Union of Concerned Scientists
Citizens and Scientists for Environmental Solutions

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**Before the U.S. House Committee on Oversight and Government Reform**

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*This testimony is presented by Dr. Francesca Grifo, Senior Scientist with the Union of Concerned Scientists (UCS), a leading science-based nonprofit working for a healthy environment and a better world. The full testimony is submitted for the record and Dr. Grifo will summarize her statement for the Committee on the problem of political interference in the work of federal government scientists.*

Good morning, my name is Dr. Francesca Grifo. I am a Senior Scientist and the Director of the Scientific Integrity Program at the Union of Concerned Scientists, a leading science-based nonprofit working for a healthy environment and a safer world. I would like to thank Chairman Waxman, Ranking Member Davis and the Members of the Committee for the opportunity to speak to you this morning about the problem of political interference in the work of federal government scientists.

This written testimony contains a brief introduction (p. 1), an overview of the issue of scientific integrity (p. 3), a summary of the report *Interference at the EPA: Politics and Science at the U.S. Environmental Protection Agency* released April 23, 2008 (p. 6), a detailed analysis of political interference in the EPA's ozone decision (p. 11), a summary of reforms needed to restore scientific integrity to the federal policy making process (p. 17) and some concluding thoughts (p. 23). Also included are a timeline of abuses of science compiled by UCS (p. 24), selected essay responses from UCS's survey of EPA scientists (p. 27), a statement on *Scientific Freedom and the Public Good* endorsed by many prominent scientists (p. 32), and brief summaries of four past surveys of federal government scientists conducted by UCS (p. 33).

## I. Introduction

The United States has enjoyed prosperity and health in large part because of its strong and sustained commitment to independent science. As the nation faces new challenges at home and growing competitiveness abroad, the need for a robust federal scientific enterprise remains critical. Unfortunately an epidemic of political interference in federal science threatens this legacy, promising serious and wide-ranging consequences.

The U.S. Environmental Protection Agency (EPA) has been especially harmed by political interference in its work to protect human health and the environment. The flagrant political interference in EPA's decision regarding the national ambient air quality standard (NAAQS) for ground-level ozone is emblematic of this epidemic.

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Despite the unanimous recommendation from the EPA's scientific advisors that the ozone NAAQS should be set no higher than 70 parts per billion (ppb), in March 2008 EPA Administrator Stephen Johnson issued the final ozone standard at 75 ppb – a level not based on the best science and not sufficiently protective of public health. This decision followed multiple edits to EPA documents by the White House that played-up uncertainties in scientific knowledge of the health effects of ozone exposure and laid the groundwork for Johnson's decision. The White House also directly overruled the EPA's attempt to set a secondary standard to protect crops and plant life from ozone exposure.

These and other EPA decisions based on tainted science have consequences for the health and safety of Americans that can be measured in numbers of hospital visits and premature deaths.[1] The White House has also rewritten EPA scientific documents concerning climate change, pressured EPA scientists to support predetermined conclusions regarding mercury pollution and has pushed for rules that politicize the scientific findings contained in the IRIS toxics database.

To assess the breadth and depth of political interference at the EPA, and to give voice to the thousands of civil servant scientists working at the agency, the Union of Concerned Scientists (UCS) distributed a 44-question survey to nearly 5,500 scientists at the EPA in the summer of 2007 and received responses from 1,586 scientists. The results of that survey, as well as additional investigations, are contained in our recently released report *Interference at the EPA: Politics and Science at the U.S. Environmental Protection Agency*.[2] We summarize here the problems with scientific integrity across the federal government, the major findings of this latest report and outline the solutions needed to restore scientific integrity to federal decision making.

Political interference has penetrated deeply into the culture and practices of federal agencies. This interference in science threatens our nation's ability to respond to complex challenges to public health, the environment, and national security. It risks demoralizing the federal scientific workforce and raises the possibility of lasting harm to the federal scientific enterprise. It betrays public trust in our government and undermines the democratic principles upon which this nation was founded. The thousands of scientists in the employ of the federal government represent a tremendous resource and their knowledge and advice should not be manipulated or ignored. Without strong action to restore integrity to federal science our nation will be ill-prepared to deal with the challenges we face.

[1] Scientific papers documenting the health effects of particulate matter and ozone air pollution are numerous and citations for a number of such studies are collected in the following documents: Shprentz, D. 2007. Top ten ozone studies: Public testimony on EPA's proposed revisions to the national ambient air quality standard for ozone. August 30. Online at http://www.cleanairstandards.org/article/2007/08/743; American Lung Association. 2005. Adverse health effects of particulate matter: New science shows effects below current standards. Online at http://www.cleanairstandards.org/article/2005/06/395.

[2] To read the text of the report and see supporting materials go to http://www.ucsusa.org/EPAscience/.

## II. Scientific Integrity

Successful application of science has played a large part in the policies that have made the United States of America the world's most powerful nation and its citizens increasingly prosperous and healthy.

Although scientific input to the government is rarely the only factor in public policy decisions, scientific input should always be weighted from an objective and impartial perspective. Presidents and administrations of both parties have long adhered to this principle in forming and implementing policies. However, the current Bush administration has consistently undermined this legacy by manipulating, censoring and suppressing the work of federal government scientists—with serious consequences for our health, safety, and environment.

Misrepresenting and suppressing scientific knowledge for political purposes can have serious consequences. For example, if the Nixon administration suppressed air quality studies and vetoed the Clean Air Act of 1970, Americans would have suffered more than 200,000 premature deaths and millions of cases of respiratory and cardiovascular disease over the next 20 years.[3]

This misuse of science has led Russell Train, the EPA administrator under Presidents Nixon and Ford, to observe: "How radically we have moved away from regulation based on independent findings and professional analysis of scientific, health and economic data by the responsible agency to regulation controlled by the White House and driven primarily by political considerations."[4]

Political interference in the work of federal scientists has become widespread in the past several years. To catalog these abuses, UCS launched the *A-to-Z Guide to Political Interference in Science* (see p. 18)[5] a webpage that now documents 85 case studies of such interference, involving 24 government agencies. In our February 2008 report, *Federal Science and the Public Good*,[6] we outlined the patterns of interference with government science. The report also highlights the deeper systemic changes that have been made to the structure and policies of the executive branch that threaten to enshrine politicized science even after George W. Bush leaves office. These findings are summarized below.

**Patterns of Abuse**

Specific examples of the misuse of science have occurred across a broad range of issues such as childhood lead poisoning, toxic mercury emissions, climate change, reproductive health, and nuclear weapons. Experts at the FDA charged with ensuring the safety of our food and drug supply, report being pressured to alter their scientific conclusions. Political appointees in the Department of the Interior have been exposed for overruling the scientific consensus and refusing to protect endangered species. Scientists nominated to serve on scientific advisory boards report being asked about their political leanings. And scientists studying what may very

[3] See http://www.epa.gov/oar/sect812. See also data from the American Meteorological Society, online at http://ametsoc.org/sloan/cleanair/index.html.
[4] Train, R. 2003. "E.P.-Eh?" Grist Magazine, September 23.
[5] See http://www.ucsusa.org/AtoZ/.
[6] To read the text of the report go to http://www.ucsusa.org/scientific_integrity/restoring/federal-science.html.

well be the most profound global change of this century – global warming – are effectively barred from communicating their findings to the news media and the public.

Interference can take many different forms, including:

- Falsifying data and fabricating results. Federal officials with little or no scientific background have misrepresented scientific data and presented scientific results not based on actual research.

- Selectively editing reports and creating false uncertainty. Political appointees have selectively deleted evidence from scientific documents, and exaggerated uncertainty in scientific findings.

- Tampering with scientific procedures. Federal agencies have replaced standard scientific procedures with flawed methodologies, biased toward finding predetermined results.

- Intimidating and coercing scientists. High-level administration officials have directly pressured researchers at federal agencies to alter scientific findings, threatening reprisal if they refuse.

- Censoring and suppressing scientists. Federal officials have prevented scientists from communicating with their colleagues, the media, and the public.

- Hiding, suppressing, and delaying release of scientific findings. Federal officials have buried scientific findings and prevented their public release.

- Disregarding legally mandated science. Federal agencies have repeatedly ignored scientific research that by law must form the basis for certain policy decisions.

- Allowing conflicts of interest. Officials with clear conflicts of interest have held key positions throughout the federal government, from which they have made decisions harming the integrity of federal science.

- Corrupting scientific advisory panels. Political interests have manipulated the process for selecting members of independent scientific advisory panels.

**Changing the Rules**

Beyond the system-wide epidemic of interference, the Bush administration has instituted deeper changes in the structure and policies of the executive branch. Without a strong commitment to scientific integrity from the next president and Congress, these changes may ensure that politicization of science will continue after President Bush leaves office.

- Centralizing decision making and the unitary executive. The Bush administration has invoked the theory of the "unitary executive" to justify tight White House control over federal agencies. For example, President Bush has greatly expanded the use of signing statements. He has used them to assert his right to ignore or disobey any laws or requests

he considers unconstitutional, including congressional requests for scientific information and whistle-blower rights for federal employees. Executive order 13422 dramatically expands the role of the Office of Management and Budget (OMB) in reviewing all agency regulations, including the scientific basis for regulations.

- Homogenizing agency decision making. The White House has sought to replace the policies of individual agencies regarding peer review of scientific findings, risk assessment, and cost-benefit analysis with inappropriate government-wide standards, ignoring the reality that each federal agency requires different tools to best fulfill its mission.

- Reducing transparency. The Bush administration has limited government transparency and accountability by preventing public disclosure of information on the internal workings of the federal government. New policies regarding Freedom of Information Act requests and classification of government documents have created a "presumption of secrecy." In this approach, agencies automatically keep information from public view unless someone specifically requests it, or the law requires them to disclose it.

- Adding unnecessary bureaucracy. New demands, including interagency review and excessive legal challenges from industry, have prevented federal agencies from acting promptly to protect public health and safety.

- Retaliating against whistle-blowers. The Bush administration's penchant for secrecy and centralizing executive power has increased the vulnerability of federal employees who blow the whistle on government waste, fraud, or abuse.

- Foxes guarding the henhouse. The revolving door for officials who shuttle between high-level government positions and regulated industries has harmed the integrity of federal science. The legacy of political appointees with conflicts of interest lives on in the agencies after their departure—through both the flawed policies they helped enact and the erosion of public trust in agency integrity.

- Removing science from decision making. Administration officials have often simply shut out scientists and scientific information from the policy discussion.

- Weakening enforcement and monitoring. Many federal agencies have seen their ability to enforce the nation's laws decline under the Bush administration. In many cases, agencies are simply not collecting the data they need to ensure robust enforcement.

**Scientist Surveys**

To move beyond anecdotes and to gather information about the extent and nature of the interference, UCS has conducted a series of surveys of federal scientists. Previous surveys have given voice to scientists at the Fish and Wildlife Service, the National Ocean and Atmospheric

Administration Fisheries, the Food and Drug Administration and climate scientists working in seven federal agencies.[7] The survey of EPA scientists is the fifth in the series.

Collectively 3,400 federal government scientists responded to these five surveys. Several common themes ran through their responses:

- 1301 scientists across nine federal agencies reported that they fear retaliation for openly expressing their concerns about the mission driven work of their agencies.
- 688 scientists from four agencies reported that they were not able to publish work in peer reviewed journals if it did not adhere to agency policies.
- 150 federal climate scientists from seven agencies personally experienced at least one incident of political interference in the past five years.
- And from our most recent report, 889 EPA scientists personally experienced at least one incident of inappropriate interference in their work over the past five years.

**Scientists Respond**

The scientific community has responded to this growing problem. The more than 15,000 individual scientists, including 52 Nobel Laureates and nearly 200 members of the National Academies, who have called for a restoration of scientific integrity in federal policy making have been joined by several major scientific associations, including the American Association for the Advancement of Science, the American Public Health Association, the American Geophysical Union, and the Ecological Society of America, which have addressed the problem at society wide meetings and have begun to investigate how to defend science.

## III. Interference at the EPA

The U.S. Environmental Protection Agency (EPA) has the simple yet profound charge "to protect human health and the environment." EPA scientists apply their expertise to protect the public from air and water pollution, clean up hazardous waste, and study emerging threats such as global warming. Because each year brings new and potentially toxic chemicals into our homes and workplaces, because air pollution still threatens our public health, and because environmental challenges are becoming more complex and global, a strong and capable EPA is more important than ever.

Yet challenges from industry lobbyists and some political leaders to the agency's decisions have too often led to the suppression and distortion of the scientific findings underlying those decisions—to the detriment of both science and the health of our nation. While every regulatory agency must balance scientific findings with other considerations, policy makers need access to the highest-quality scientific information to make fully informed decisions.

Concern over this problem led the Union of Concerned Scientists (UCS) to investigate political interference in science at the EPA. In the summer of 2007, UCS, working with the Center for Survey Statistics and Methodology at Iowa State University, distributed a 44-question survey to nearly 5,500 EPA scientists, asking for information about political interference in their scientific work, the use of science in EPA decision making, barriers to communication, employee morale,

[7] More information about the surveys can be found at http://www.ucsusa.org/surveys/.

and the agency's effectiveness. UCS identified these scientists through EPA websites, consultations with current and former employees, and targeted Internet searches.

We received completed surveys from 1,586 scientists, for a response rate of 29 percent. These respondents represented every scientific program office at EPA headquarters, all 10 regional offices, and more than a dozen research laboratories across the country. Most respondents were agency veterans, with more than a decade of experience at the EPA. Beyond specific survey questions, more than 850 scientists also provided written comments in response to an open-ended essay question. To add to this information, UCS interviewed dozens of current and former EPA scientists.

The results of these investigations show an agency under siege from political pressures. On numerous issues—ranging from mercury pollution to groundwater contamination to climate change—political appointees of the George W. Bush administration have edited scientific documents, manipulated scientific assessments, and generally sought to undermine the science behind dozens of EPA regulations.

These findings highlight the need for strong reforms to protect EPA scientists, make agency decision making more transparent, and reduce politicization of the regulatory process.

**Political Interference in Scientific Work**

Large numbers of EPA scientists reported widespread and inappropriate interference by EPA political appointees, the White House, and other federal agencies in their scientific work:

- 889 scientists (60 percent of respondents[8]) personally experienced at least one incident of political interference during the past five years.

- Among EPA veterans (scientists with more than 10 years experience at the agency), 409 (43 percent) said interference occurred more often in the past five years than in the previous five-year period.

EPA scientists also reported personally experiencing specific forms of political interference, from the explicit to the subtle:

- 94 scientists (7 percent) had frequently or occasionally been "directed to inappropriately exclude or alter technical information from an EPA scientific document."

- 191 scientists (16 percent) had personally experienced frequent or occasional "situations in which scientists have actively objected to, resigned from, or removed themselves from a project because of pressure to change scientific findings."

- 232 scientists (18 percent) had personally experienced frequent or occasional "changes or edits during review that change the meaning of scientific findings."

[8] Unless otherwise stated, percentages reflect the share of respondents who answered a specific question.

- 285 scientists (22 percent) had personally experienced frequent or occasional "selective or incomplete use of data to justify a specific regulatory outcome."

- 153 scientists (13 percent) had personally experienced frequent or occasional "pressure to ignore impacts of a regulation on sensitive populations."

- 299 scientists (24 percent) had personally experienced frequent or occasional "disappearance or unusual delay in the release of websites, press releases, reports, or other science-based materials."

- 394 scientists (31 percent) had personally experienced frequent or occasional "statements by EPA officials that misrepresent scientists' findings."

Respondents indicated that political interference arose from both internal and external sources:

- 516 scientists (43 percent) knew of "many or some" cases where EPA political appointees had inappropriately involved themselves in scientific decisions.

- 560 scientists (49 percent) knew of "many or some" cases where political appointees at other federal agencies had inappropriately involved themselves in decisions.

- 507 scientists (42 percent) knew of "many or some" cases where "commercial interests have inappropriately induced the reversal or withdrawal of EPA scientific conclusions or decisions through political intervention."

- 329 scientists (28 percent) knew of such interference by "nongovernmental or advocacy groups."

In essay responses, nearly 100 scientists identified the White House Office of Management and Budget (OMB), which oversees the federal budget and coordinates all federal regulations, as the primary source of external interference.

Respondents reported widespread respect for their direct supervisors, but had fewer commendations for EPA's senior leaders:

- 1,282 scientists (81 percent) respected the integrity and professionalism of their direct manager or supervisor, while 686 (43 percent) said the same about EPA's senior leaders.

- A majority of respondents (906 scientists, or 59 percent) agreed that their direct supervisor stands behind scientific staff who express politically controversial opinions.

Rates of political interference varied widely among offices and divisions within the agency:

- The percentage of scientists reporting interference was highest in the program offices with regulatory duties, and at EPA headquarters. A total of 337 scientists in the program

offices (68 percent), and 379 scientists at headquarters (69 percent), reported at least one incident of interference in the past five years.

- The percentage of scientists reporting interference was lower—although still significant—in the Office of Research and Development (ORD), the EPA's main research arm. The ORD's National Health and Environmental Effects Research Laboratory was notably freer of interference (39 percent) than any other EPA division, while its National Center for Environmental Assessment had the highest percentage of scientists reporting interference of all EPA divisions (84 percent).

- The percentages of scientists reporting interference in the 10 regional offices varied widely, from 44 percent (region 6) to 73 percent (region 9).

To place these results in context, we cite specific incidents of interference. For example, political appointees at the White House and in top positions at the EPA manipulated scientific findings and analyses regarding mercury pollution and climate change. These incidents involved pressure to change scientific methods and findings, direct editing of scientific documents by nonscientists, and delayed release of scientific reports.

A third case—involving interagency review of the EPA's assessment of toxic chemicals—illustrates the growing ability of the OMB and other federal agencies to review and second-guess the work of the EPA's scientific experts.

**Barriers to the Free Communication of Science**

The free communication of scientific results is a critical part of the scientific process. Despite statements by EPA leaders asserting that the agency supports scientific openness, many scientists report that it restricts free communication of the results of taxpayer-funded research:

- 783 scientists (51 percent) disagreed or strongly disagreed that EPA policies allow scientists to "speak freely to the news media about their findings." Another 556 scientists (36 percent) had no opinion or were unsure. Only 197 scientists (13 percent) agreed that the EPA allows scientists to communicate freely with the media.

- 291 scientists (24 percent) disagreed or strongly disagreed that they are "allowed to publish work in peer-reviewed scientific journals regardless of whether it adheres to agency policies or positions."

Beyond these restrictive policies, hundreds of scientists said they fear retaliation for speaking candidly about the EPA's work. More scientists feared retaliation for speaking candidly inside the agency than outside it:

- 492 scientists (31 percent) disagreed or strongly disagreed that they could openly express concerns about the EPA's work *inside* the agency without fear of retaliation.

- 382 scientists (24 percent) disagreed or strongly disagreed that they could openly express concerns about the EPA's work *outside* the agency without fear of retaliation.

Interviews with current and former EPA scientists revealed new examples of problems in communicating scientific research. In two cases, EPA scientists were barred from presenting research on climate change at scientific conferences. Other scientists reported difficulties speaking with the media and obtaining EPA clearance to publish their findings in scientific journals.

Political interference in scientific work combined with barriers to the free communication of scientific findings affect the amount and quality of information the U.S. public receives.

**Undermining the Role of Science in EPA Decision Making**

Scientific information is the lifeblood of much of the EPA's work and the credibility of its decisions depends on the quality of its scientific work. A plurality of EPA scientists reported that the agency's regulatory policies are consistent with its scientific findings. However, a similar number felt that the EPA could do a better job of using the best judgment of its scientific staff:

- 745 scientists (48 percent) felt that the EPA's determinations and actions are frequently or always consistent with the scientific findings in agency documents and reports.

- 719 scientists (47 percent) felt that the EPA's determinations occasionally, seldom, or never make use of the best judgment of its scientific staff.

Hundreds of EPA scientists also felt that the agency only occasionally incorporates expert advice from advisory committees into policy decisions:

- 553 (36 percent) scientists felt that the agency occasionally, seldom, or never heeds advice from independent scientific advisory committees.

Recent changes in the EPA's process for setting the National Ambient Air Quality Standards provide one prominent example of how political considerations have trumped scientific expertise and sidelined EPA's scientific advisory committees.

**Challenges to Agency Effectiveness**

Beyond political interference in EPA science, several survey questions asked respondents about other factors that could impair their ability to do their jobs, and the ability of the agency as a whole to fulfill its mission. Large numbers of EPA scientists indicated that a lack of sufficient or appropriate resources was a serious issue in their office or division:

- 969 scientists (62 percent) disagreed or strongly disagreed that the "EPA division where I work has sufficient resources to adequately perform its mission of protecting human health and the environment."

- 555 scientists (36 percent) agreed or strongly agreed that the "recent changes and closures in the EPA library system have impaired my ability to do my job." This opinion was especially prevalent among scientists in regions 5, 6, and 7, which had their libraries closed (86 of these scientists, or 48 percent, agreed).

- 574 scientists (41 percent) agreed or strongly agreed that "the trend toward contracting out scientific work is harming the effectiveness of my division."

Survey questions also asked scientists about their job satisfaction, and the morale in their division:

- Respondents were twice as likely to report a decrease in job satisfaction over the past five years as to report an increase (670 versus 328 scientists).

- Opinions about workforce morale ranged widely. A total of 564 scientists (37 percent) said morale was fair, and 387 (25 percent) said morale was poor or extremely poor. A total of 570 scientists (37 percent) said morale was good or excellent.

Questions about the overall effectiveness of the EPA elicited a range of responses:

- Respondents were more likely to agree than disagree that the EPA was acting effectively to clean up environmental problems. A total of 812 scientists (52 percent) agreed that the EPA acts effectively to "clean up and/or mitigate existing pollution or environmental problems," while 522 (33 percent) disagreed.

- 694 scientists (44 percent) agreed that the EPA acts effectively to "foster practices that prevent environmental degradation or adverse health effects before they occur," while 629 scientists (40 percent) disagreed.

- Respondents were twice as likely to report a decrease in the effectiveness of their office or division (696 scientists, or 45 percent) as an increase (321 scientists, or 21 percent) over the past five years.

- Respondents were evenly split on whether the EPA is moving in the right direction. A total of 685 scientists (44 percent) disagreed that EPA is moving in the right direction, while 624 scientists (40 percent) agreed.

## IV. The Ozone NAAQS: A Case Study in Political Interference

The EPA's recent rulemaking setting the national ambient air quality standards (NAAQS) for ground-level ozone provides a perfect case study for understanding the extent of political interference in EPA's science and the consequences of this interference for the health of Americans.

Despite the unanimous recommendation from the EPA's scientific advisors that the ozone NAAQS should be set no higher than 70 parts per billion (ppb), in March 2008 EPA Administrator Stephen Johnson issued the final ozone standard at 75 ppb – a level not based on the best science and not sufficiently protective of public health. This decision followed multiple edits to EPA documents by the White House that played up uncertainties in scientific knowledge of the health effects of ozone exposure and laid the groundwork for Johnson's decision. The

White House also directly overruled the EPA's attempt to set a secondary standard to protect crops and plant life from ozone exposure.

Ground-level ozone—a component of smog—is created by chemical reactions between oxides of nitrogen and volatile organic compounds in the presence of sunlight. Multiple studies indicate that exposure to ozone pollution can cause and exacerbate a variety of respiratory health problems, and can even lead to premature death.[9] The EPA's recent decisions contradict both the letter and spirit of the Clean Air Act, which requires that the NAAQS be based on the "latest scientific knowledge" and be sufficiently protective of public health. Interference in the ozone standard is only the latest example of political meddling with air pollution standards, a disturbing trend that has serious consequences for the health and well-being of Americans.

This example illustrates many of the findings of our survey of EPA scientists, including the intrusive role of the White House Office of Management and Budget (OMB), direct interference in the work of EPA's staff scientists and systemic disregard for the expertise of EPA's advisory committees. The documented interference described below is one instance of the widespread interference seen in the following survey statistics:

- Nearly one-hundred EPA scientists noted in their essay responses widespread interference from OMB not just in reviewing EPA's policies, but also the science underlying those policies.
- 94 scientists (7 percent) had frequently or occasionally been "directed to inappropriately exclude or alter technical information from an EPA scientific document."
- 232 scientists (18 percent) had personally experienced frequent or occasional "changes or edits during review that change the meaning of scientific findings."
- 285 scientists (22 percent) had personally experienced frequent or occasional "selective or incomplete use of data to justify a specific regulatory outcome."
- 153 scientists (13 percent) had personally experienced frequent or occasional "pressure to ignore impacts of a regulation on sensitive populations."
- 553 (36 percent) scientists felt that the agency occasionally, seldom, or never heeds advice from independent scientific advisory committees. This result was markedly worse at the Office of Air Quality Planning and Standards (OAQPS) which works closely with advisory committees to set the NAAQS. Half of these respondents (29 scientists, or 50 percent) felt the EPA did not heed the advice of the advisory committees.

*Background*

The Clean Air Act requires the EPA to set NAAQS for six "criteria" air pollutants (ozone, fine and coarse particulate matter, lead, nitrogen dioxide, sulfur oxides, and carbon monoxide), and to review each standard every five years. Under the act, the EPA must base the NAAQS on the "latest scientific knowledge" and in 2001 the Supreme Court affirmed that the agency cannot consider costs or other factors in setting the NAAQS.[10] While the EPA has rarely kept to the five-year schedule, the strong scientific mandate of the Clean Air Act has ensured that standards

[9] Shprentz 2007.
[10] Whitman v. American Trucking Associations, Inc. 531 U.S. 457 (2001).

for these air pollutants eventually reflect advances in scientific understanding. These standards are responsible for widespread improvements in air quality and public health.

In 2006, the EPA's Clean Air Science Advisory Committee (CASAC) unanimously recommended tightening the ozone standard from 80 parts per billion (ppb) to a level as strict as 60 ppb, and in no case higher than 70 ppb. To support that standard, the committee cited recent controlled clinical studies documenting "statistically-significant decrements in lung function" at concentrations of 80 ppb, and "adverse lung function effects" in some individuals at 60 ppb.[11] CASAC also cited several new studies providing evidence of increased likelihood of premature death at ozone exposure levels below 80 ppb,[12] a connection that was recently confirmed by a recent report of the National Research Council.[13]

The Clean Air Act provides a strong mandate to the EPA to rely on the consensus opinions of its scientific staff and independent advisers. However, Administrator Johnson overruled these experts by setting the primary ozone standard at 75 ppb, and after direct intervention by President Bush, adopted a secondary standard for ozone that was also weaker than the scientific experts recommended. The decision by Johnson mirrors his earlier decision to overrule his scientific advisers regarding the NAAQS for fine particulate matter pollution. Even more troubling, is the EPA's attempt to cut science out of the standard setting process entirely.

*Regulatory Impact Statement*

Although the law does not allow the EPA to account for economic costs when setting the NAAQS, the EPA is required to perform a regulatory impact analysis (RIA) that weighs net costs and benefits for any proposed or final regulation. Agencies must adhere to strict guidelines set forth by the OMB when preparing RIAs. The Office of Information and Regulatory Affairs (OIRA, a part of OMB) requested that EPA make a number of changes to the RIA for the ozone NAAQS that undermined the scientific evidence of the benefits of a stronger regulation.[14]

The connection between ozone exposure and premature mortality emphasized by CASAC leads to the single largest economic benefit to a stronger ozone standard in the RIA.[15] Despite the scientific evidence for this connection, OIRA altered statements in the RIA to cast doubt on the findings and requested that EPA include cost-benefit analyses that assume no connection to

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[11] Clean Air Science Advisory Committee (CASAC). 2006. Peer review of the EPA's 2nd draft ozone staff paper. October 24; for example Adams W.C. 2002. Comparison of chamber and face-mask 6.6 hour exposures to ozone on pulmonary function and symptoms responses. *Inhalation Toxicol*. 14:745-764; Adams, W.C. 2006. Comparison of chamber 6.6 h exposures to 0.04-0.08 PPM ozone via square-wave and triangular profiles on pulmonary response. *Inhalation Toxicol*, 18:127-136.

[12] CASAC 2006; for example Bell M.L., A. McDermott, S.L. Zeger, J.M. Samet, F. Dominici. 2004. Ozone and short-term mortality in 95 US urban communities, 1987-2000. *JAMA*, 292: 2372-2378.

[13] National Research Council. 2008. Estimating mortality risk reduction and economic benefits from controlling ozone air pollution. National Academies Press: Washington, DC. Online at http://www.nap.edu/catalog/12198.html.

[14] OMB Watch. 2007. Polluted logic: How EPA's ozone standard illustrates the flaws of cost-benefit analysis in regulatory decision making. December 5. Washington, DC. Online at http://www.ombwatch.org/regs/PDFs/PollutedLogic.pdf.

[15] U.S. Environmental Protection Agency. 2007. Regulatory Impact Analysis of the proposed revisions to the national ambient air quality standards for ground-level ozone. July. Online at www.epa.gov/ttn/ecas/ria.html#ria2007.

premature mortality. OIRA's edits resulted in a downward shift in the range of possible net economic benefits ascribed to a stronger ozone standard.

*Primary Standard*

In addition to interfering in the scientific information contained in the RIA, OMB also introduced last-minute changes to the proposed ozone rule released in July 2007. These changes played up "uncertainties" in several aspects of the scientific findings and sought to provide justification for maintaining the 80 ppb standard. Other OMB edits also attempted to lay the groundwork for a weakened standard, including a suggestion for legally bypassing the Supreme Court's opinion in *Whitman v. American Trucking Assns, Inc.* [16]

Industry groups and local governments actively lobbied both the White House and the EPA to leave the 80 ppb standard unchanged, an option left open by the EPA's proposed rule.[17] On March 12, 2008, Administrator Johnson overruled CASAC to set the primary NAAQS for ozone at 75 ppb—a level unsupported by the best available science.[18] In defending this level, Johnson followed OMB's lead and pointed to "uncertainties" in the scientific evidence for health effects from ozone. Yet Johnson made no allowance for "uncertainties" in the science that might support a stronger standard (such as a lack of controlled human exposure studies focusing on sensitive populations such as children or asthmatics), despite the fact that the Clean Air Act directs the Administrator to choose a more protective standard when faced with scientific uncertainty.[19]

Johnson also called for changing the Clean Air Act to allow the EPA to consider the costs of complying with the standards when setting the NAAQS—a move that drew immediate condemnation from Congress.[20]

*Secondary Standard*

President Bush personally intervened to prevent the EPA from also adopting a stronger secondary standard for ozone. The Clean Air Act allows the EPA to set secondary standards to protect the "public welfare"—a broad term that includes lower visibility, ecological damage, and other concerns—beyond the primary standards designed to protect public health. The EPA often sets secondary NAAQS that are identical to the primary standards.

However, the agency, with CASAC's support, initially proposed a more stringent seasonal standard for ozone, to protect crops and other plant life during times of intense exposure. A March 6, 2008, memorandum from OIRA head Susan Dudley to Administrator Johnson

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[16] Patton. V. 2007. Testimony before the Senate Committee on Environment and Public Works, Subcommittee on Clean Air and Nuclear Safety. July 11.
[17] Boyle, K. 2008. Industry groups rallying against EPA ozone proposal. *Greenwire*, February 6.
[18] U.S. Environmental Protection Agency (EPA). 2008. EPA strengthens smog standards to better protect human health and the environment. March 12. Washington, DC.
[19] Thurston, G.D. Testimony before the Senate Committee on Environment and Public Works, Subcommittee on Public Sector Solutions to Global Warming, Oversight, and Children's Health Protection. May 7.
[20] Eilperin, J. 2008a. EPA tightens pollution standards; but agency ignored advisers' guidance. *Washington Post*, March 13. Online at http://www.washingtonpost.com/wp-dyn/content/article/2008/03/12/AR2008031202362.html.

questioned the EPA's scientific basis for the secondary standard, and called on the agency to consider "economic values, personal comfort and well-being."[21] EPA Deputy Administrator Marcus Peacock replied that the EPA was barred by law from considering economic costs, and that the EPA was unaware of "any information indicating beneficial effects of ozone on public welfare."[22] Confidential talking points prepared for Administrator Johnson's March 11 meeting with President Bush also emphasized strong scientific support for the EPA's proposal.[23]

Despite this pushback from the EPA, a last minute intervention by President Bush overruled the agency's proposal and established a secondary standard identical to the primary one. The *Washington Post* reported that Solicitor General Paul Clement warned that Bush's decision contradicted the agency's past submissions to the Supreme Court defending against industry challenges, and touched off a "scramble" to create new legal justifications for the weakened secondary standard.[24] Following the final decision, CASAC sent a letter to Johnson re-emphasizing that the ozone review panel does "*not endorse the new primary ozone standard as being sufficiently protective of public health.*"[25]

*Fine Particulate Matter NAAQS*

Administrator Johnson's disregard for the recommendations of CASAC and his staff scientists in the ozone decision is a replay of his 2006 decision not to tighten the NAAQS for fine particulate matter. Fine particulate matter (or $PM_{2.5}$) consists of particles less than 2.5 micrometers in diameter. More than 2,000 peer-reviewed studies link $PM_{2.5}$ pollution to strokes, heart disease, respiratory ailments, and premature death.[26]

A 2005 EPA risk assessment found that $PM_{2.5}$ pollution causes more than 4,700 premature deaths each year in just nine cities, while other studies have estimated that tens of thousands of people die nationwide each year from $PM_{2.5}$ exposure.[27] Based on its review of the scientific evidence, CASAC recommended tightening the yearly average standard for $PM_{2.5}$ from 15 micrograms per cubic meter to 13–14 micrograms per cubic meter. Yet Administrator Johnson

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[21] Dudley, S. 2008. Memorandum to EPA Administrator Stephen L. Johnson. Subject: Secondary ozone NAAQS. March 6. Online at *http://www.reginfo.gov/public/postreview/Steve_Johnson_Letter_on_NAAQs_final_3-13-08_2.pdf*.

[22] Peacock, M. 2008. Memorandum to Susan Dudley. Subject: Ozone secondary standard. March 7. The letter from Dudley to Peacock begins on page 5 of this document. Online at *http://www.reginfo.gov/public/postreview/Steve_Johnson_Letter_on_NAAQs_final_3-13-08_2.pdf*.

[23] Johnson, S. 2008. Ozone secondary NAAQS. March 11. Talking points (labeled "deliberative and confidential") prepared for EPA Administrator Johnson's March 11, 2008, meeting with President Bush. The document was placed in the public docket after the decision. Online at *http://ombwatch.org/regs/PDFs/OzoneSecondaryMemo3-11.pdf*.

[24] Eilperin, J. 2008b. Ozone rules weakened at Bush's behest. *Washington Post*, March 14. Online at *http://www.washingtonpost.com/wp-dyn/content/story/2008/03/14/ST2008031400320.html.*

[25] Clean Air Science Advisory Committee (CASAC). 2008. Letter to Stephen Johnson. April 7. Italics in original.

[26] American Lung Association 2005.

[27] Environmental Protection Agency. 2005. Particulate matter health risk assessment for selected urban areas. June. Washington, DC. Online at http://www.epa.gov/ttn/naaqs/standards/pm/data/pm_risk_tsd_finalreport_2005_mainbody.pdf; Abt Associates. 2000. *The particulate-related health benefits of reducing power plant emissions*. Boston: Clean Air Task Force. Online at *http://www.catf.us/publications/view/4*.

issued a final rule in September 2006 that left the standard unchanged. No EPA administrator had disregarded CASAC's advice in its nearly 30-year history.

Yet Johnson claimed that CASAC's nearly unanimous 22 to 2 vote was evidence of disagreement on the science. Shortly after the EPA announced the final rule, CASAC members voiced their objections in a letter to Johnson, emphasizing that, "There is clear and convincing scientific evidence that significant adverse human-health effects occur" at the new $PM_{2.5}$ standard, and that it "does not provide an 'adequate margin of safety . . . requisite to protect the public health' (as required by the Clean Air Act)."[28]

CASAC members also alleged that the EPA had "twisted" or "misrepresented" the panel's recommendations on a number of issues related to the proposed standards. Bart Ostro, chief air pollution epidemiologist at the California EPA, charged that "the EPA had incorporated 'last-minute opinions and edits' by the White House Office of Management and Budget that 'circumvented the entire peer review process.'" Ostro also pointed out that the White House's changes were "very close to some of the letters written by some of the trade associations."[29]

*Changes to the NAAQS Process and the Proposed Lead NAAQS Rule*

In December 2006, after the controversy surrounding the $PM_{2.5}$ decision, Deputy Administrator Peacock announced a new streamlined policy for setting the NAAQS that removes independent assessments by scientific experts and injects political determinations much earlier in the decision making process.[30]

For decades, the foundation of the NAAQS process was the staff paper, a comprehensive overview of the health effects of the air pollutant in question prepared by EPA scientists. Staff scientists also worked with CASAC to review the latest studies and recommend appropriate standards. Only after this scientific review was complete would the administrator create a draft standard.

The new rules for setting the NAAQS eliminate this critical independent scientific assessment. High-level political appointees are involved right from the start, working with staff scientists to create a document containing "policy relevant science" that "reflects the agency's views." CASAC is cut out of the process until after the EPA has announced its proposed standard, when the advisory group can comment just like any other member of the public. The new rules closely follow recent recommendations from the American Petroleum Institute.[31]

The first criteria pollutant to be reviewed under these new rules is lead, a powerful neurotoxin that accumulates in human and animal tissue. Even low levels of lead can cause osteoporosis, high blood pressure, heart disease, anemia, memory problems, and seizures in adults. Children

[28] Clean Air Science Advisory Committee (CASAC). 2006. Letter to EPA Administrator Stephen L. Johnson. September 29.
[29] Wilson, J. 2006. EPA panel advises agency chief to think again. *Los Angeles Times*, February 4.
[30] Peacock, M. 2006. Memorandum to Dr. George Gray, assistant EPA administrator, Office of Research and Development. Subject: Process for reviewing National Ambient Air Quality Standards. December 7. Online at http://www.epa.gov/ttn/naaqs/memo_process_for_reviewing_naaqs.pdf.
[31] Boxer, B., et al. 2006. Letter to EPA Administrator Stephen L. Johnson, December 21. Washington, DC.

are at the greatest risk: even low levels of lead can lower IQ levels and cause learning deficits.[32] Regulation of lead under the Clean Air Act has dramatically reduced levels in the air and people's blood—one of the crowning public health achievements of the past 30 years.

The severing of independent scientific assessment from the policy-making process was evident in the recent Advanced Notice of Proposed Rulemaking (ANPRM) for lead. Despite scientific consensus on the value of a strong lead standard, the ANPRM still sought input on policy options that would result in a weaker lead standard and even considers removing lead from the criteria pollutant list entirely—options that CASAC explicitly rejected.

CASAC members strongly criticized the ANPRM for lead at a December 2007 meeting. According to one member, "This comes across as an attempt to mystify the process so EPA can come up with whatever [standard] it wants." Another asserted that the process "questions the legitimacy of CASAC's mission." The advisory group plans to propose significant changes to the process by which the EPA sets the NAAQS.[33] On May 1, 2008 the EPA proposed to tighten the lead NAAQS from 1.5 micrograms of lead per cubic meter of air to a range of between 0.10 and 0.30 micrograms per cubic meter. The proposal drew both praise as well as criticism for considering options above the range proposed by CASAC and the EPA's staff scientists (from 0.02 to 0.2 micrograms per cubic meter).[34]

## V. Solutions and Reforms

The results of our survey and interviews with EPA scientists show widespread problems at the agency. Hundreds of scientists report direct and indirect interference with their scientific work by political appointees at the EPA and the White House. Despite claims to the contrary from EPA leaders, scientists also report institutional barriers to freely communicating their findings through both the media and scientific publications. EPA scientists are not confident that environmental decision makers respect their expertise. And the agency's effectiveness needs to improve on several fronts.

Wide-ranging political interference in EPA science requires a suite of reforms in five major arenas: protecting EPA scientists, improving the agency's transparency, reforming its regulatory framework, strengthening its system of scientific advice, and depoliticizing funding, monitoring, and enforcement. These efforts to revitalize the EPA and allowing it to fulfill its mission of protecting human health and the environment will require strong leadership from Congress, the next president, and the next EPA administrator, joined by EPA scientists and the broader scientific community.

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[32] American Association of Pediatrics, Committee on Environmental Health. 2005. Lead exposure in children: Prevention, detection, and management. *Pediatrics* 116:1036–1046; Lanphear, B., et al. 2005. Low-level environmental lead exposure and children's intellectual function: An international pooled analysis. *Environmental Health Perspectives* 113(7):894–899.

[33] Inside EPA. 2007. Citing lead standard, CASAC will urge new NAAQS review process. December 27. Arlington, VA.

[34] Eilperin, J. 2008c. New EPA standards would cut amount of lead in the air. *Washington Post*, May 2. Online at http://www.washingtonpost.com/wp-dyn/content/article/2008/05/01/AR2008050103176.html.

**Protecting EPA Scientists**

To fulfill their profound responsibility to the public, EPA scientists need assurance that standing behind their scientific work will not open them to either official or unofficial retaliation. Congress is now considering several bills that would strengthen the federal whistle-blower system:

- Both houses of Congress have passed legislation that would enhance protections for whistle-blowers under the Whistleblower Protection Act of 1989, and members are now working to reconcile the two versions. The House version, HR 985, includes specific protections from retaliation for scientists, who expose efforts to distort or suppress federal research. The Senate bill, S. 274, unfortunately, lacks these protections for scientists. It is crucial that these protections are part of the final law now being negotiated by the Senate Homeland Security and Governmental Affairs and the House Oversight and Government Reform Committees.

- Members of the House and Senate have introduced bills to reauthorize the Office of Special Council and the Merit Systems Protection Board—federal entities that investigate claims of reprisal against federal whistleblowers and adjudicate whistleblower claims, respectively. Although the legislation includes many important reforms, the Senate has taken no action, and the House bill is still in committee.

- The House has recently passed legislation to grant greater autonomy to inspectors general (IGs), and immunity from coercion by the agencies they police. The Senate has reported such legislation out of committee. Both versions contain an important requirement that IG websites enable employees to anonymously report waste, fraud, and abuse. Government scientists could use this mechanism to confidentially challenge scientific misconduct. Both versions of such legislation also give IGs subpoena power.

Congress should pass the strongest-possible whistle-blower protections, and the president should sign them into law. The next EPA administrator should also work with the coalition of EPA unions to integrate the agency's Principles of Scientific Integrity (EPA 1999) into the official employee grievance procedure.

**Making the EPA More Transparent**

Some aspects of EPA decision making are open to public scrutiny, but many "predecisional" meetings and discussions are not. The integrity of EPA science is threatened in no small part by decisions made behind closed doors. Opening up these processes to congressional and public scrutiny is an important way to reveal and end abuses of science. The EPA should also better explain how it arrives at decisions that affect health and the environment.

The agency should institute a transparency policy for all meetings attended by non-EPA personnel. Such a policy need not be burdensome to EPA employees: outside participants could enter the required information directly into a database before any meeting, or within a specified time period after a meeting.

- This policy should require the EPA to post all meetings with outside entities on its website, including those with for-profit and not-for-profit organizations, and representatives of other agencies.

- The database should include the names and affiliations of attendees as well as the date, time, location, and subject of each meeting, with an exception granted for cases of national security.

Official EPA reports and documents in draft form are exempt from release under the Freedom of Information Act. Abuse of this exemption—wherein documents remain in draft form indefinitely—does occur.

- To prevent abuse of the "predecisional" exemption, the next EPA administrator should adopt procedures that allow the periodic release of documents that have remained in draft form for a given length of time.

The EPA should also publish a summary statement discussing the scientific basis for any significant policy, guidance, or regulation informed by science. This statement should be available in a timely fashion, and should include:

- The scientific rationale for a decision, and all scientific documents and data used to make it (including reasonable release of information from industry)

- A minority report voicing any significant dissenting scientific evidence or opinions

- An explanation of how the agency resolved such differences of opinion

- Identification by name of each official and employee who participated in the decision.

The Food and Drug Administration Amendments Act of 2007 already incorporates such transparency requirements, and the EPA could adapt them.

*Reforming Media Policy*

Both science and democracy thrive in an open environment. The EPA should clarify its policies on the interaction between scientists and the media, to ensure that the public has access to taxpayer-funded information that affects their health and safety, and to ensure that scientists and other employees can exercise their rights to free speech:

- Any EPA media policy must respect at least two fundamental rights: (1) scientists have the right to speak freely about any topic (including EPA policy) if they clarify that they are speaking as private citizens, not as agency representatives; and (2) scientists should have the right to review and correct any official document (such as a press release or report) that cites or references their scientific work, to ensure that accuracy has been maintained after the clearance and editing process.

- Congress or the EPA may need to impose narrow restrictions on these basic rights in certain instances, such as in cases under litigation. Officials should clearly define these situations.

- However, because the EPA is also a scientific agency, it should also exceed these basic rights by creating a public affairs system that actively disseminates agency research and codifies the positive rights of EPA scientists.

- The next EPA administrator should review the written policies of all offices and regions on the interaction between agency scientists and the media. Policies that do not explicitly protect scientists' fundamental right to freely communicate their scientific findings should be rewritten, and offices and regions without explicit policies should create them.

- The EPA should hold training sessions to clearly explain employees' rights in communicating their research to the media and the public, and the resources available to them to do so.

*Reforming Publication Policy*

Peer review is a pillar of the scientific method; political review is not. The EPA's process for clearing information for outside publication sometimes becomes a de facto policy review, and delays publication of controversial papers despite disclaimers that the views are personal.

- The next EPA administrator should review the agency's clearance policies, and work with the agency's offices and divisions to streamline excessive review.

- A disclaimer on a published paper that it is not official agency policy should exempt it from a full policy review.

- The clearance process should set reasonable yet strict time limits on how long the agency can delay publication of a paper. If officials do not reach a decision within that time frame, the paper should automatically proceed to publication with a written disclaimer. If officials deny clearance, they should provide a written explanation to the authors.

- The process for reviewing and clearing papers for outside publication must be transparent, and thus posted on the website of each EPA office and division.

**Reforming the Regulatory Process**

While the White House oversees federal agencies, it must strike a balance between administration priorities and agency independence. The EPA was created to implement and enforce the nation's environmental laws, and it has developed the expertise, experience, processes, and policies to fulfill those critical duties. The regulatory process should respect the agency's reservoir of scientific and technical knowledge. Congress should also consider ways to strengthen our nation's environmental regulatory system, to fortify the EPA's scientific mission and meet the pressing challenges of the twenty-first century.

*Ensuring Agency Independence*

The EPA is the nation's first line of defense against threats to public health and the environment. As such, the EPA should be empowered to take the lead on environmental concerns and to push back against interference in its science and decisions by the OMB and other federal agencies. To accomplish this:

- The next president should elevate the EPA to a cabinet-level agency, or establish a Department of the Environment.

- The next president should reverse executive order 13422, removing the power of presidential appointees unaccountable to Congress to commence rulemaking, and returning that power to the EPA and its administrator.

The OMB and its Office of Information and Regulatory Affairs play important roles in coordinating and overseeing the regulatory process. However, those roles should not include second-guessing or editing the science underlying EPA decisions:

- The next president should establish a regulatory process that respects the scientific and technical expertise of the EPA, and that excludes the OMB from interfering in EPA's scientific and technical determinations.

- The next president should repeal the OMB's one-size-fits-all directives on peer review and risk assessment. The EPA should have the flexibility to choose the form of peer review best suited to its needs.

- In particular, EPA experts should prepare risk assessments and the scientific component of regulatory impact assessments without interference from the OMB.

*Enacting Legislative Reforms*

The dozen or so environmental laws noted in Chapter 2 have led to dramatic improvements in public health and environmental quality. Yet the challenges the nation faces today are very different from those of 30 years ago. Congress should assess the adequacy of our current environmental regulatory structure, and consider reforms to close loopholes and strengthen the EPA's ability to address pressing threats to human health and the environment. (See CPR 2007 for possible recommendations.)

To support the quality of the EPA's scientific work, these reforms should focus on ensuring that the agency has the regulatory tools it needs to collect critical environmental data. Such tools could include stronger scientific testing requirements for pesticides and chemicals used in commerce, expanded TRI reporting requirements, and the authority to broaden environmental monitoring networks where necessary.

Congress should also consider new legislation that gives the EPA a framework to address emerging challenges such as climate change, nanotechnology, and endocrine-disrupting

chemicals. Environmental justice should be a guiding principle in these efforts, to ensure that the costs of pollution and the benefits of environmental protection are shared equitably among all parts of society.

**Ensuring Robust Scientific Input to EPA Decision Making**

The EPA should review and strengthen the ways it uses the scientific expertise of its staff and advisory committees, especially in cases where scientific input is critical or the law requires it. The agency should also tighten its conflict-of-interest restrictions.

*Disclosing and Mitigating Conflicts of Interest*

The next EPA administrator should work with employees, industry, and the scientific community to develop comprehensive conflict-of-interest policies for both staff and members of advisory committees:

- Government employees and members of advisory committees who are involved in regulation should disclose all conflicts of interest and special interests that might affect their ability to do their job in an unbiased manner.

- Individuals with a significant conflict of interest may still contribute to a project as invited experts, but the EPA should restrict them from decision-making authority or otherwise influencing policy outcomes.

Conflict-of-interest policies should also prohibit the revolving-door practice of appointing individuals from industry as senior EPA officials who regulate those industries:

- The next administration should provide clear guidelines for minimizing the appointment of senior officials with conflicts of interest. At a minimum, federal employees should be required to recuse themselves from decisions involving former employers (RDWG 2005).

*Reforming Advisory Committees*

The EPA should pursue reforms to make better use of its independent advisory committees. Specifically, the next EPA administrator should work with the Clean Air Scientific Advisory Committee to improve the process for setting the National Ambient Air Quality Standards, to ensure that decision makers have access to the "best available science."

**Depoliticizing Funding, Monitoring, and Enforcement**

These actions are essential to restore the scientific integrity of EPA decision making. But, in addition, problems with funding, monitoring and enforcement—which relate to EPA's scientific integrity—also need to be addressed by Congress and the next President to ensure that the EPA is the robust environmental agency that our country needs. In particular, Congress should provide the EPA with resources commensurate with its growing responsibilities and should work to ensure that selective internal budget cuts are not used to punish inconvenient programs or

offices. The next president should commit to strong and consistent enforcement of the nation's environmental laws.

## VI. Concluding Thoughts

The EPA's scientific enterprise is our nation's first line of defense against threats to public health and the environment. These threats are growing more complex and global, with the potential to harm the nation's health and prosperity. Despite notable successes, air and water pollution remain serious public health problems. Each year brings new and untested chemicals into our homes, schools, and workplaces. Climate change alone is projected to have profound impacts on public health, agriculture, the economy, and even national security.

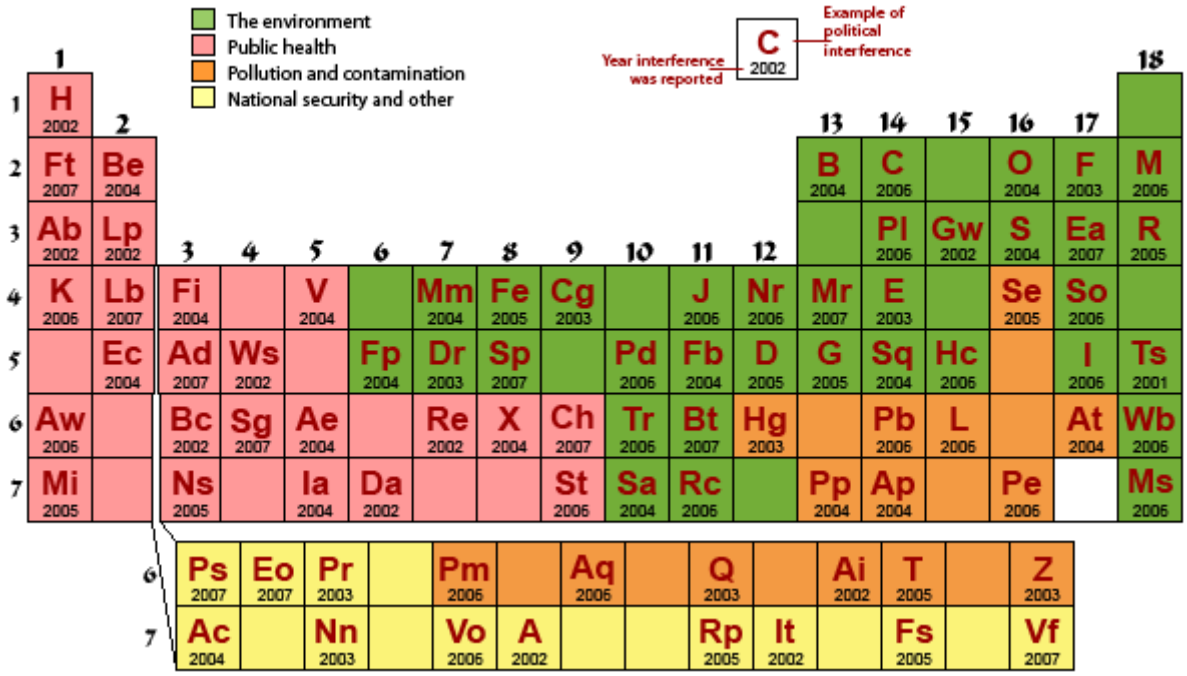
These problems are not insurmountable. The environmental and public health successes of the past several decades show that the country can rise to the challenge of environmental threats—but only if the EPA has the proper tools. Given the complexity of today's environmental challenges, a credible scientific knowledge base is essential to an effective response. To foster and sustain a healthy scientific enterprise, Congress and the next president should take concrete steps to protect EPA's scientists, make the agency more transparent, reform the regulatory process, strengthen the scientific advisory system, and depoliticize funding, monitoring, and enforcement.

Science is not the only element of effective policy making. However, because science enjoys widespread respect, appointed officials will always be tempted to manipulate or suppress scientific findings to support predetermined policies. Such manipulation is not only dishonest; it undermines the EPA's credibility and affects the health and safety of Americans.

The Bush administration's direct abuse of science—combined with systemic changes to the regulatory system that threaten the integrity of EPA science—highlight the need for strong action by the next president and Congress to restore scientific integrity to the agency's decision making. Only then can the EPA fully mobilize to serve the public good and ensure the nation's health.

## A. The A to Z Guide to Political Interference in Science

In recent years, scientists who work for and advise the federal government have seen their work manipulated, suppressed, distorted, while agencies have systematically limited public and policy maker access to critical scientific information. To document this abuse, the Union of Concerned Scientists has created the A to Z Guide to Political Interference in Science. To read the full A to Z Guide visit http://www.ucsusa.org/AtoZ/.




From air pollution to Ground Zero, the *A to Z Guide* showcases dozens of examples of the misuse of science on issues like childhood lead poisoning, toxic mercury contamination, global warming, and endangered species. These 85 examples originate in 24 federal agencies and departments.

*Timeline of abuses of science*

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| April 2008 | Integrity of EPA's toxics database threatened by interagency review |
| December 2007 | All-terrain vehicle danger report |
| October 2007 | NASA pilot survey |
| | Censoring climate change health hazards |
| August 2007 | Mountain removal mining |
| July 2007 | Surgeon general muzzled |
| | FEMA trailers |
| May 2007 | Southwestern bald eagle |
| | Spotted owl |
| April 2007 | Voter fraud |
| March 2007 | Polar bear travel restrictions |
| February 2007 | Lead testing of children's lunchboxes |
| January 2007 | Executive Order 13422 |

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| December 2006 | Lead national ambient air quality standards |
| October 2006 | Prairie dogs |
| | Roundtail chub |
| | *Tabernaemontana rotensis* |
| August 2006 | EPA closes its scientific libraries |
| | EPA ignores scientific studies on pesticides |
| July 2006 | Education Department suppresses study on school vouchers |
| | NASA mission statement |
| June 2006 | Changes in climate change websites |
| May 2006 | STD Panel at CDC conference manipulated, |
| | Science disregarded for prescription drug Ketek |
| April 2006 | National ambient air quality standards process changes |
| | Muzzled scientists at carbon conference |
| | Global warming news releases |
| | Minders on climate media interviews |
| February 2006 | Navy downplays sonar impact on marine life |
| | Science suppressed on hurricane/global warming connection |
| | Bureau of Land Management suspends forest study funding |
| | EPA distorts evidence for tightening particulate matter standard |
| January 2006 | NASA censors climate scientist James Hansen |
| November 2005 | Economic analysis distorted for endangered red frog habitat |
| October 2005 | EPA limits information about their release of toxic chemicals |
| August 2005 | Department of Justice suppresses racial profiling study |
| July 2005 | EPA report on fuel efficiency withheld |
| | Top FDA official overrules staff to approve nerve stimulator |
| June 2005 | Bureau of Land Management altered a cattle grazing impact study |
| | Distortion and censorship of global warming documents |
| May 2005 | Genetics eliminated from Endangered Species Act decisions |
| April 2005 | World Health Organization approval of abortion pill block attempt |
| March 2005 | New selenium pollution control standards misrepresent science |
| February 2005 | First UCS surveys of federal agencies scientists released |
| December 2004 | Endangered Species Act scientific documents altered for greater sage grouse |
| | Federally funded abstinence-only curriculum contains false science |
| November 2004 | FDA ignores scientists' warnings on arthritis drug Vioxx |
| October 2004 | EPA promotes flawed study on hydraulic fracturing, an oil drilling technique |
| September 2004 | Endangered Species Act science ignored for the marbled murrelet |
| August 2004 | Science obscured on health impacts of weedkiller Atrazine |
| | Forest Service exaggerates wildfire threat to spotted owl to promote logging |
| June 2004 | Health Organization panel experts are vetted by Health and Human Services |
| May 2004 | EPA uses bad science to create plywood plant pollution rule |
| | FDA appointees distort science to deny access to emergency contraception |
| | Research at the U.S. Fish and Wildlife Service is distorted |
| April 2004 | EPA distorts guidelines for monitoring air pollution over national parks |
| | CDC researchers kept from international AIDS conference |
| | Fish and Wildlife Service distorted economic analysis of bull trout habitat |
| | NIH advisory board rejects scientists subjected to political litmus tests |
| March 2004 | Science-based recommendations removed from an official report on salmon |
| | Scientists dismissed from President's Council on Bioethics |
| | Carbon sequestration pamphlet |
| February 2004 | Arms Control Advisory Panel dismissed and never reappointed. |
| January 2004 | Multiple agencies disregard science on mountaintop removal mining |

| | |
|---|---|
| December 2003 | Office of Management and Budget adopts flawed peer review rule |
| | Administration officials manipulate Endangered Species Act science |
| August 2003 | White House orders misleading of public on Manhattan air quality after 9/11 |
| July 2003 | National Nuclear Security Administration Panel dismissed |
| | EPA withheld an analysis of alternatives to President Bush's Clear Skies Act |
| June 2003 | Administration officials undermined science behind climate change |
| March 2003 | Forest Service overruled science-based old-growth forest management plan |
| February 2003 | White House suppressed information on impact of mercury on public health |
| December 2002 | Obscured scientific evaluation of abstinence-only education programs |
| | CDC ordered to change website about the effectiveness of condoms |
| | NIH Drug Abuse Advisory Panel subject to political litmus tests |
| | Abortion and breast cancer linked on National Cancer Institute website |
| | Microbiologist prohibited from publishing on airborne bacteria |
| November 2002 | Workplace Safety Panel scientists rejected because of their beliefs |
| October 2002 | Childhood lead poisoning panelists replaced by scientists with industry funding |
| | Underqualified doctor nominated to chair FDA reproductive health committee |
| September 2002 | Administration disregarded scientific analysis of aluminum tubes in Iraq |
| | Engineer rejected from Army Science Board because of political contributions |
| May 2002 | Manipulation of global warming science |
| August 2001 | Fish and Wildlife Service misrepresented information on rare trumpeter swans |

## B. Selected Quotes from EPA Scientists Arranged by Topic

The following are selected quotes from EPA scientists who responded to a survey by the Union of Concerned Scientists. For more information about the survey, including the text of all essay responses, please visit http://www.ucsusa.org/EPAscience. The quotes are organized by topic.

When asked how to improve scientific integrity at the EPA, scientists said:

*Political interference*

There are still good scientists producing good science at USEPA. The main problem I see is an administration that considers science only if it supports its agenda. As in other areas, science is used only if it furthers preexisting policy; otherwise it is ignored, marginalized or suppressed (e.g. climate change).
-A scientist from the EPA regional offices

EPA needs dynamic, scientific leadership interested in the well being of the environment and public health. EPA should not be the political agency it has become, the right hand of industry and short economic gain.
-A scientist from the Office of Solid Waste and Emergency Response

Do not trust the Environmental Protection Agency to protect your environment. Ask questions. Be aware of political and economic motives. Become politically active. Elect officials with motives to protect the environment and hold them accountable.
-A scientist from the EPA regional offices

Political considerations should not trump environmental stewardship, and the EPA should not be forced to be silent on the environmental consequences of policy shifts.
-A scientist from the EPA regional offices

Do not allow other entities such as [the White House Office of Management and Budget] to interfere with, or suppress the publication of, EPA's scientific work products. Maintain an open peer review process…. Strengthen whistleblower protections for civil servants.
-A scientist from the EPA regional offices

EPA needs to be an independent agency and the amount of political interference needs to be curtailed.
-A scientist from the EPA regional offices

Keep political appointees from interfering in scientific decisions or publications. Do not allow political appointees to pressure authors to withdraw from publication or pressure their supervisors to carry out actions that inhibit publication.
-A scientist from the EPA regional offices

*Funding and Staffing*

MORE FUNDING! We do NOT have the resources to meet our mission. My division has seen its resources - in purchasing power- cut over 50% since 10 years ago.
-A scientist from the Office of Research and Development

EPA was created and began recruiting scientists in the 1970s; many have retired or will shortly do so. The inability to fill technical vacancies along with the loss of EPA libraries are bleeding down the EPA's technical knowledge base and our ability to provide or share the skills and knowledge that are critical to overall mission success.
-A scientist from the EPA regional offices

Increase the morale of the employees by providing incentives for growth. New hires, at least among scientists in my area are few and far between (no hires in almost 10 years) and the shrinking and aging employee population is more looking forward to retirement than providing ideas that work and will make a difference, because nobody seems to really listen.
-A scientist from the Office of Prevention, Pesticides, and Toxic Substances

*External Interference*

[The White House Office of Management and Budget] and the White House have, in some cases, compromised the integrity of EPA rules and policies; their influence, largely hidden from the public and driven by industry lobbying, has decreased the stringency of proposed regulations for non-scientific, political reasons. Because the real reasons can't be stated, the regulations contain a scientific rationale with little or no merit.
-A scientist from the EPA regional offices

Currently, [the White House Office of Management and Budget] is allowed to force or make changes as they want, and [EPA actions] are held hostage until this happens.
OMB's power needs to be checked as time after time they weaken rulemakings and policy decisions to favor industry.
-A scientist from the Office of Air and Radiation

External scientific advisory processes associated with risk assessment should not incorporate industrial perspectives. In other words, "risk management" should be recognized as a human values problem, and should be more explicitly separated from risk assessment.
-A scientist from the EPA regional offices

*Openness*

Remove the political screening step in science at the Agency. For example, we are not allowed to talk to the press when they call but must refer them to a person in the front office. Often this results in the press not getting the true facts but only those that don't make the Agency look bad.
- A scientist from the Office of Prevention, Pesticides and Toxic Substances

The premise should be that all documents (except enforcement related stuff) start out as public documents unless EPA has jumped through a lot of legal hoops to be able retain them.
-A scientist from the EPA regional offices

The science and risks and benefits need to be honestly and fairly considered. The decisions that are made should be justified and be transparent as to why a decision was made and the risks and benefits be clearly and honestly presented.
-A scientist from the Office of Prevention, Pesticides, and Toxic Substances

I perceive that there is a gag rule that prevents government employees from being allowed to tell the public what they have learned on the job, as well as their job-informed and educated opinions. This work, and knowledge gained during that work, is paid for by the taxpayers.
-A scientist from the Office of Air and Radiation

*Scientific Review*

Do not allow political appointees into the process of scientific review. Their job is to make management decisions, not influence the data and information before it is collected and presented.
-A scientist from the EPA regional offices

Improve the peer review process by not making it so cumbersome and by allowing those with real experience to participate.
-A scientist from the Office of Solid Waste and Emergency Response

One of the best current safeguards is review of Agency documents and policies by independent advisory boards including the Science Advisory Board, the Clean Air Scientific Advisory Committee, and the Board of Scientific Counselors. Much EPA work in human health risk assessment is now subjected to Inter-Agency Review by other Federal entities which appear to be more closely aligned with private interests than with the public health community…. Maybe more Congressional oversight would help the Executive Branch straighten its priorities.
-A scientist from the Office of Research and Development

*Organizational Improvements*

I have never seen morale at a lower point than we currently have in EPA. Good scientists are leaving because they can no longer put up with all the micro-management that is heaped on them in lieu of effective administrative leadership.
-A scientist from the Office of Research and Development

Reduce the power of [the White House Office of Management and Budget] over EPA scientific products. All communications between EPA and OMB during the development of Agency technical products and actions should be preserved for the public record…. In particular, implementation of OMB's risk assessment guidelines would be disastrous.
-A scientist from the Office of Air and Radiation

Make sure that there is no way that you can change the science to accommodate a political "need." Currently I think EPA's credibility is in the tank due almost entirely to trying to make the science fit a political need rather than openly admitting that both paradigms exist and then deal with the realities of both politics and science to make the decision.
-A scientist from the EPA regional offices

This is a young and small agency that has, since its inception, been under enormous pressures. The ability to protect the environment is often also bound by the laws that govern the agency. So, the best way to improve the scientific work at EPA is to ensure that appropriate governing laws are enacted so that with reasonable interpretation the goals of protecting the environment may be met.
-A scientist from the Office of Prevention, Pesticides, and Toxic Substances

EPA is by mandate a regulatory agency charged with protecting human health and the environment. To restore the integrity of scientific work at EPA, political appointees must be removed from all levels within the Agency. Those appointees influence ranges from subtle to direct manipulation of statutory/regulatory actions. Further, the influence of other agencies, particularly [the White House Office of Management and Budget] significantly affects the actions of specific individual program offices, which amounts to direct oversight of almost everything EPA does. These influences are not limited to manipulation of the results of basic scientific work, but from everything from how vigorously the Agency pursues oversight, weakening guidance and enforcement of statutes/regulations that are detrimental to human health and the environment.
-A scientist from the EPA regional offices

*Respect for Science*

My opinion of EPA has changed since being here. Specifically, I had believed EPA was more scientific in its approach. Now I realize that EPA has politically driven agendas that sometimes, not always, affects decisions of scientific nature.
-A scientist from the EPA regional offices

Science and technical information needs to be given more weight in decision-making rather than just seen as background information.
-A scientist from the EPA regional offices

Managers need to learn to trust the expertise of the technical staff.
- A scientist from the Office of Water

Take the politics out of science. Senior EPA leaders and White House officials over the past 6 years have used "junk" science along with biased opinions to make bad environmental decisions. EPA needs to be fully funded to perform its mission.
-A scientist from EPA headquarters

[The integrity of EPA science could best be improved] by allowing scientists with internationally acknowledged expertise to work and publish in their fields, instead of withholding support and restricting activity.
-A scientist from the Office of Air and Radiation

[The integrity of EPA science could best be improved] by staying true to the pollution laws that congress gives us (which means much more frequent revision to reflect the latest science), by leaving less discretion to the executive branch, and by giving the scientific advisory boards more weight to make decisions.
-A scientist from the EPA regional offices

Allow the science to drive policy rather than the other way around.
-A scientist from the Office of Research and Development

*Other*

Strong, independent oversight and protection of "whistleblowers" (real protection - not what is there now) could stem the most damaging practices.
-A scientist from the Office of Research and Development

As a user rather than producer of technical and scientific information, I find it very frustrating that I have to search out myself research findings and recommendations [of various advisory bodies] that directly affect the management of my programs. By the time the reports filter down to the staff program levels, they have either mutated beyond recognition during intervening manager reviews, or have simply been lost in the fog of the bureaucracy.
-A scientist from the EPA regional offices

1) Improve transparency in government by requiring comments from [the White House Office of Management and Budget] and other agencies on science documents to be made public
2) ensure science decisions on conclusions contained in EPA science documents are made by EPA career scientists
3) require political appointees to post summary of discussion (including any documents provided) and attendees when they meet with external stakeholders
4) encourage accountability in EPA political appointees through Congressional inquiry regarding basis for decisions and role of science versus political considerations in decision making
-A scientist from the Office of Research and Development

"[Restore] the Agency's public role as a faithful advocate for and protector of the environment, as opposed to publicly downplaying the need for action in so many instances. Such a stance would communicate from the top that we are all about scientific excellence because, at heart, we sincerely care about environmental protection."
-A scientist from the Office of Research & Development

## C. Scientific Freedom and the Public Good

*On February 14, 2008, a group of prominent scientists called on the U.S. government to establish conditions that would enable federal scientists to produce the scientific knowledge that is needed by a government dedicated to the public good.*[35] *In an accompanying report,* Federal Science and the Public Good,[36] *UCS details specific steps that Congress and the administration can take to restore scientific integrity to federal policy making.*

Scientific knowledge and its successful applications have played a large role in making the United States of America a powerful nation and its citizens increasingly prosperous and healthy. The challenges that face the United States in the twenty-first century can only be met if this tradition is honored and sustained.

To that end, the U.S. government must adhere to high standards of scientific integrity in forming and implementing its policies. Breaches of this principle have damaged the public good and the international leadership of the United States. To meet its obligation to serve the public interest, the government must have reliable scientific work and advice at its disposal, and provide the public with reliable scientific information. This requires the government to provide federal scientists with the resources and the professional environment necessary to carry out their missions effectively and honestly. The government should also draw on the knowledge of federal scientists and of the larger scientific community to formulate public policy in an objective and transparent manner.

Scientists employed by government institutions commit themselves to serve the public good free from undisclosed conflicts of interest and to carry out science that is reliable and useful, while respecting statutory limitations such as national security laws. Therefore, government scientists should, without fear of reprisal or retaliation, have the freedom:

- to conduct their work without political or private-sector interference;
- to candidly communicate their findings to Congress, the public, and their scientific peers;
- to publish their work and to participate fully in the scientific community;
- to disclose misrepresentation, censorship, and other abuses of science; and
- to have their technical work evaluated by scientific peers.

We call on Congress and the executive branch to codify these freedoms, to establish stronger means for gathering scientific advice, and to take concrete steps to enhance transparency, so as to create conditions conducive to a thriving scientific enterprise that will serve our democracy with integrity and bring the full fruits of science to all Americans and to the world.

[35] For more information and to see the names of the endorsers go to http://www.ucsusa.org/scientific_integrity/restoring/scientificfreedom.html.
[36] To read the text of the report go to http://www.ucsusa.org/scientific_integrity/restoring/federal-science.html.

## D. Previous UCS Surveys of Federal Agency Scientists

Previous UCS surveys have given voice to over 1,800 scientists across the federal government. Full results for these surveys can be found at http://www.ucsusa.org/surveys/. The survey findings include the following:

**U.S. Fish and Wildlife Service (FWS)**
In February 2005, the Union of Concerned Scientists (UCS) and Public Employees for Environmental Responsibility (PEER) released the results from a 42-question survey distributed to 1,410 FWS biologists, ecologists, botanists and other science professionals working in Ecological Services field offices across the country. The survey was designed to obtain their perceptions of scientific integrity within the FWS, as well as political interference, resources and morale. 414 scientists returned completed surveys (29 percent), despite agency directives not to reply—even on personal time.

Notable results include:

- Nearly half of all respondents whose work is related to endangered species scientific findings (44%) reported that they "have been directed, for non-scientific reasons, to refrain from making jeopardy or other findings that are protective of species."
- One in five agency scientists revealed they have been instructed to compromise their scientific integrity—reporting that they have been "directed to inappropriately exclude or alter technical information from a FWS scientific document," such as a biological opinion.
- More than half of all respondents (56%) knew of cases where "commercial interests have inappropriately induced the reversal or withdrawal of scientific conclusions or decisions through political intervention."

**National Oceanic and Atmospheric Administration (NOAA) Fisheries**
In June 2005, UCS and PEER released the results from a 34-question survey distributed to 464 NOAA Fisheries biologists, ecologists, botanists and other science professionals working in headquarters and regional and field offices across the country. The survey was designed to obtain their perceptions of scientific integrity within the agency, as well as political interference, resources and morale. 124 scientists returned completed surveys (27 percent).

Notable results include:

- More than one third of respondents positioned to make such recommendations (37%) have "been directed, for non-scientific reasons, to refrain from making findings that are protective" of marine life.
- Nearly one in four (24%) of those conducting such work reported being "directed to inappropriately exclude or alter technical information from a NOAA Fisheries scientific document."
- More than half of all respondents (53%) knew of cases where "commercial interests have inappropriately induced the reversal or withdrawal of scientific conclusions or decisions through political intervention."

**Food and Drug Administration (FDA)**
In June 2006, UCS and PEER released the results of a 38-question survey distributed to 5,918 scientists at the FDA to obtain their perceptions about scientific integrity. 997 scientists filled out and returned the survey (17 percent).[37]

Notable results include:

- Almost one in five (18 percent) responded, "I have been asked, for non-scientific reasons, to inappropriately exclude or alter technical information or my conclusions in an FDA scientific document."
- Three in five (60 percent) knew of cases "where commercial interests have inappropriately induced or attempted to induce the reversal, withdrawal or modification of FDA determinations or actions."
- Approximately half of the respondents (51 percent) felt the "FDA is acting effectively to protect public health."

**Federal Climate Scientists**
In January 2007, UCS released the results of a 40-question survey distributed to 1,630 climate scientists at seven federal agencies (NASA, NOAA, EPA, USGS, USDA, DOE and DOD) and 119 climate scientists at the independent National Center for Atmospheric Research (NCAR). 279 federal scientists and 29 NCAR scientists filled out and returned the survey. The survey results were released as a joint report with the Government Accountability Project (GAP) entitled *Atmosphere of Pressure*.[38]

Notable results include:

- 150 scientists (58 percent) said they had personally experienced at least one incident of political interference in the past five years.
- Nearly half of all respondents (46 percent) perceived or personally experienced pressure to eliminate the words "climate change", "global warming" or other similar terms from a variety of communications.
- More than half of respondents (52 percent) said that their agencies always or frequently require public affairs officials to monitor scientists' communications with the media.

[37] For more information about the FDA survey go to http://www.ucsusa.org/scientific_integrity/interference/fda-scientists-survey-summary.html.
[38] To read the text of the report go to http://www.ucsusa.org/scientific_integrity/interference/atmosphere-of-pressure.html.