, and other topics. The 1,586 scientists who responded were largely senior scientists: two-thirds had been with the EPA for 10 years or more, three-fourths had an advanced degree, and more than 80 percent were at General Service level 13 or higher.

UCS contracted with the Center for Survey Statistics and Methodology (CSSM) at Iowa State University to conduct the survey and tabulate and analyze the data. CSSM produced an online questionnaire that used anonymous logins and passwords to track which recipients had completed the survey, and to allow follow-up reminders to those who had not. Survey recipients received an initial email contact containing the login and password, as well as a hard copy mailed to their place of work. To boost the response rate, the researchers sent up to three reminder emails to those who had not responded.

To allow survey respondents to freely express their opinions about the EPA, our highest priorities were ensuring their confidentiality and anonymity. Thus, while UCS provided the sample of scientists that received the survey, we did not have access to any links between a given survey response and personal information, such as a name or email address. CSSM maintained such links solely to send out targeted reminder emails during the data collection period, and destroyed all such links once it closed the survey.

Creating the Survey Mailing List

No centralized directory of EPA scientists is available, so we drew on many sources to create the mailing list for the survey. Some offices and divisions list staff members online, and provide information on their job and project duties. Other divisions provided incomplete or no information about staff members online.

To fill these gaps, UCS asked current and former EPA employees to review staff lists from all remaining scientific offices and divisions, to identify scientists and exclude nonscientists. We also used targeted Internet searches to turn up information about employees' job titles and duties through lists of conference attendees, authors of peer-reviewed papers, internal memoranda, and newsletters. To allow as many EPA scientists as possible to participate, we erred on the side of including employees who worked at scientific branches and divisions even if their job duties were unclear.

The mailing list was therefore broad but of uneven quality. For example, in divisions that posted names but not job titles, the sample likely included some nonscientists. Conversely, the survey may have improperly excluded some legitimate scientists working in divisions where Internet search was the primary means of obtaining information. This approach also produced a notable bias toward agency veterans, as their names were more likely to appear on a website, at the expense of younger scientists and new hires. To address these shortcomings, we relied on several demographic questions in the survey itself to exclude nonscientists (see below).

Once we identified the names of EPA scientists, obtaining contact information was straightforward, as the online EPA Employee Locator provides telephone numbers, email addresses,

postal addresses, and mail codes (EPA 2008c). We excluded anyone whose name did not appear in the locator from the mailing list.

Defining "Scientist"

We used a broad definition of "scientist" when compiling the mailing list. That is, we included Ph.D. scientists who had been promoted to policy-making positions and who no longer performed bench science, as well as individuals with a bachelor's degree whose daily work involves running experiments.

To confirm that we were surveying only agency scientists, we asked the recipients of the survey to identify their highest level of education, their major field of training, the percentage of their job duties that related to scientific topics, and what their EPA scientific work involved. We excluded the small number of respondents who indicated that zero percent of their job duties related to science from the sample.

Survey Questionnaire

The survey questionnaire featured 43 multiple-choice questions and one open-ended essay question. Besides posing demographic questions, the survey asked respondents about institutional support for scientists, agency culture and openness, employee morale and job satisfaction, the EPA's resources and effectiveness, the extent to which the policy-making process relied on science, and specific issues such as contracting and library closures.

The survey also asked respondents about their personal experiences with various forms of political interference in scientific work. And the open-ended essay question asked about how to improve the integrity of science at the EPA. (See Appendix A for the questionnaire and total responses, and Appendix B for further analysis of statistics in this report.)

Survey Demographics

CSSM mailed and emailed letters about the survey to 6,035 EPA employees beginning on June 25, 2007, and collected data until September 7, 2007. Email messages to 395 individuals bounced back as undeliverable; it is likely that these individuals are no longer EPA employees. CSSM also excluded 221 recipients judged to be nonscientists based on their personal communication or survey responses. Thus the eligible sample totaled 5,419 individuals (see Appendix D for a full methodology report from CSSM).

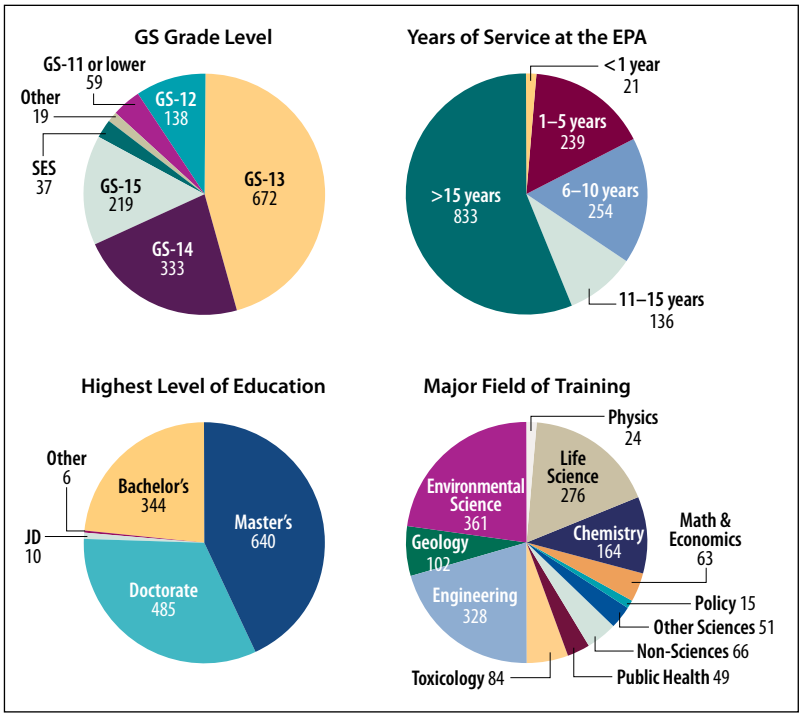
CSSM received completed surveys from 1,586 of these scientists, for a response rate of 29 percent (see Table 1). However, because of the unknown selection effects described above, the true response rate for EPA scientists is uncertain. Of the scientists who did respond, 855 answered the essay question.

The survey was designed to measure raw numbers of scientists who experienced political interference in their scientific work. Because of unknown selection effects in creating the sample, and the self-selection of respondents, it is difficult to extrapolate these raw numbers to a percentage of the EPA's total scientific workforce. Our analysis of the results includes percentages mainly as a tool for comparing scientists' responses to different options, and for comparing responses from different EPA offices and divisions.

TABLE 1: **Summary of the Survey's Sample Size and Response Rate**

	No.	Percent	No.	Percent
Total sample	6,035	100.0		
Ineligible	221	3.7		
No email available	395	6.5		
Total eligible sample	5,419	89.8		
Refusals			73	1.3
Unavailable for study duration			10	0.2
No response			3,750	69.2
Completed surveys			1,586	29.3
Response rate	29.3%			

FIGURE 5: **Basic Demographics of Survey Respondents**



To prevent anyone from identifying individual respondents from the data, we report results only for offices or divisions where 100 or more scientists received the survey.

Respondents included scientists from a broad range of disciplines (see Figure 5) working in every major office and subdivision of the EPA. Three-quarters (76 percent) held either a master's or doctoral degree, and a large majority (65 percent) spent more than half their time working on scientific topics. Nearly two-thirds (65 percent) were agency veterans with more than 10 years' experience at the EPA, and the vast majority (83 percent) were high-level government employees at General Service levels 13 through 15. Thirty-seven respondents were employees in the Senior Executive Service—scientists who serve in key positions just below the top presidential appointees.

The EPA's Response

In response to our initial email request, some EPA managers instructed their employees not to complete the survey, even though our cover letter indicated that they could do so on their free time or from a nonwork computer. However, after examining the project's methodology and goals, the deputy ethics officer of the EPA's Office of General Counsel circulated an email stating that the OGC had no legal concerns about the survey. The email affirmed that EPA employees could complete the survey on their personal time, and that doing so on their work computer would fall under the EPA's "limited use" policy. (See Appendix C for the initial emails and the response from the OGC.)

Interviews and Document Requests

To provide context for the survey results, we also interviewed 27 current and former EPA employees on scientific freedom at the EPA, and talked with three non-EPA scientists about their experiences working with EPA colleagues. The interviews focused on the sources' personal experience with political interference in their work, their perceptions of the agency's current and past work environment, and their recommendations for reform. We conducted most interviews via telephone, and most sources asked us not to name them in this report.

We also filed Freedom of Information Act (FOIA) requests for EPA documents on six topics: the closure of the OPPTS Chemical Library; the Toxics Release Inventory (TRI) burden reduction rule; the creation of the Endocrine Disruptor Screening Program (EDSP); the formulation of the Clean Air Mercury Rule; the formulation of the latest National Ambient Air Quality Standards for particulate matter, ozone, and lead; and the ability of climate change scientists to speak to the media and the public. As of press time, we had received complete responses to two of the FOIA requests (on the chemical library and TRI), two incomplete responses (EDSP and NAAQS), and no response to the remaining two requests. Multiple phone calls over six months to both the agency's chief FOIA officer and officials at the Office of Air and Radiation failed to secure timely release of the documents.