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Scientific Speech: Protecting the Right of Environmental Scientists to Express Professional Opinions

Daniel M. Filler
Drexel University - Thomas R. Kline School of Law, daniel.m.filler@drexel.edu

Robert R. Kuehn
Washington University in St. Louis - School of Law, rkuehn@wustl.edu

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by Robert R. Kuehn

Editors' Summary: Science plays a central role in ensuring that our environmental, health, and safety laws and regulations are protective of human health and the environment. The author presents several instances where scientists were allegedly fired or otherwise attacked because employers or others were disturbed by the results of their scientific research. Kuehn surveys the legal protections available to scientists and the legal tools available to their detractors when disputes over scientific speech arise. He concludes that additional protections are needed to ensure that scientists are free to present their findings without fear or unwarranted retribution.

A substantial percentage of environmental scientists work in fear of retaliation for expressing their scientific opinions, according to a number of recent surveys. Heightening these fears is the recent effort of the chairman of the U.S. House of Representatives' Science Committee to investigate three climate scientists, an action criticized by the National Academy of Sciences (NAS) and American Association for the Advancement of Science as "intimidating" and "chilling."[1] The survey results also come at a time of increasing allegations that environmental science is being manipulated or suppressed to support government or industry positions.[2] Meanwhile, the U.S. Congress considers legislation to expand whistleblower protection for government scientists.[3]

As environmental issues grow in economic significance and as science takes on increasing importance in influencing public opinion and resolving environmental policy debates, efforts to pressure or suppress environmental scientists have become increasingly common.[4] As one author observed, the power of science to legitimate environmental positions by claiming exclusive truth makes ownership of science "one of the most contested issues in modern environmentalism."[5] In addition, as university dependence upon industry financial support for research on environmental science becomes more widespread, the scientific freedom of university researchers to pursue research activities and communicate research results is increasingly at risk.[6]

Environmental scientists always have had to answer questions about their methods, data, assumptions, and conclusions, and rightfully so, since it is the nature of science to question research results. Because scientific research and judgments by scientists are not always free of outside influences, a healthy scientific debate also may include inquiries about a researcher's motives, biases, and values. Not content with determining issues of environmental science through an open discussion over scientific methods and values, some have gone beyond debate and sought to silence certain scientists or their work. Dr. Brian Martin explains the difference between commonly accepted means of dis-

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1. *Climate of Distrust*, 436 NATURE 1 (2005); *Hunting Witches*, WASH. POST, July 23, 2005, at A16; Letter from Ralph J. Cicerone, President, National Academy of Sciences, to Reps. Joe Barton & Ed Whitfield, U.S. House of Representatives (July 15, 2005); Letter from Alan I. Leshner, Chief Executive Officer, American Association for the Advancement of Science, to Rep. Joe Barton, U.S. House of Representatives (July 13, 2005).
2. *See, e.g.*, HOUSE COMM. ON GOV'T REFORM, POLITICS, AND SCIENCE IN THE BUSH ADMINISTRATION (Minority Staff 2003); UNION OF CONCERNED SCIENTISTS, SCIENTIFIC INTEGRITY IN POLICYMAKING (2004); Linda Greer & Rena Steinzor, *Bad Science*, ENVTL. F., Jan./Feb. 2002, at 28; Carolyn Raffensperger, *Bush Brings Sounds of Silence, Not Science*, ENVTL. F., Jan./Feb. 2003, at 12; Eugene Russo, *Fighting for Integrity*, SCIENTIST, July 14, 2004; Paul Recer, *Panelists Decry Bush Science Policies*, ASSOCIATED PRESS, Feb. 22, 2005.
3. *See* S. 1358, 109th Cong. (2005); H.R. 839, 109th Cong. (2005). The bills protect federal employees against adverse personnel actions taken because of the employee's development or dissemination of scientific research and analysis that the employee reasonably believes to be accurate and valid.
4. Elihu Richter et al., *Efforts to Stop Repression Bias by Protecting Whistleblowers*, INT'L J. OCCUPATIONAL & ENVTL. HEALTH, Jan./Mar. 2001, at 68.
5. A. Dan Tarlock, *Who Owns Science?*, 10 PA. ST. ENVTL. L. REV. 135, 136 (2002); *see also* Brian Martin, *The Scientific Straightjacket: The Power Structure of Science and the Suppression of Environmental Scholarship*, ECOLOGIST, Jan./Feb. 1981, at 33, 35 (arguing that environmental scholarship is a prime area for suppression because it often threatens vested interests).
6. Richter et al., *supra* note 4, at 68.

agreeing with a scientist's work and inappropriate means of retaliating against a scientist:

> If someone disagrees with a scientist's research conclusions or public statements, an accepted method of response is to criticize the argument, for example, by sending a letter to the scientist or to a journal. By contrast, sending a letter of complaint to the scientist's boss or funding body, attacking the scientist's credibility or right to speak out, would be seen by many as an attempt to apply pressure on the scientist rather than address the issues under dispute.[7]

By attacking the scientist who brings a contrary message, these attackers seek to silence the scientist's voice, or, at the very least, to delay or detract the scientist from focusing on the unwelcome research project, to reduce the credibility of the researcher and her work, or to send a warning signal to other scientists about the adverse consequences that may result if they engage in similar work.

Suppression of the work of environmental scientists raises serious concerns about scientific freedom, threatens public health and the environment, and denies lawyers and legislators access to important information about environmental science. Because science depends on the free and open exchange of research and ideas, suppression may cause delays or wasteful repetition of research. Where suppression results in the failure or delay of scientists, government officials, or the public to gain information about harmful activities, public health and the environment may be negatively impacted.

This Article examines the phenomenon of suppression of environmental scientists and the legal system's failure to address such attacks on scientific freedom. Part I describes the scope and methods of suppression of environmental scientists, documenting both anecdotal evidence and surveys of scientists. Part II analyzes some of the laws relating to suppression of scientific speech, in particular laws relating to defamation, research misconduct, and employer retaliation against employees who speak out. Part III concludes by recommending more effective legal remedies and greater professional efforts to deter the suppression of environmental science.

I. The Scope of Suppression of Environmental Scientific Speech

The International Society for Environmental Epidemiology (ISEE) defines research suppression or oppression as obstructing the study or release of scientific findings for reasons other than a concern for scientific validity or objectivity.[8] Martin defines suppression as instances where someone or some organization threatens a scientist's employment position, financial support, or ability to publish or communicate research for reasons other than the quality of the work or the qualifications or credentials of the researcher.[9] More specifically, suppression involves efforts to withdraw or withhold research money; transfer scientists to jobs where further unwelcome research is difficult or impossible; deny employment appointments, promotions, or tenure; dismiss scientists from their research positions; and block publications or presentations on the methods and results of research.[10] Thus, suppression of scientific speech seeks to prevent the creation of certain unwelcome data or theories or, alternatively, to deter or block the dissemination of unwelcome data or theories that already exist, through pressure or restraints on environmental scientists.

Examples of attacks on environmental scientists involve government and private-sector employers who sought to punish scientists for publicizing their research results or communicating their scientific opinions. When Dr. David Kern prepared an abstract about a rare lung disease he noticed among workers at a manufacturing plant that hired him as a consultant, the company requested that it not be submitted, arguing that an agreement to protect trade secrets prevented any public discussion of the disease.[11] Kern changed the abstract to make it difficult to identify the manufacturer and presented his findings, feeling that his professional obligations to seek out information from colleagues that might assist in determining the causes and to warn others about the disease outweighed the company's objections. In response, Kern's hospital and university employer pressured him to withdraw the abstract, judging that the risk of litigation by the company over any disclosure was not worth publicly disclosing information about the disease.[12] Ultimately, Kern's employer terminated his consulting relationship with the company, eliminated the occupational health program he directed, and informed him that his five-year employment contract would not be renewed.[13]

Omar Shafey, a former epidemiologist with the Florida Department of Health, met a similar fate when he refused to alter his report, characterized by the Centers for Disease Control and Prevention (CDC) as "excellent" and "reasonable and appropriate," recommending that the state stop its aerial spraying of the pesticide malathion.[14] After Shafey refused to follow the suggestion of a state official that Shafey conform his scientific recommendations to official agency policy or leave,[15] the Florida Department of Health undertook an extensive audit of Shafey's travel records and, upon

7. Brian Martin, *Suppression of Dissent in Science, in* 7 Research in Social Problems and Public Policy 105, 110 (William R. Freudenburg & Ted I.K. Youn eds., 1999) [hereinafter Martin, *Suppression of Dissent*].

8. International Society for Environmental Epidemiology, *Proposed Definitions Relating (1) to the Suppression of Research and (2) to the Repression of Research, at* http://www.iseepi.org/about/ethics.html#bias_definitions (last visited Oct. 21, 2005).

9. Brian Martin, Suppression Stories 52 (1997).

10. Brian Martin, *Suppressing Research Data: Methods, Context, Accountability, and Responses, in* 6 Accountability in Res. 333, 346-47 (1999) [hereinafter Martin, *Suppressing Research Data*]; Brian Martin, *Critics of Pesticides: Whistleblowing or Suppression of Dissent?*, Phil. & Soc. Action, July/Sept. 1996, at 33, 44-45 [hereinafter Martin, *Critics of Pesticides*]; Richter et al., *supra* note 4, at 68.

11. David G. Kern, *The Unexpected Result of an Investigation of an Outbreak of Occupational Lung Disease*, Int'l J. Occupational & Envtl. Health, Jan./Mar. 1998), at 19, 25; Mariam Shuchman, *Secrecy in Science: The Flock Worker's Lung Investigation*, 129 Annals Internal Med. 341, 341-42 (1998).

12. Kern, *supra* note 11, at 25-26, 29.

13. *Id.* at 27, 29; Joseph LaDou, *The Rise and Fall of Occupational Medicine in the United States*, 22 Am. J. Preventative Med. 285, 292 (2002); Wade Roush, *Secrecy Dispute Pits Brown Researcher Against Company*, 276 Science 523, 523-24 (1997).

14. Jan Hollingsworth, *Warnings Cut From Malathion Report*, Tampa Trib., Jan. 17, 1999, at 1; Jan Hollingsworth, *CDC Agrees Malathion Caused Illness*, Tampa Trib., Nov. 11, 1999, at 1.

15. Jan Hollingsworth, *Shafey Firing Raises Issue of Autonomy*, Tampa Trib., Apr. 5, 2000, at 1. The CDC official praised Shafey for his e-mail. *Id.*

finding a possible $12.50 overcharge on a travel reimbursement claim and an allegedly inappropriate e-mail to the CDC, fired him.[16]

Myron Mehlman, Mobil Oil Corporation's former director of toxicology and manager of its environmental health and science laboratory, gave a presentation to corporate managers in Japan about the health effects of gasoline.[17] Upon learning during the presentation that gasoline sold by Mobil's Japanese subsidiary contained levels of benzene in excess of 5%, Mehlman warned the managers that the concentrations were too high and that the levels had to be reduced or the gasoline should not be sold. Immediately upon returning to the United States, Mobil fired Mehlman, accusing him of misusing company personnel and supplies to promote his wife's scientific publishing business, and subsequently attempted "to orchestrate a smear campaign" against him.[18] Mehlman successfully sued Mobil under New Jersey's employee protection act and recovered $7 million in damages.[19]

Supervisors of James Zahn, a former U.S. Department of Agriculture researcher, repeatedly prevented him from presenting his findings that air emissions from hog confinements contained antibiotic-resistant bacteria.[20] Zahn's supervisors took the action after a representative of pork producers questioned his scheduled appearance before a local board of health. Recently, Dr. Fardin Oliaei, a scientist with the Minnesota Pollution Control Agency, filed a federal whistleblower complaint and lawsuit alleging she was threatened, reprimanded, and restrained from doing her job after disclosing her concerns that perfluorochemical compounds from a manufacturing facility were contaminating fish.[21] Scientists for the U.S. Department of the Interior (DOI) also report numerous instances of threats or demotions when their scientific opinions differ from the agency's preferred position.[22] Last year, the U.S. Fish and Wildlife Service (FWS) terminated Andrew Eller, a biologist who filed a challenge under the Data Quality Act to the agency's decisions on the endangered Florida panther.[23] After later acknowledging that Eller's scientific concerns were correct, the agency agreed to reinstate him.

Lawsuits, or threats of lawsuits, are another form of harassment. After Dr. Randolph Byers first suggested that some childhood learning problems might be caused by lead toxicity, the Lead Industries Association threatened to sue him for $1 million.[24] A lawyer for cold fusion proponent Stanley Pons wrote a letter to University of Utah physicist Michael Salamon threatening legal action and demanding retraction of a study reported in *Nature* magazine that cast doubt on some of Pons' cold fusion claims.[25] A retired director of epidemiology for Monsanto (a leading manufacturer of genetically modified crops) filed a $4 million defamation suit against the Environmental Research Foundation, a small public interest science organization, after it published a story about a U.S. Environmental Protection Agency (EPA) memo that raised questions about the epidemiologist's study of workers exposed to dioxin while manufacturing Agent Orange.[26] Also, a company proposing to build a nuclear waste facility threatened to sue two members of the NAS who were commissioned by the DOI to study the safety of the proposed facility.[27] When the federal government claimed that it could not indemnify the scientists against the lawsuit, the safety analysis stopped.[28]

A final set of examples involves public attacks on the character and conduct of the scientist. Dr. Melvin Reuber, a National Cancer Center research scientist, found his career destroyed and reputation ruined after someone leaked a private employment reprimand letter to chemical

16. Jan Hollingsworth, *Health Office Fires Critic*, Tampa Trib., Mar. 18, 2000, at 1. Martin notes that the rhetoric of accountability, through audits or surveillance, is sometimes used to harass a scientist. Martin, *Suppressing Research Data, supra* note 10, at 355. Martin suggests a "double standard test" to see if the scientist is being treated the same as other employees or instead discriminated against because of unwelcome research or recommendations. Martin, *supra* note 9, at 30.

17. Mehlman v. Mobil Oil Corp., 707 A.2d 1000, 1002-03 (N.J. 1998).

18. *Id.* at 1003-04. The jury found Mobil's purported grounds for termination were pretextual.

19. The jury awarded Mehlman $3.5 million in punitive damages based upon Mobil's attempted smear campaign and "as a necessary deterrent to prevent Mobil and other companies from silencing their employees when they object to the type of harmful, dangerous conduct by their employers claimed here." Mehlman v. Mobil Oil Corp., 676 A.2d 1143, 1162, 1164-65 (N.J. Super. Ct. App. Div. 1996). Mehlman described his efforts to restore his reputation as "nine years of hell." Tony Cantu, *Whistleblower Says Win Over Mobil Is Global Warning*, Princeton Packet (Princeton, N.J.), Mar. 31, 1998, at 1A.

20. Perry Beeman, *Ag Scientists Feel the Heat*, Des Moines Reg., Dec. 1, 2002, at 1A.

21. *Scientist Sues Pollution Control Agency Over Alleged Violation of Rights, Retaliation*, 36 Env't Rep. (BNA) 1795 (2005); Kara Sissell, *Whistleblower Files Complaint Over PFC Research*, Chemical Wk., June 8, 2005, at 43.

22. Public Employees for Environmental Responsibility, Grizzly Science 11-12, 16-19 (1997).

23. David Fleshler, *U.S. Wildlife Biologist Who Was Fired Over Panther Data Wins Job Back*, Sun-Sentinel (Ft. Lauderdale, Fla.), June 30, 2005, at 1B.

24. David Rosner & Gerald Markowitz, Deceit and Denial 58-59 (2002); Herbert L. Needleman, *Salem Comes to the National Institutes of Health: Notes From Inside the Crucible of Scientific Integrity*, 90 Pediatrics 977, 977 (1992).

25. William Booth, *Utah Faculty Joins Cold Fusion Controversy*, Wash. Post, June 10, 1990, at A4; Robert Pool, *Cold Fusion Follies*, 250 Science 755 (1990). After protests from other scientists, the lawyer dropped the threat.

26. Peter Montague, *Bill Gaffey's Work*, Rachel's Env't & Health News, May 16, 1996, at 1. A number of prominent newspapers, including the *Atlanta Constitution* and the *Austin (Tex.) American-Statesman*, also reported the allegations in the EPA memo but were not sued, evidencing the selective nature of the harassment efforts. On the eve of trial, the plaintiff died.

27. Frank Clifford, *Lawsuit Threat Halts Dump Site Tests*, L.A. Times, Nov. 22, 1996, at A3.

28. *Id.*; Peter Montague, *Political Science*, Rachel's Env't & Health News, Nov. 28, 1996, at 1. Critics also have used lawsuits, or the threat of lawsuits, to suppress the work of medical scientists. *See e.g.*, Douglas M. Birch & Gary Cohn, *Standing Up to Industry*, Balt. Sun, June 26, 2001, at 1A (reporting on a $10 million demand by a pharmaceutical company against university researchers for damages allegedly incurred by the researchers' decision to halt research on the AIDS drug Remune and to publish their conclusion that the drug provided little benefit to patients); David J. Hess, *Suppression, Bias, and Selection in Science: The Case of Cancer Research*, 6 Accountability Res. 245 (1999) (reporting on the suppression of research on the role of bacteria in cancer etiology); Drummond Rennie, *Thyroid Storm*, 277 J. Am. Med. Ass'n 1238 (1997) (reporting on threats of legal action by a pharmaceutical company against Dr. Betty Dong to prevent publication of research on the thyroid drug Synthroid); Miriam Shuchman, *Legal Issues Surrounding Privately Funded Research Cause Furor in Toronto*, 159 Can. Med. Ass'n J. 983 (1998) (reporting on threats of a lawsuit against researcher Nancy Oliveri over her desire to inform clinical trial patients that an experimental iron chelator might put them at risk of early death).

industry officials, which was then published in *Pesticide and Toxic Chemical News*.[29] The personnel action and reprimand letter, which a jury found contained false statements,[30] occurred after someone with the California Department of Food and Agriculture complained to Reuber's supervisors that his research on the potential carcinogenicity of the pesticide malathion was harming the state's agriculture industry.

Former EPA scientist David Lewis alleged that EPA and sludge industry representatives retaliated against him for his research and publications challenging the safety of the land application of sewage sludge.[31] U.S. Department of Labor investigators agreed, finding that in reaction to an article in *Nature* magazine critical of EPA's sludge rule, Agency officials applied ethics rules on the print size of publication disclaimers in a discriminatory fashion and unlawfully denied Lewis his promotion.[32]

A lead industry trade group hired dozens of scientists in an attempt to discredit the work of Herbert Needleman, a Harvard University scientist whose research indicated that low levels of exposure to lead could negatively impact a child's intelligence and behavior.[33] Years after an EPA committee of experts rejected industry complaints that Needleman had committed scientific misconduct, two scientists, represented by a law firm that previously represented lead companies and acting on "suspicions," filed renewed misconduct charges against Needleman.[34] He was again cleared, but spent more than 15 years and thousands of dollars, not to mention thousands of hours that otherwise would have been spent on further research on lead's toxicity, defending against unsupported charges.[35]

Further, a campaign allegedly orchestrated by a public relations company that worked for the Monsanto Company attacked the character of researchers David Quist and Ignacio Chapela of the University of California at Berkeley after they published a study indicating that traces of deoxyribonucleic acid (DNA) from bio-engineered corn had spread to native Mexican maize.[36] Immediately upon publication, critics of the study mounted a series of Internet-based attacks, some false, against the researchers' motivations and credibility.[37] Many of the Internet postings were made using fictitious names from computers belonging to a public relations firm specializing in "Internet advocacy" that represents Monsanto.[38] Chapela, who also was personally intimidated and threatened by fellow scientists and Mexican officials over his research, feels he can no longer work on the issue of transgenic corn because of the discreditation campaign.[39]

A number of recent surveys have examined environmental scientists on their perceptions of interference in their work. A survey of National Oceanic and Atmospheric Administration (NOAA) fisheries scientists found that 22% had been inappropriately directed to exclude or alter technical information from a scientific document and over 37% felt they were not allowed to do their jobs as scientists.[40] Significantly, almost 40% of the scientists said they could not openly express their professional opinion about conservation requirements outside the agency without fear of retaliation; 29% feared retaliation even if their professional opinions were voiced solely within the agency.

In a similar survey, 20% of FWS scientists stated they had been inappropriately directed to exclude or alter technical information from a scientific document, and 32% felt they were not allowed to do their jobs as scientists.[41] Forty-two percent believed they could not openly express their professional concerns about the biological needs of species and habitats outside the agency without fear of retaliation; 30% feared retaliation if their professional opinions were voiced solely within the agency.

EPA employees express similar fears of retaliation. In a survey of EPA Region 8 staff and management, 34% believed that senior managers did not carefully consider the

29. Keith Schneider, *Hard Times*, Amicus J., Fall 1982, at 22.

30. Reuber v. Food Chem. News, Inc., 925 F.2d 703, 707 (4th Cir. 1991) (holding there was insufficient evidence to support the jury's verdict that an article containing false statements about Reuber had been published with actual malice).

31. *Muting the Whistleblowers*, Sarasota Herald Trib., Aug. 23, 2003, at A18; Letter from David L. Lewis, Ph.D., to James Sensenbrenner, Chair, Judiciary Committee, U.S. House of Representatives (May 3, 2001) (on file with author).

32. Caroline Snyder, *EPA Wants Scientist Out for Publishing Papers Critical of Sludge Rule*, Inside the Fishbowl, July 2002, *available at* http://www.nteu280.org/fishbowl/julyfishbowl.htm (last visited Oct. 24, 2005).

33. Devra Davis, When Smoke Ran Like Water 126-27 (Basic Books 2002).

34. Stephen Burd, *Scientists See Big Business on the Offensive*, Chron. Higher Educ., Dec. 14, 1994, at A27; Needleman, *supra* note 24, at 979-80. One of the accusers legal fees were paid through a trust fund but the accuser declined to identify the source of funds, saying she had been asked to keep the matter confidential. *But see* Claire B. Ernhart et al., *On Being a Whistleblower: The Needleman Case*, 3 Ethics & Behav. 73 (1993) (defending the allegations).

35. Burd, *supra* note 34, at A27, A30; Needleman, *supra* note 24, at 980. Needleman argues that his experience

> shows that the federal investigative process can be rather easily exploited by commercial interests to cloud the regulatory consensus about a toxicant's dangers, can slow the regulatory pace, can damage an investigator's credibility, and can keep him tied up almost to the exclusion of any scientific output for long stretches of time, while defending himself.

Needleman, *supra* note 24, at 980.

36. David Quist & Ignacio H. Chapela, *Transgenic DNA Introgressed Into Traditional Maize Landraces in Oaxaca, Mexico*, 414 Nature 541 (2001).

37. PBS, *Seeds of Conflict: Nature Article Debate*, *at* www.pbs.org/now/science/genenature.html (last visited Oct. 24, 2005).

38. *Id.*; Peter Aldhous, *More Heat Than Light*, 420 Nature 730 (2002); Jonathan Matthews, *Amazing Disgrace*, Ecologist, May 2002, at 30; George Monbiot, *Corporate Phantoms*, Guardian (London), May 29, 2002, at 17; Kara Platoni, *Kernels of Truth*, East Bay Express (Cal.), May 29, 2002, *available at* http://www.eastbayexpress.com/issues/2002-05-29/feature.html (last visited Oct. 24, 2005).

39. Justin Berton et al., *What Ever Happened to . . .*, East Bay Express (Cal.), Dec. 25, 2002, *available at* http://www.eastbayexpress.com/issues/2002-12-25/news8.html (last visited Oct. 24, 2005); Marc Kaufman, *Battlelines Drawn in Mexico Over Genetically Modified Corn*, Guardian Wkly. (London), Apr. 4, 2002, at 33; *see also* David Helvarg, *The Greenhouse Spin*, Nation, Nov. 16, 1996, at 21 (reporting on efforts to undermine the Intergovernmental Panel on Climate Change's 1995 report on global climate change by alleging misconduct by the chief scientists who prepared the report); Edward Groth III, *The Debate Over Food Biotechnology in the United States: Is a Societal Consensus Achievable?*, 7 Sci. & Eng'g Ethics 327 (2001) (detailing the "vituperative ad hominem attacks" by proponents of water fluoridation, nuclear power, and pesticides on leading opponents of the technologies).

40. Union of Concerned Scientists & Public Employees for Environmental Responsibilities, Survey of NOAA Fisheries Services Employees (2005).

41. Union of Concerned Scientists & Public Employees for Environmental Responsibilities, Survey of U.S. Fish and Wildlife Service Ecological Services Employees (2005).

scientific advice and opinions of professional staff. Thirty-six percent of professional employees with five or more years experience stated they were hesitant to perform controversial aspects of their job for fear of retaliation.[42]

In a survey of thousands of scientists funded by the National Institutes of Health (NIH), over 15% revealed they had changed the design, methodology, or results of a study in response to pressure from a funding source, a rate the authors feel even underestimates the true scope of such behavior.[43] An informal e-mail survey of public-health specialists at the Agency for Toxic Substances and Disease Registry (ATSDR) found a similarly high percentage of professionals afraid to speak openly within that agency about their work.[44]

A study of Cornell University agricultural and nutrition-science educators found that although almost one-half had reservations about genetically engineered foods, educators with such concerns were less comfortable in expressing their views with colleagues and other constituents than those with pro-genetically engineered food opinions.[45] The study's authors suggest that those with a precautionary viewpoint toward genetically engineered foods may not feel free to express their views openly, particularly where they are seeking tenure or reappointment, out of concern over antagonizing agribusiness interests within the university.[46]

Environmental scientists outside the United States experience similar efforts to control their scientific speech and display similar reluctance to engage in certain research or speak out on certain issues. A 1999 survey of British specialists in science, engineering, and technology found that 30% had been asked to tailor their research conclusions or resulting advice to suit the customer's preferred outcome, to obtain future contracts, or to discourage publication.[47] Results from a survey of attendees at the annual conference of the ISEE revealed that 50% of those who completed the questionnaire had experienced harassment following publication of research on health risks from environmental exposures.[48] More than one-half of Australian environmental scientists employed as university researchers felt that scientists jeopardize their careers by speaking out on environmental issues; over one-third knew scientists who had been disadvantaged because of their views on environmental issues.[49] An indication of the level of concern these scientists had for their careers if they disseminated unwelcome scientific information was the finding that while over one-half had provided scientific information to politically active environmental organizations, 16% acted exclusively in an anonymous capacity and an additional 43% acted anonymously at times.[50]

Because researchers often are reluctant to publicize their cases of suppression or stand up to employers or financial sponsors of research, there is no way of knowing how many studies have been delayed, suppressed, or altered due to outside influences on environmental research.[51] Martin argues it is reasonable to infer that the publicized cases of suppression are a small fraction of the number of times third parties try to suppress environmental scientists.[52] Every researcher that has looked at the phenomenon has concluded that efforts to suppress environmental scientists are significant and increasing,[53] with one university researcher opining there was more pressure on environmental research from external sources than he had seen in 38 years at the university.[54]

Even if the number of publicized efforts to interfere in environmental research is limited, the effects may not be. Efforts to suppress an environmental scientist's work impact not only the person directly attacked but also others who, upon learning of the attack, are dissuaded from pursuing certain lines of inquiry or publishing certain results.[55] This self-censorship, often hard to document, may be the greatest source of suppression.

II. Laws Relating to Environmental Scientific Speech

The examples set out above suggest three areas of the law that may impact the scientific freedom of environmental scientists: defamation; scientific misconduct rules; and protection of employee speech.

A. Defamation: Suppression's Sword or Shield?

Special interests and scientists have repeatedly invoked the law of defamation as a means of both suppressing and protecting certain scientific speech. Efforts to use the law of defamation to suppress scientific speech are unlikely to succeed in court, given the protection afforded by the U.S. Constitution's First Amendment to speech of public concern.

42. Public Employees for Environmental Responsibilities, 2003 PEER Survey of EPA Region 8 Employees (2003).

43. Brian C. Martinson et al., *Scientists Behaving Badly*, 435 Nature 737 (2005).

44. Peter Montague, *Public Health Professionals Afraid to Speak Out*, Rachel's Env't & Health News, Mar. 31, 2005, at 2.

45. Jennifer L. Wilkins, *Moving From Debate to Dialogue About Genetically Engineered Foods and Crops: Insights From a Land Grant University*, 18 J. Sustainable Agric. 167, 185, 194 (2001).

46. *Id*. at 196; *see also* Karen Charman, *Spinning Science Into Gold*, Sierra Mag., July/Aug. 2001, at 40 (reporting on the backlash against academics who openly criticize biotechnology).

47. *One in Three Asked to Tailor Research Findings*, IPMS Bull., Feb. 2000, at 8; *see also* Liz Lightfoot, *Scientists "Asked to Fix Results for Backer,"* Daily Telegraph (London), Feb. 14, 2000, at 9.

48. Richter et al., *supra* note 4, at 70.

49. Susan Wilson & Ian Barnes, *Scientists' Participation in Environmental Policy*, Search, Oct. 1995, at 270, 273.

50. *Id.* at 271.

51. Katherine S. Mangan, *Drug Company Seeks $10 Million From Scientist and University*, Chron. Higher Educ., Nov. 17, 2000, at A48 (reporting observation of Marcia Angell, former editor of the *New England Journal of Medicine*).

52. Martin, *supra* note 5, at 33.

53. *See, e.g.*, Samuel Epstein, The Politics of Cancer 300, 308 (1979) (characterizing industry suppression and destruction of data by scientists on the dangers of cancer from exposure to pollution as "commonplace" and "legion"); Frederick R. Anderson, *Science Advocacy and Scientific Due Process*, Issues in Sci. & Tech., Summer 2000, at 71 ("Well-organized campaigns against certain types of research and the researchers who conduct them do appear to be on the rise.") *id.* at 74; Richard A. Deyo et al., *The Messenger Under Attack—Intimidation of Researchers by Special-Interest Groups*, 336 New Eng. J. Med. 1176, 1176 (1997) (arguing that increased financial and public interest in health hazards invite more frequent and acrimonious attacks on health research); Martin, *Critics of Pesticides*, *supra* note 10, at 46 (arguing that "suppression is much more common than generally realised"); Richter et al., *supra* note 4, at 68 (characterizing pressure on environmental scientists to discourage a particular line of research or publication of unwelcome research findings as "increasingly common").

54. Beeman, *supra* note 20 (reporting the opinion of Prof. Niel Harl of Iowa State University).

55. Martin, *Suppression of Dissent*, *supra* note 7, at 121.

Those same First Amendment protections also make it difficult for a scientist to use the law against suppression efforts that defame the scientist.

To establish a case for defamation, a plaintiff must prove that the defendant made a false statement concerning the plaintiff to a third person that "tends so to harm the reputation of another as to lower him in the estimation of the community or to deter third persons from associating or dealing with him."[56] Businesses, like individuals, can be defamed if the false statement injures the business character of the corporation or its prestige and standing in the industry.[57]

A number of First Amendment doctrines provide protection against defamation and other actions alleging injury from the written or spoken statements of environmental scientists. First, where the person allegedly defamed is a "public official" or "public figure," the plaintiff must show by clear and convincing proof that the defendant made the statement with actual malice.[58] A person can be a public figure where she has achieved such pervasive fame or notoriety that she is a public figure for all purposes and contexts or where she voluntarily assumes a central role in a particular public controversy and becomes a public figure for that limited issue.[59]

In *Gertz v. Robert Welch, Inc.*,[60] the U.S. Supreme Court defined limited public figures as those who "have thrust themselves to the forefront of particular public controversies in order to influence the resolution of the issues involved."[61] Thus, limited public figures voluntarily inject themselves into a particular public issue in hopes of affecting the debate. Scientists may become limited public figures if they testify before regulatory agencies or serve as expert witnesses on the subject at issue,[62] voluntarily participate in media coverage of the issue,[63] or publish an opinion piece for a newspaper on a controversial issue.[64]

Two cases illustrate the distinction between a private figure and limited public figure scientist. In *Hutchinson v. Proxmire*,[65] a scientist sued a U.S. senator for defamation after the senator used the scientist's publicly funded research as an example of alleged wasteful government spending. The Court found that because the scientist had simply received federal research grants and published his results in scholarly journals that only reach a small category of professionals, he had not invited the kind of attention and comment that merits limited public figure status.[66]

In contrast, *Reuber v. Food Chemical News, Inc.*[67] held that an environmental scientist was a limited public figure and could only recover for the publication of false information about his conduct and character upon a showing of actual malice because, in part, the scientist willingly shared a manuscript of his research with an environmental group and county attorney. Regrettably, this case suggests that where an environmental scientist is aware of a controversy and knowingly supplies her research results to interested parties, as opposed to having a third party find the results on its own in a scholarly journal, the scientist could be deemed a public figure in any later defamation action by the scientist against persons or publications that made false statements against the scientist.

If scientists can so easily be deemed to have thrust themselves to the forefront of particular public controversies in order to influence the resolution, then limited public purpose status also would be appropriate for a business or special interest group seeking to convince the public of the safety or minimal environmental impacts of its products or activities. Indeed, many attacks on scientists are for the very purpose of influencing or, in many cases, limiting public debate on environmental controversies. Thus, environmental scientists can take some comfort that, in most instances, a business suing an environmental scientist for allegedly defamatory research would be deemed a limited public figure.[68]

56. Restatement (Second) of Torts §559 (1977); *see also* Rodney A. Smolla, Law of Defamation §1:8 (2d ed. 2003).

57. W. Page Keeton et al. on the Law of Torts 779 (5th ed. 1984) [hereinafter Keeton et al.]; Smolla, *supra* note 56, §4:75; *see also* Vincent Brannigan & Bruce Ensor, *Did Bose Speak Too Softly?: Product Critiques and the First Amendment*, 14 Hofstra L. Rev. 571, 573 (1986).

58. Public officials include "those among the hierarchy of government employees who have, or appear to the public to have, substantial responsibility for or control over the conduct of governmental affairs." Rosenblatt v. Baer, 383 U.S. 75, 85 (1966). "The employee's position must be one which would invite public scrutiny and discussion of the person holding it, entirely apart from the scrutiny and discussion occasioned by the particular charges in controversy." *Id*. at 87 n.13.

59. Gertz v. Robert Welch, Inc., 418 U.S. 323, 351 (1974). The media cannot "bootstrap" a person into a public figure by pointing to media coverage by the defendant of the plaintiff as evidence that the plaintiff is a public figure. Hutchinson v. Proxmire, 443 U.S. 111, 135 (1979). The public controversy that gives rise to public figure status must preexist the statement that gives rise to the defamation suit, not be created by the media itself. Smolla, *supra* note 56, §2:25.

60. 418 U.S. 323 (1974).

61. *Id*. at 345.

62. *See, e.g.*, McBride v. Merrell Dow & Pharms., Inc., 800 F.2d 1208, 1211 (D.C. Cir. 1986). *But see* Wolston v. Reader's Digest Ass'n, 443 U.S. 157, 166-69 (1979) (holding that dragging a person unwillingly into a controversy, by requiring them to testify at a proceeding or charging them with wrongdoing, does not make the person a limited public figure); Franklin v. Benevolent & Protective Order of Elks, 159 Cal. Rptr. 131, 137-41 (Cal. Ct. App. 1979) (holding that teacher was not a limited public figure in a controversy inspired by her choice of a textbook where she spoke at a public hearing and otherwise participated only to the extent required by school regulations or made necessary by inquires of the media).

63. *See, e.g.*, Reuben v. Food Chem. News, Inc., 925 F.2d 703, 708 (4th Cir. 1991); Renner v. Donsbach, 749 F. Supp. 987, 991 (W.D. Mo. 1990); Park v. Capital Cities Communications, Inc., 585 N.Y.S.2d 902, 197 (N.Y. App. Div. 1992).

64. *See, e.g.*, Faltas v. State Newspaper, 928 F. Supp. 637, 645 (D.S.C. 1996), *aff'd*, 155 F.3d 557 (4th Cir. 1998). *But see* Madsen v. Buie, 454 So. 2d 727, 730 (Fla. Dist. Ct. App. 1984) (holding that a single letter to a newspaper did not make a university professor of psychology a limited public figure).

65. 443 U.S. 111 (1979).

66. *Id.* at 134-35. "Neither his applications for federal grants nor his publications in professional journals can be said to have invited that degree of public attention and comment on his receipt of federal grants essential to meet the public figure level." *Id.* at 135. Thus, publication of scientific research in journals, without more, should not make a scientist a limited public figure. *See* Greenberg v. CBS, Inc., 419 N.Y.S.2d 988, 993-94 (N.Y. App. Div. 1979) (noting that a scientist's journal articles were intended for a scholarly audience, not for a mass market). *Hutchinson* did not address whether the professor was a "public official" but noted that the category "cannot be though to include all public employees." *Hutchinson*, 443 U.S. at 119 n.8; *see* Staheli v. Smith, 548 So. 2d 1299, 1304 (Miss. 1989) (holding that public university professor involved in geology research and grants was not in that class of higher level, decision-making public employees that are deemed public officials).

67. 925 F.2d at 703, 709-10 (4th Cir. 1991).

68. When a corporation sues in defamation, a majority of courts apply the same public-private figure and public concern standards to deter-

If the individual or business seeking to sue the environmental scientist is a public figure, the requirement to prove by clear and convincing evidence that the allegedly defamatory statement was made with actual malice is difficult. Actual malice requires proof that the statement was made with knowledge that it was false or with reckless disregard to whether it was false or not.[69] Reckless disregard means that the speaker made the statement with a high degree of awareness of its probable falsity or entertained serious doubts as to its truth.[70] Inaccuracies or errors are considered inevitable in debates and do not demonstrate malice.[71] It is also not enough to show that the defendant acted with spite, hatred, ill will, or intent to injure the plaintiff, or even that the statement was made in order to increase the speaker's profits.[72] In essence, if a person or business sought to sue an environmental scientist over his or her research statements, the plaintiff would have to prove some intentional research misconduct, not simply research error or carelessness.

Even if the person or business allegedly defamed is not a public figure, where the issue involved in the defamatory statement is of "public concern," the plaintiff must show proof of fault by the defendant.[73] Whether a statement addresses a matter of public concern is determined by the statement's content, form, and context.[74] This includes not only the number of persons affected by the subject of the allegedly defamatory statement but also the severity of the impact on those persons affected.[75] Given the public's interest in issues of environmental science and the likely broad dissemination of the statement, as well as the likely impact of the statement on public health or the environment, an environmental scientist's research and opinions are likely to be considered statements of public concern and given enhanced First Amendment protection.[76]

As a matter of public concern, the statement must be provable as false before there can be liability under defamation law.[77] Mere statements of opinion are not actionable unless the "opinion" implies a false assertion of fact that is capable of being proven true or false.[78] Statements that are hyperbolic or exaggerated often are not taken reasonably to imply false facts.[79]

Decisions in lawsuits against environmental scientists or those reporting the results of environmental research demonstrate the remoteness of proving research statements false, much less showing, in cases where the plaintiff is a public figure, that any provable false statements were made with actual malice. In the lawsuit by apple growers against CBS television for broadcasting a program on the carcinogenic risks of the pesticide Alar on children, the court required the plaintiffs to provide affirmative evidence that the pesticide does not pose a risk to children.[80] Because of the absence of specific studies on cancer risks to children from Alar and the difficulty of disproving a risk, plaintiffs were unable to show that statements made during the broadcast were false.[81]

Similarly, in *Immuno AG. v. Moor-Jankowski*,[82] a company sued the editor of a scientific journal for publishing an allegedly false letter to the editor that criticized the company's plan to conduct hepatitis research using wild chimpanzees. In holding that the plaintiff failed to show the falsity of factual assertions in the letter, the court noted that the plaintiff had failed to prove the existence of a scientific test that could conclusively disprove the concerns in the letter.[83]

Many environmental science disputes are reducible to differences of opinion on the appropriate methodology or test, degree of uncertainty or likelihood of outcomes or causation, or involve scientific hypotheses or allegations of risk that cannot be proved or disproved. In addition, scientists by nature state their conclusions cautiously, characterizing their results as hypotheses and choosing words that suggest the tentative nature of findings and conclusions.[84] Therefore, where an environmental scientist's research concerns an unresolved scientific issue or methodology or is expressed in cautionary fashion, proving false facts would be difficult.

The *Reuber* case, where the court reversed a jury verdict in favor of the scientist, suggests that proving actual malice also would be difficult.[85] The court found that the publisher's decision not to inquire whether inconsistent state-

mine the burden of proof to place on the business. SMOLLA, *supra* note 56, §§2:96, 2:98.

69. New York Times Co. v. Sullivan, 376 U.S. 254, 279-80 (1964).
70. Harte-Hanks Communications, Inc. v. Connaughton, 491 U.S. 657, 667 (1989).
71. Bose Corp. v. Consumers Union, 466 U.S. 485, 513 (1984).
72. *Harte-Hanks Communications, Inc*., 491 U.S. at 666-67; National Ass'n of Letter Carriers v. Austin, 418 U.S. 264, 281 (1973).
73. Philadelphia Newspapers, Inc. v. Hepps, 475 U.S. 767, 777 (1986).
74. Dunn & Bradstreet, Inc. v. Greenmoss Builders, Inc., 472 U.S. 749, 761 (1985).
75. *See id.* at 762; Farnsworth v. Tribune Co., 253 N.E.2d 408, 411 (Ill. 1969).
76. In *Reuber*, the court characterized the debate over the carcinogenic hazards of pesticide spraying as a "controversy of immense public concern," observing that the implications of scientific research are more far reaching today than ever before and noting the enhanced importance of the public's understanding of a scientist's credentials and conclusions. *Reuber*, 925 F.2d at 718, 720.
77. Milkovich v. Lorain Journal Co., 497 U.S. 1, 19 (1990).
78. *Id.* at 20; In re Palmisano, 70 F.3d 483, 487 (7th Cir. 1995).
79. *See, e.g.*, Peter Scalamandre & Sons, Inc. v. Kaufman, 113 F.3d 556, 562 (5th Cir. 1997). To be defamatory, the statement must be "of or concerning" the plaintiff. Rosenblatt v. Baer, 383 U.S. 75, 81 (1966); SMOLLA, *supra* note 56, §4:39. Where a scientist's research pertains to a group or class and is not reasonably susceptible of application to any given persons, a claim for defamation is not actionable. *See, e.g.*, Texas Beef Group v. Winfrey, 11 F. Supp. 2d 858, 863-64 (N.D. Tex. 1998), *aff'd on other grounds*, 201 F.3d 680 (5th Cir. 2000) (holding that cattlemen had failed to show that statements about risks of "Mad Cow Disease" were "of and concerning" them); Gintert v. Howard Publications, Inc. 565 F. Supp. 829, 833 (N.D. Ind. 1983) (holding that statements about environmental conditions in community were not reasonably susceptible of application to any given individual); National Nutritional Foods Ass'n v. Whelan, 492 F. Supp. 374, 380-81 (S.D.N.Y. 1980) (holding that statements critical of the health food industry were not actionable by individuals in that industry).
80. Auvil v. CBS "60 Minutes," 67 F.3d 816, 821 (9th Cir. 1995).
81. *Id.* at 821-22.
82. 567 N.E.2d 1270, 1275 (N.Y. 1991).
83. *Id.* at 1276; *see also Texas Beef Group*, 201 F.3d at 688 (holding that statements depicting American beef as unsafe from "Mad Cow Disease" were not actionable because they did not contain a provably false factual connotation).
84. *See* Dong v. Board of Trustees of Leland Stanford Junior Univ., 236 Cal. Rptr. 912, 920 (Cal. Ct. App. 1987) (holding that where the underlying facts supporting a belief are disclosed, courts have found such statements not to be actionable in defamation); Baker v. Los Angeles Herald Exam'r, 721 P.2d 87, 90-91 (Cal. 1986) ("Where the language of the statement is 'cautiously phrased in terms of apparency,' the statement is less likely to be reasonably understood as a statement of fact rather than opinion.").
85. *Reuber*, 925 F.2d at 720-21.

ments in a personnel letter regarding the government scientist were true or false and the publisher's admission that it would have published the statement even if it knew that some or all of it was false did not prove malice.[86] The court explained that it was "reject[ing] the attempt to silence one's adversaries in a public controversy by suing organizations attempting to inform the public about questions raised as to the research [of an environmental scientist]."[87]

While the likelihood of success in a defamation lawsuit based on scientific speech seems remote, the "threat of being put to the defense of a lawsuit . . . may be as chilling to the exercise of First Amendment freedoms as fear of the outcome of the lawsuit itself."[88] Any lawsuit an environmental scientist must defend extracts a heavy toll in time and expenses. In the *Immuno AG.* case, although the editor of the journal was ultimately vindicated by a unanimous court, the seven-year litigation cost $2 million in legal expenses, including $70,000 the editor had to pay out of his own pocket because his insurance company would not pay for certain necessary depositions.[89] The other defendants in the case, which included the scientist who wrote the letter to the editor, settled rather than endure the time and expense of a trial.[90]

The threat of litigation, even where the likelihood of success by the plaintiff is doubtful, can dissuade companies from publishing scientific research. When Dr. Stanton Glantz and associates wrote a book analyzing secret tobacco industry documents on the health effects of smoking, publisher after publisher turned down the opportunity to publish the book. As one publisher explained:

> At serious big-league law firms, the consensus was that, although we could probably ultimately show that we have a right to publish, financially we'd be out of business before we had a chance to show anybody anything. If you anger a tobacco company and get into what amounts to a financial war with it—where the issue is who can afford better attorneys for longer—you're going to lose.[91]

The court in *Immuno AG.* observed that the chilling effect of threatened litigation "can be especially severe for scholarly journals, such as defendant's, whose editors will likely have more than a passing familiarity with the subject matter of the specialized materials they publish."[92] Prof. Michael Curtis warns that the current pesticide dialogue is seriously distorted by threats of defamation, which are insufficiently deterred by existing legal rules on defamation.[93] He argues that a scientist who believes the safety of pesticides is little cause for concern is comparatively safe in making unequivocal and bland assurances of safety, while scientists who think pesticides in food expose the public to unreasonable risks must express themselves in a much more guarded fashion or face the possibility of immediate legal action.[94] As discussed in Part III, to ensure an open, fair debate on issues of environmental science in which both sides feel equally free to express their scientific positions, steps must be taken to minimize the ability of lawsuits and threats of lawsuits to suppress environmental scientists.

B. Misuse of Scientific Misconduct Charges

Misconduct in scientific research is a source of increasing attention and regulation. Over the past decade, federal agencies have developed extensive rules that define misconduct in federal research and set forth processes for responding to misconduct allegations and punishing those found guilty.[95] Along with this focus have come calls for the right and responsibility of those with information about misconduct to report such activity[96] and increased efforts to protect whistleblowers who make good-faith allegations of scientific misconduct from retaliation.[97]

This focus on identifying and punishing misconduct, and encouraging the reporting of suspected misconduct, has created a potential weapon against unwelcome environmental research—the unsupported allegation of research misconduct. In the past, a concern about scientific research might have resulted in a request for reanalysis or correction that was handled informally or quietly or in an article in a scientific journal challenging the earlier result. Today, misconduct allegations trigger a formalized process with, in a majority of cases, adverse consequences even for those exonerated.

Needleman learned that a mere allegation of misconduct can interfere with the ability of an environmental scientist to perform research after spending more than 15 years of his life rebutting unsubstantiated charges of misconduct in his research on lead.[98] Two scientists who filed the charges ad-

86. *Id.* at 716-17.

87. *Id.* at 718.

88. Karaduman v. Newsday, Inc., 416 N.E.2d 557, 563 (N.Y. 1980).

89. Deborah Blum, The Monkey Wars 173-74 (1994).

90. *Id.* at 173; Anthony Lewis, Make No Law 212 (1991).

91. Jon Wiener, *The Cigarette Papers*, Nation, Jan. 1, 1996, at 11, 14.

92. *Immuno AG.*, 567 N.E.2d at 1282.

93. Michael Kent Curtis, *Monkey Trials: Science, Defamation, and the Suppression of Dissent*, 4 Wm. & Mary Bill Rts. J. 507, 537 (1995).

94. *Id.*

95. *See, e.g.*, 42 C.F.R. pt. 93 (2005) (Public Health Service); 45 C.F.R. pt. 689 (2005) (National Science Foundation); 65 Fed. Reg. 76260 (Dec. 6, 2000) (Office of Science and Technology Policy). Research misconduct is fabrication, falsification, or plagiarism in proposing, conducting or reviewing research, or in reporting research results. 42 C.F.R. §93.103 (2005); 45 C.F.R. §689.1(a) (2005); 65 Fed. Reg. at 76262. It does not include honest error or differences in interpretations or judgments of data. 42 C.F.R. §93.103(d) (2005); 45 C.F.R. §689.1(b) (2005); 65 Fed. Reg. at 76262. A finding of misconduct requires that there be a significant departure from accepted research practices, that the misconduct be committed intentionally, knowingly, or recklessly, and that the allegation be proven by a preponderance of the evidence. 42 C.F.R. §93.104 (2005); 45 C.F.R. §689.2(c) (2003); 65 Fed. Reg. at 76262.

96. *See, e.g.*, Commission on Research Integrity, Integrity and Misconduct in Research 28 (1995); Committee on the Conduct of Science, National Academy of Sciences, On Being a Scientist 18 (1989).

97. *See, e.g.*, 42 C.F.R. §93.304(l) (2005); 45 C.F.R. §689.4(a)(4) (2005); 65 Fed. Reg. at 76263.

98. Davis, *supra* note 33, at 129. Prof. Ellen Silbergeld explained the efforts to silence Needleman:

> In the 1990s a new weapon was at hand. The NIH Office of Scientific Integrity provided the industry a possible weapon with which to intimidate one of its most accomplished critics. . . . [T]he industry may have perceived that it could use an allegation of scientific fraud and misconduct to regain some control over public policy on lead.

Ellen K. Silbergeld, *Annotation: Protection of the Public Interest, Allegations of Scientific Misconduct, and the Needleman Case*, 85 Am. J. Pub. Health 165, 166 (1995). She characterizes this abuse

mitted they had no evidence of any misconduct, only suspicions.[99] Similarly, after Dr. Eugene Dong, a Stanford University researcher, forwarded a graduate student's concerns about scientific conclusions in a colleague's research to the chairman of the department, the accused scientist wrote letters to the university accusing Dong of scientific fraud.[100] Dong's accuser later admitted under oath that he did not have any evidence to support the misconduct charges.[101]

Interested parties attacked University of Washington researchers after they published a study casting doubt on the value of immunodiagnostic tests used to support claims for chemical sensitivity.[102] Allegedly, some of the accusers contacted patients of one of the researchers to encourage them to attack his credibility.[103] Even after five separate inquiries found no basis for a full-scale investigation, the accusers continued to file complaints and publicly accuse the exonerated researchers of misconduct.[104]

A number of commentators have cautioned about the abuse of charges of scientific misconduct. Prof. Dan Burk observed that the present investigative process allows charges of misconduct easily to be brought out of spite, professional jealousy or revenge, or to punish or remove unpopular or irksome researchers.[105] Prof. Harold Green argues that "most whistle-blowers' allegations will ultimately prove baseless and motivated by animosity, personal grievances, personality problems, and the like."[106] The director of the National Center for Environmental Health and a member of the federal Commission on Research Integrity expressed alarm that companies are using alleged concerns about research integrity to intimidate public health scientists and further commercial ends.[107] A report that an attorney sponsored a workshop promoting the use of allegations of misconduct as a way to attack unwelcome research supports concerns that allegations are being abused by groups motivated by special interests.[108]

Even if the misconduct allegation results in exoneration, the accused usually suffers. A 1996 report for the Public Health Service's Office of Research Integrity (ORI) found that 60% of exonerated scientists experienced at least one adverse consequence as a result of being accused of scientific misconduct, with 65% of exonerated scientists reporting that these negative actions continued even after they were cleared.[109] In addition to the Needleman matter, the cases of Drs. Jorge Ferrer and Theresa Imanishi-Kari demonstrate the extreme adverse effects that exonerated scientists experience from having to defend against charges of scientific misconduct.[110]

In a number of ways, federal scientific misconduct whistleblower protection rules may condone unfounded allegations against environmental scientists. First, the rules do not require a complainant to provide any threshold of information to support the allegation, yet institutions are obligated to respond promptly to each allegation, regardless of evidentiary basis or motivation.[111] An ORI survey on research institution policies for responding to allegations of scientific misconduct found that only 11% of institutions expect the allegation to describe the misconduct and only 10% expect supporting documentation or other evidence.[112] Apparently, as the Needleman incident demonstrates, allegations sufficient to trigger an investigation include mere suspicions.

Second, ORI argues that provided the accuser makes the allegation in good faith, a whistleblower is entitled to a conditional privilege against defamation claims.[113] ORI defines good faith as a belief in the truth of one's own allegation that a reasonable person could have believed based upon the information known to the whistleblower at the time of the allegation.[114] Nisan Steinberg argues that ORI's privilege pol-

of the scientific misconduct investigative process as intended to "hobble a highly accomplished researcher and terrorize those who might be inspired to emulate him." *Id.* at 165.

99. Needleman, *supra* note 24, at 979-80.

100. Dong v. Board of Trustees of Leland Stanford Junior Univ., 236 Cal. Rptr. 912, 915-17 (Cal. Ct. App. 1987).

101. *Id.* at 915. Dong alleged he suffered decreased salary, denial of promotions, and emotional distress because of the unfounded allegations. The court dismissed Dong's defamation suit against his accuser and university officials on the ground that the misconduct allegations were mere statements of opinion rather than fact. *See also* Needleman v. Healy, 1996 U.S. Dist. LEXIS 21614 (W.D. Pa. 1996) (dismissing claims by exonerated scientist for relief against university and government officials over alleged mishandling of misconduct allegations).

102. Deyo et al., *supra* note 53, at 1176-77.

103. *Id.* at 1177; William Edward Daniell, *Science, Integrity, and Investigators' Rights: Current Challenges*, 24 Reg. Toxicology & Pharmacology S152, S158 (1996). *But see* Albert Donnay, *Intimidation of Researchers by Special-Interest Groups*, 337 New Eng. J. Med. 1314 (1997) (alleging errors of fact and misrepresentations in the article by Deyo et al., and denying that patients were encouraged to attack the researcher's credibility).

104. Deyo et al., *supra* note 53, at 1177. "Because of the large numbers of complaints, the inquiries lasted more than 13 months, despite institutional policies requiring resolution of the inquiry phase within 30 days." *Id.*

105. Dan L. Burk, *Research Misconduct: Deviance, Due Process, and the Disestablishment of Science*, 3 Geo. Mason Indep. L. Rev. 305, 332 (1995).

106. Harold P. Green, *Scientific Responsibility and the Law*, 20 U. Mich. J.L. Reform 1009, 1021 (1987).

107. Burd, *supra* note 34, at A26-27.

108. Deyo et al., *supra* note 53, at 1177.

109. Research Triangle Institute, Survey of Accused But Exonerated Individuals in Research Misconduct Cases 17, 20 (1996). Negative outcomes included additional allegations beyond those of scientific misconduct, threats of lawsuits, ostracization by colleagues, reductions in research support, delays in processing grant applications, delays in obtaining clearance of manuscripts, denial of promotion, denial of salary increase, and termination. *Id.* at 81.

110. *See* Ferrer v. Trustees of Univ. of Pa., 825 A.2d 591 (Pa. 2002); Gina Kolata, *Inquiry Lacking Due Process*, N.Y. Times, June 25, 1996, at C3 (reporting on the adverse consequences not only to exonerated researcher Imanishi-Kari but also to her chief defender David Baltimore).

111. 42 C.F.R. §93.300(b) (2005); 45 C.F.R. §689.4(a)(1) (2003). ORI encourages institutions receiving federal research funds to adopt its "Whistleblower Bill of Rights," which states that whistleblowers and other witnesses to possible research misconduct "have a responsibility to raise their concerns honorably and with foundation." ORI, *Whistleblowers Bill of Rights*, *at* http://ori.hhs.gov/misconduct/Whistleblower_Rights.shtml (last visited Oct. 24, 2005). However, federal misconduct regulations do not require that an allegation of misconduct be made with any foundation.

112. ORI, Analysis of Institutional Policies for Responding to Allegations of Scientific Misconduct tbl. 3-2 (2000), *available at* http://ori.dhhs.gov/documents/institutional_policies.pdf (last visited Sept. 26, 2005).

113. ORI, The Whistleblower's Conditional Privilege to Report Allegations of Scientific Misconduct (1993), *available at* http://ori.dhhs.gov/misconduct/Whistleblower_Privilege.shtml (last visited Oct. 24, 2005).

114. 42 C.F.R. §93.210 (2005).

icy seeks to provide greater protection to misconduct by whistleblowers than generally provided by the common law.[115] He notes the common-law privilege for reporting wrongdoing to public authorities requires that the accuser act in a reasonable manner for a proper purpose and forfeits the privilege if the accuser acts chiefly from motives of ill will.[116] ORI's broad privilege policy would extend protection even to accusers who act primarily out of ill will, spite, or a desire to do harm to the accused scientist. In addition, by defining bad-faith allegations as those made in knowing or reckless disregard of information that would negate the allegation, ORI in essence has adopted the actual malice standard so difficult for an innocent researcher to prove in court.[117]

Finally, the misconduct rules do not attempt to punish unfounded or bad-faith accusers, other than to waive their immunity. The president's Office of Science and Technology Policy, in response to a comment on its draft federal research misconduct policy, refused to include a provision punishing informants who act in bad faith, explaining that nonfederal research institutions could adopt policies to address the consequences of false, malicious, or capricious allegations, and agencies could address the issue in the implementation of their misconduct policies.[118] However, only 3% of institutional policies specify the disciplinary actions that will be taken against persons who make bad-faith allegations of misconduct.[119]

Although the report of the U.S. Department of Health and Human Services' (DHHS') Commission on Research Integrity proposed that obstruction of an investigation of research misconduct be considered a form of professional misconduct, it did not characterize unfounded accusations as misconduct nor did it propose any form of sanctions against those who file unfounded allegations.[120] Similarly, in the cases of unfounded accusations noted above, there is no report of any disciplinary or other adverse action taken against the accusers for making unfounded allegations. Thus, unless an exonerated scientist chooses to sue the accuser for defamation or some other infringement of the scientist's rights, the accuser may not face any sanction for filing an unfounded misconduct charge.

The NAS' report on scientific misconduct noted the problems caused by false accusations and included malicious allegations as a form of misconduct.[121] The report argued that given the damage that can be done by false or malicious allegations and the time and resources necessary to investigate allegations, "appropriate documentation" should be provided at the time of an initial allegation to justify reviewing the complaint.[122]

Members of the Commission on Research Integrity expressed concern about whether allegations of misconduct have been and can be misused for commercial ends, but its final report did not identify unfounded or malicious allegations as a form of misconduct.[123] The DHHS' implementation group objected that the commission's report appeared more attentive to the rights of whistleblowers and the responsibilities of other parties than to the responsibilities of whistleblowers and the rights of other parties, such as the accused.[124] In addition, 50 professional societies representing scientific researchers criticized the commission's report for ignoring the possibility that accusations may be ill founded, malevolent, or simply wrong and for failing to appreciate the damaging consequences innocent scientists face because of such accusations.[125] They protested the report's lack of recommendations to address wrongful behavior on the part of the accuser and to its protection of complainants at the expense of accused scientists.[126]

In spite of these objections, the DHHS' misconduct rules and proposed regulation on misconduct by whistleblowers do not include a provision on bad-faith allegations. As proposed in Part III, federal agencies and research institutions must do more to guard against the harm resulting from unfounded allegations of research misconduct.

C. Countering Employer Retaliation

A common form of suppression against environmental scientists is for an employer to take some punitive personnel action against the scientist who has undertaken, or intends to undertake, unwelcome research. These actions include discharges, denials of promotions, raises or other employment benefits, transfers, and creating hostile working conditions, all intended to either suppress the scientist's work or discourage the scientist from continuing the area of research. In some circumstances, whistleblower protection statutes and the First Amendment may provide a remedy to counter these suppression efforts.

The Whistleblower Protection Act of 1989 recognizes that disclosure of waste, fraud, and abuse is in the public interest and protects government whistleblowers from repri-

115. Nisan A. Steinberg, *Regulation of Scientific Misconduct in Federally Funded Research*, 10 S. CAL. INTERDISC. L.J. 39, 102 (2000).

116. *Id.* (citing KEETON ET AL., *supra* note 57).

117. *See* ORI, Notice of Proposed Rulemaking: Public Health Service Standards for the Protection of Research Misconduct Whistleblowers, 65 Fed. Reg. 70830 (Nov. 28, 2000) (to be codified at 42 C.F.R. pt. 94, subpt. A). ORI argues that the burden of showing bad faith, and overcoming the presumption of good faith, rests with the plaintiff in a defamation lawsuit. ORI, *supra* note 112.

118. 65 Fed. Reg. at 76260, 76262.

119. ORI, *supra* note 111, app. D. ORI's Model Policy for Responding to Allegations of Scientific Misconduct likewise does not warn against bad-faith allegations or specify what action will be taken against such bad-faith accusers. ORI, MODEL POLICY FOR RESPONDING TO ALLEGATIONS OF SCIENTIFIC MISCONDUCT (1997), *available at* http://ori.dhhs.gov/documents/model_policy_responding_allegations.pdf (last visited Sept. 26, 2005). Instead, the Model Policy simply states that the institutional official who makes the final determination on allegations of misconduct will determine whether any administrative action should be taken against the bad-faith whistleblower. *Id.* at 18.

120. COMMISSION ON RESEARCH INTEGRITY, *supra* note 96, at 17.

121. PANEL ON SCIENTIFIC RESPONSIBILITY AND THE CONDUCT OF RESEARCH, RESPONSIBLE SCIENCE, Vol. I, at 29-30 (1992).

122. *Id.* at 121.

123. COMMISSION ON RESEARCH INTEGRITY, *supra* note 96, at 17; Burd, *supra* note 34, at A26.

124. DHHS, IMPLEMENTATION PROPOSALS ON RECOMMENDATIONS BY THE COMMISSION ON RESEARCH INTEGRITY (1996), *available at* http://www.faseb.org/opar/raub.html (last visited Sept. 26, 2005).

125. Letter from Ralph A. Bradshaw, President, Federation of American Societies for Experimental Biology (FASEB), to Donna Shalala, Secretary, DHHS (July 2, 1996), *available at* http://www.faseb.org/opar/hhslet2.html (last visited Sept. 26, 2005); Letter from Ralph A. Bradshaw, President, FASEB, to William F. Raub, Science Advisor, Office of Science Policy, DHHS (May 13, 1996), *available at* http://faseb.org/opar/cristat.html (last visited Sept. 26, 2005).

126. Bradshaw Letter, *supra* note 125; Raub Letter, *supra* note 125.

sal.[127] The law makes it illegal to retaliate against any federal employee for lawfully disclosing information that evidences illegality, gross mismanagement or waste of funds, abuse of authority, or a substantial and specific danger to public health or safety.[128] For protection, an employee must show that he made a disclosure evidencing a reasonable belief of illegality or misconduct and that the disclosure was a contributing factor in an adverse personnel action against the employee.[129] Upon such proof, the burden shifts to the federal employer to demonstrate that it would have taken the same personnel action in the absence of the disclosure.[130]

For a health or safety disclosure to be protected, it must be both substantial and specific. As a U.S. Senate report explained:

> [G]eneral criticism by an employee of the Environmental Protection Agency that the agency is not doing enough to protect the environment would not be protected under [the Whistleblower Protection Act]. However, an allegation by a Nuclear Regulatory Commission engineer that the cooling system of a nuclear reactor is inadequate would fall within the whistleblower protections.[131]

Hence, the Act does not protect revelation of a "negligible, remote, or ill-defined peril that does not involve any particular person, place, or thing."[132] According to commentators, complex procedural requirements and narrow judicial interpretations significantly limit the usefulness of the Act to federal employees.[133] Thus far, congressional efforts to address these deficiencies, such as the proposed Federal Employee Protection of Disclosures Act, have been unsuccessful.

Employee protection provisions in federal environmental statutes may be more useful to scientists. A number of federal environmental statutes protect employees who disclose violations of environmental laws or assist in a proceeding resulting from the administration of the statute.[134] An employer violates these whistleblower provisions if the employee engaged in a protected activity of which the employer was aware, the employer discharged or otherwise discriminated against the employee with respect to the employee's compensation, terms, conditions or privileges of employment, and the protected activity was the likely reason for the adverse action.[135] Aggrieved employees are entitled to affirmative relief to abate the discrimination, including reinstatement, back pay, and, if appropriate, compensatory damages.[136] Unlike the Whistleblower Protection Act, these environmental whistleblower provisions prohibit retaliation against any category of employee, not just federal employees.[137] Similarly, 39 states have whistleblower statutes that provide general whistleblower protection to public employees, 23 states provide general protection for all employees, and 14 states provide specific protection to persons reporting certain environmental misconduct.[138]

The availability of federal environmental whistleblower protection statutes to protect a scientist depends in large measure on the nature of the scientist's work. Whistleblower provisions in federal environmental statutes "share a broad, remedial purpose of protecting workers from retaliation based on their concerns for safety and quality."[139] Engaging in unpopular research alone would not constitute an activity protected by whistleblower statutes. To be protected, most statutes require that the employee commence, seek to commence, or participate in some type of proceeding for the administration or enforcement of requirements in an environmental statute.[140] Thus, with the exception of the Comprehensive Environmental Response, Com-

127. Pub. L. No. 101-12, 103 Stat. 16 (1989) (codified as amended in scattered sections of 5 U.S.C. (2000)).

128. 5 U.S.C. §2302(b)(8) (2000).

129. *Id.* §§1214(b)(4)(B)(ii), 1221(e)(1).

130. *Id.* §§1214(b)(4)(B)(ii), 1221(e)(2).

131. S. REP. NO. 95-969, at 21 (1978), *reprinted in* 1978 U.S.C.C.A.N. 2723, 2743.

132. Sazinski v. Department of Hous. & Urban Dev., 73 M.S.P.R. 682, 686 (M.S.P.B. 1997).

133. STEPHEN M. KOHN, CONCEPTS AND PROCEDURES IN WHISTLEBLOWER LAW 101-04 (2001); Thomas M. Devine, *The Whistleblower Protection Act of 1989: Foundation for the Modern Law of Employment Dissent*, 51 ADMIN. L. REV. 531, 575-79 (1999); Mark Clayton, *Hard Job of Blowing the Whistle Gets Harder*, CHRISTIAN SCI. MONITOR, Jan. 20, 2005, at 13 (noting that the appeals court handling Whistleblower Protection Act cases has ruled against whistleblowers in 94 out of 95 cases); *Helping Whistleblowers Survive*, N.Y. TIMES, May 1, 1999, at A14.

134. *See, e.g.*, 15 U.S.C. §§2601-2692, 2622, ELR STAT. TSCA §§2-412 (Toxic Substances Control Act); 30 U.S.C. §§1201-1328, 1293, ELR STAT. SMCRA §§101-908 (Surface Mining Control and Reclamation Act); 33 U.S.C. §§1251-1387, 1367, ELR STAT. FWPCA §§101-607 (Clean Water Act); 42 U.S.C. §§300f to 300j-26, 300j-9(i), ELR STAT. SDWA §§1401-1465 (Safe Drinking Water Act); 42 U.S.C. §5851 (2000) (Energy Reorganization Act); 42 U.S.C. §§6901-6992k, 6971, ELR STAT. RCRA §§1001-11011 (Resource Conservation and Recovery Act); 42 U.S.C. §§7401-7671q, 7622, ELR STAT. CAA §§101-618 (Clean Air Act); 42 U.S.C. §§9601-9675, 9610, ELR STAT. CERCLA §§101-405 (Comprehensive Environmental Response, Compensation, and Liability Act or "Superfund").

135. *See, e.g.*, Passaic Valley Sewerage Comm'rs v. Department of Labor, 992 F.2d 474, 480-81 (3d Cir. 1993); *see also* 29 C.F.R. §24.2 (2003) (describing the acts prohibited by federal employee protection statutes). To obtain relief, the employee must file a complaint within 30 days of the alleged discriminatory act (or 180 days in the case of the nuclear whistleblower act) with the Department of Labor. KOHN, *supra* note 133, at 145. Once an employee shows that the protected activity played a role in the employer's action, the burden shifts to the employer to show that it would have discharged the employee even if the protected activity had not occurred. *See, e.g.*, Stone & Webster Eng'r Corp. v. Herman, 115 F.3d 1568, 1572 (11th Cir. 1997); Mackowiak v. University Nuclear Sys., Inc., 735 F.2d 1159, 1163-64 (9th Cir. 1984).

136. 29 C.F.R. §24.8(d) (2005).

137. KOHN, *supra* note 133, at 141.

138. Elletta Sangrey Callahan & Terry Morehead Dworkin, *The State of State Whistleblower Protection*, 38 AM. BUS. L.J. 99, 111-14 & Tab. I (2000); *see also* Stefan Rutzel, *Snitching for the Common Good: In Search of a Response to the Legal Problems Posed by Environmental Whistleblowing*, 14 TEMP. ENVTL. L. & TECH. J. 1, 16-23 (1995); Laura Simoff, *Confusion and Deterrence: The Problems That Arise From a Deficiency in Uniform Laws and Procedures for "Environmental Whistleblowers,"* 8 DICK. J. ENVTL. L & POL'Y 325, 333-36 (1999). In addition to remedies provided under federal or state whistleblower statutes, a majority of states recognize a cause of action for wrongful employment discharge pursuant to the public policy exception to the at-will employment doctrine. KOHN, *supra* note 133, at 21; Callahan & Dworkin, *supra* at 107; Chad A. Atkins, *The Whistleblower Exception to the At-Will Employment Doctrine: An Economic Analysis of Environmental Policy Enforcement*, 70 DENV. U. L. REV. 537, 542 (1992). For a discussion of the use of the public policy exception to protect workers who make complaints relating to health or safety, see KOHN, *supra* note 133, at 25-56; Rutzel, *supra* at 12-16; George G. Sarno, Annotation, *Liability for Retaliation Against At-Will Employee for Public Complaints or Efforts Relating to Health or Safety*, 75 A.L.R. 4th 13 (1989).

139. *Mackowiak*, 735 F.2d at 1163.

140. *See, e.g.*, 42 U.S.C. §7622(a).

pensation, and Liability Act,[141] a scientist seeking the protection of an environmental whistleblower statute would have to show that the research work triggering the personnel action was "grounded in conditions reasonably perceived to be violations of the environmental acts" or for use in administering the acts, not simply that the research work indicated the environment might be negatively impacted by certain conduct.[142]

Even if the scientist engages in work relating to the administration or enforcement of a federal environmental law, environmental whistleblower protection only applies if the scientist in some way disseminates her concerns. Internal complaints to the employer or to a co-worker are a protected activity,[143] as are complaints to the news media and public interest groups.[144] Sharing information with an environmental activist also may constitute a protected activity, although merely discussing a problem with a member of the general public may be too remote.[145] No formal or written complaint is required, nor must the information provided be unique or of a type that the employer is attempting to hide.[146]

In some circumstances, disclosure of scientific research might constitute a protected activity under environmental whistleblower provisions. EPA toxicologist William Marcus successfully used federal environmental whistleblower provisions when he was terminated by the Agency after drafting and releasing a memo criticizing a report EPA contemplated using in regulating fluoride levels.[147] When, after his reinstatement, EPA "bad mouthed" him with respect to job references and his potential as an expert witness and isolated him from his fellow employees and peers, Marcus again successfully used federal whistleblower provisions to recover an additional $100,000 in compensatory damages from EPA.[148] EPA microbiologist Lewis collected $115,000 from EPA when Agency administrators accused him of an ethics violation for publishing a 1996 article in *Nature* magazine alleging that EPA was bypassing sound science due to political pressures.[149] The Department of Labor found that the Agency's inquiry into Lewis' compliance with Agency standards was improperly motivated by the content of his writings rather than a sincere concern about the form or style of the writings.[150] EPA scientist Kate Jenkins won reinstatement to her previous position and $10,000 after she was punished by EPA for releasing information that questioned the scientific validity of an industry study on dioxin.[151]

Similarly, an engineer's concern that studies relied on by his company to obtain federal water pollution discharge permits were flawed demonstrates a sufficiently perceived violation of the Clean Water Act (CWA) to constitute a protected whistleblower activity.[152] Protected activity also includes the issuance of a report finding excessive concentrations of hazardous substances on school property.[153] In contrast, research advocating a new method to measure harm from certain wastes is not a protected activity since the work does not allege a violation of any environmental statute.[154] Thus, where a scientist's research publications or comments indicate the government or some other entity is not complying with requirements in environmental statutes or are for use in agency proceedings, provisions in environmental statutes should protect the scientist against employer reprisals. On the other hand, where the scientist is simply seeking to determine if an activity might harm the environment, not reporting evidence of a violation or information for an agency proceeding, these provisions likely would not protect the scientist.

The First Amendment also may provide protection when an employer seeks to retaliate against an environmental scientist. In *Pickering v. Board of Education*,[155] the Court held that the First Amendment protects government employees who speak on matters of public concern. Even if a public employee could have been discharged for any reason or no reason at all, the employee may be entitled to protection if discharged for exercising a constitutional right to freedom of expression.[156] To prevail, the employee must demonstrate that the speech may be "fairly characterized as constituting speech on a matter of public concern"[157] and was a substantial or motivating factor in the employment action.[158]

141. 42 U.S.C. §9610.

142. Crosby v. Hughes Aircraft Co., 85-TSC-2, at 14 (Dep't of Labor Aug. 17, 1993); *see also* American Nuclear Res., Inc. v. Department of Labor, 134 F.3d 1292, 1295-96 (6th Cir. 1998); Bechtel Constr. Co. v. Secretary of Labor, 50 F.3d 926, 931 (11th Cir. 1995).

143. *See, e.g.*, Passaic Valley Sewerage Comm'rs v. Department of Labor, 992 F.2d 474, 478-80 (3d Cir. 1993); KOHN, *supra* note 133, at 174.

144. *See, e.g.*, KOHN, *supra* note 133, at 257-58; Donovan v. R.D. Anderson Constr. Co., 552 F. Supp. 249, 253 (D. Kan. 1982).

145. *See, e.g.*, Ferguson v. Weststar, Inc., No. 1998-CAA-9, at 6-7 (Dep't of Labor Jan. 27, 2000); KOHN, *supra* note 133, at 258. Communication with a member of the public would be a protected activity where there is a "causal connection" between the employee's communication with that person and any subsequent investigation of the concerns communicated by the employee. *Ferguson*.

146. *See, e.g.*, Simon v. Simmons Foods, Inc., 49 F.3d 386, 388 & n.1 (8th Cir. 1995); DeFord v. Secretary of Labor, 700 F.2d 281, 286 (6th Cir. 1983).

147. Marcus v. EPA, No. 1992-TSC-5, at 3-5 (Dep't of Labor Feb. 7, 1994).

148. Marcus v. EPA, No. 1996-CAA-3, at 52 (Dep't of Labor Dec. 15, 1998).

149. National Whistleblower Center, *Background Information on EPA Whistleblowers*, *at* http://www.whistleblowers.org/epawhistleblowers.htm (last visited July 19, 2004).

150. Letter from George R. Holt, Wage and Hour Division, U.S. Department of Labor, to Henry L. Longest II, Deputy Assistant Administrator for Management, U.S. EPA (undated 1997 letter) (on file with author); Wage and Hour Division Compliance, U.S. Department of Labor, Dr. David L. Lewis v. EPA Investigation Report (Jan. 16, 1997) (on file with author).

151. Jenkins v. EPA, No. 92-CAA-6 (Dep't of Labor Dec. 14, 1992).

152. Abu-Hjeli v. Potomac Elec. Power Co., No. 89-WPC-1, at 5 (Dep't of Labor Sept. 24, 1993).

153. Jayko v. Ohio EPA, No. 1999-CAA-5, at 73, 75-77 (Dep't of Labor Oct. 2, 2000).

154. Jarvis v. Battelle Pac. NW Lab., No. 97-ERA-15, at 3-4 (Dep't of Labor June 2, 1997).

155. 391 U.S. 563 (1968).

156. Mt. Healthy Bd. of Educ. v. Doyle, 429 U.S. 274, 283-84 (1977).

157. Connick v. Myers, 461 U.S. 138, 146 (1983).

158. *Mt. Healthy Bd. of Educ.*, 429 U.S. at 287. Government scientists also may be protected by federal and state due process guarantees if: (1) as a result of some government action in punishing the scientist for his research activities, the scientist was deprived of a liberty or property interest; and (2) the deprivation of that interest was done without adequate notice and a fair opportunity to be heard. *See, e.g.*, Cleveland Bd. of Educ. v. Loudermill, 470 U.S. 532, 538-47 (1985); Llano v. Berglund, 282 F.3d 1031, 1034-35 (8th Cir. 2002). Where the public employee has a protected interest that is deprived by the employer's action, the employee is entitled to notice of the charges against her, an explanation of the employer's evidence, and an opportunity to present her side of the story. *Cleveland Bd. of Educ.*, 470 U.S. at 546. For environmental scientists who are members of university faculties, notions of academic freedom may provide addi-

Courts look to the content, form, and context of a statement to determine if a public employee's speech pertains to a matter of public concern.[159] Speech fairly characterized as relating to any matter of political, social, or other concern to the community is deemed of public concern.[160] Speech characterized as an employee grievance concerning internal office policy or workplace conditions is not.[161] Speeches and articles addressed to public audiences, made outside the workplace, and involving content largely unrelated to employment would more likely fall within the protected category of comment on matters of public concern.[162] Speech communicated only within the office or to a supervisor, rather than to the public at large, may still be a statement addressing a matter of public concern.[163] Because issues of public health or the environment so clearly touch on matters of concern to the public, statements by environmental scientists should be regarded as relating to matters of public concern.[164]

If the court determines that a government employee's speech addresses a matter of public concern, the court must then balance the interest of the employee in commenting upon matters of public concern against the interest of the government in promoting the efficiency of the public services it performs through its employees to determine the scope of the First Amendment protection afforded.[165] This requires weighing the employee's interest in self-expression and participation in public discussions, along with the public's interest in being informed, against the government's interest in providing efficient services.[166] Among the relevant considerations are whether the statement impairs discipline by superiors or harmony among co-workers, has a detrimental impact on close working relationships for which personal loyalty and confidence are necessary, impedes the performance of the speaker's duties, or interferes with the regular operation of the enterprise.[167]

As the public concern element of the speech increases, so does the need for the government to show that the employee's speech disrupts the efficient operation of the agency.[168] The public's strong interest in hearing from government scientists on matters of health and safety further increases the burden on the government to show that the potential disruptiveness of the speech outweighs its value.[169] In addition, where an existing policy limits or chills the employee's potential speech before it happens, the burden on the government is greater than in the case of an isolated disciplinary action.[170]

Because rights secured by the Constitution only are protected against infringement by governments and public officials, generally just scientists employed by government agencies may seek First Amendment protection against their employers. Actions by nongovernmental entities may be subject to First Amendment restrictions only if the alleged infringement of federal rights is "fairly attributable to the State."[171] Yet, "a State normally can be held responsible for a private decision only when it has exercised coercive power or has provided such significant encouragement, either overt or covert, that the choice in law be deemed to be that of the State."[172] In the case of university researchers, even where virtually all of a school's income comes from government funding, such financial dependence does not make the school a state actor.[173] Likewise, scientists employed by government contractors, even where those employers receive most or all of their funding from government sources, should not expect protection from the First Amendment for discharges in retaliation for speeches or publications on environmental matters. Nonetheless, efforts by government officials to pressure a private employer to punish a scientist could subject the government officials to claims that they unlawfully retaliated against the scientist for exercising free speech rights.[174]

III. Recommendations

The widespread scope of suppression of environmental scientists, the significant harm that could result to public health or the environment from such suppression, and the limited usefulness of legal remedies for the protection of scientists support the need for enhanced legal efforts to protect scientific speech and defend scientists whose work is attacked. On the issue of defamation, courts should be wary of declaring that by going outside the laboratory or publishing outside of academic journals, scientists thrust themselves to the forefront of a public controversy in order to influence its resolution. Sharing scientific information or opinions, even where done voluntarily, does not mean the scientist assumed special prominence or is at the forefront of a controversy. By punishing even marginal participation, these broad interpretations of the limited public figure criteria chill public par-

tional protection of research and publication activities. *See* WILLIAM A. KAPLIN & BARBARA A. LEE, THE LAW OF HIGHER EDUCATION 312 (3d ed. 1995).

159. *Connick*, 461 U.S. at 147-48.

160. *Id.* at 146.

161. *Id.* at 154.

162. United States v. National Treasury Employees Union, 513 U.S. 454, 466 (1995).

163. Rankin v. McPherson, 483 U.S. 378, 386 n.11 (1987).

164. "Quintessentially, employees speak on matters of public concern when they report dereliction of public duties, corruption, or threats to public health or safety." Cynthia L. Estlund, *Free Speech and Due Process in the Workplace*, 71 IND. L.J. 101, 114 (1995); *see also* Sanjour v. EPA, 56 F.3d 85, 91 (D.C. Cir. 1995) (characterizing speech by two EPA employees on current government environmental policies as perhaps the paradigmatic matter of public concern); *Reuber*, 925 F.2d at 720 (characterizing the issue of the carcinogenic effects of pesticides as a matter of "immense public concern").

165. *Rankin*, 483 U.S. at 388; *Pickering*, 391 U.S. at 568. The state bears the burden of justifying the discharge on legitimate grounds.

166. *See National Treasury Employees Union*, 513 U.S. at 465-66, 468-70; *Sanjour*, 56 F.3d at 94.

167. *Rankin*, 483 U.S. at 388. A public employer may also prevail by showing that it would have reached the same employment decision even in the absence of the protected speech. *Mt. Healthy Bd. of Educ.*, 429 U.S. at 287.

168. *National Treasury Employees Union*, 513 U.S. at 483 (O'Conner, J., concurring); *Connick*, 461 U.S. at 152.

169. *See* Waters v. Churchill, 511 U.S. 661, 674 (1994); *Pickering*, 391 U.S. at 572; *Sanjour*, 56 F.3d at 94.

170. *National Treasury Employees Union*, 513 U.S. at 468; *see also* Hoover v. Morales, 164 F.3d 221, 227 (5th Cir. 1998).

171. Lugar v. Edmondson Oil Co., 457 U.S. 922, 937 (1982).

172. Blum v. Yaretsky, 457 U.S. 991, 1004 (1982).

173. Rendell-Baker v. Kohn, 457 U.S. 830, 840-41 (1982).

174. *See, e.g.*, Kinney v. Weaver, 367 F.3d 337, 357-58 (5th Cir. 2004); Worrell v. Henry, 219 F.3d 1197, 1209-13 (10th Cir. 2000); Helvey v. City of Maplewood, 154 F.3d 841, 844 (8th Cir. 1998); Korb v. Lehman, 919 F.2d 243, 248 (4th Cir. 1991).

ticipation by knowledgeable scientists, especially since scientists are aware that a tactic now used to silence them is unfounded defamation lawsuits. If, as courts have acknowledged, the public has an interest in hearing from scientists in environmental debates, then scientists should not, in effect, become fair game for ruthless attacks on their professional reputation and character simply by discussing or distributing their work.

Where scientists are subject to legal attack, their employers should step forward to defend and indemnify them. Defamation lawsuits against scientists rarely have merit, yet can extract a heavy personal and professional toll on the scientist. In many respects, these lawsuits resemble the strategic lawsuits against public participation (SLAPPs) used by developers, businesses, and other special interests to chill or punish public participation.[175] According to experts, a SLAPP suit is best defended by early review and dismissal by courts and by SLAPPing back through monetary awards of attorneys fees, litigation costs, and countersuit damages in favor of the defendant for the abuse of the courts and violation of constitutional rights caused by the SLAPP suit plaintiff.[176]

To SLAPP back effectively and otherwise defend against legal attacks, scientists need the assistance of legal counsel. Institutions, however, often have failed to provide legal assistance to scientists targeted for attack.[177] State statutes generally provide for legal representation and indemnification of public employees for civil claims arising out of any act or omission occurring within the scope of their employment.[178] These employee protection provisions should be liberally construed to cover a government scientist's publications and speeches. In the case of university scientists, the American Association of University Professors recommends that colleges and universities adopt policies that ensure effective legal and other representation and full indemnification for any faculty member included in a lawsuit or other extra-institutional proceeding arising from an act or omission in the discharge of institutional or related professional duties or in the defense of academic freedom at the institution.[179] This coverage should extend to occasions when the researcher is disseminating her work outside the academic setting, since universities offer their faculty's expertise for use by the media and use media coverage of faculty publications and speeches in university public relations efforts.[180] Research institutions also should recognize the important role attorneys have played in defending scientists wrongly accused of scientific misconduct and provide legal counsel to employees accused of scientific misconduct while performing their work in good faith.[181]

Few allegations of scientific misconduct turn out to be true.[182] Hence, rules for investigating misconduct charges should reflect the small percentage of allegations found to be valid and the significant negative consequences scientists suffer even when exonerated. At a minimum, before any inquiry is initiated, the accuser should be required to provide evidence in support of the charge. A mere suspicion or hearsay information should not be considered sufficient to trigger an inquiry.

Some institutional policies on misconduct provide guidance on what should be expected from an accuser. At the University of Arizona, an accuser "should submit a detailed, written report" of the alleged misconduct; only "allegations reasonably evidencing misconduct" can trigger an inquiry.[183] The University of South Alabama likewise requires "evidence of wrongdoing" and notes that hearsay evidence alone is not adequate to warrant an inquiry.[184] Federal misconduct regulations should not simply allow institutions to require this type of objective evidence of misconduct in the allegation but should mandate such evidence before any institution initiates an inquiry.

In addition, federal regulations should reconsider the broad privilege afforded complaints. Steinberg contends that "ORI's current policy appears to extend the protection of qualified privilege by ignoring the common law's concern that a qualified privilege must be exercised in a reasonable manner for a proper purpose, or it will be forfeited."[185] A comment to the *Restatement (Second) of Torts* explains that "publication of defamatory matter upon an occasion giving rise to a privilege, if made solely from spite or ill will, is an abuse and not a use of the privilege."[186] Thus, whistleblowers should be expected to act with reasonable care in making allegations of misconduct and should not enjoy immunity from liability where they act out of malice toward the accused scientist.[187]

175. SLAPP is defined as "involving communications made to influence a governmental action or outcome, which, secondarily, resulted in (a) a civil complaint or counterclaim (b) filed against nongovernmental individuals or organizations (NGOs) on (c) a substantive issue of some public interest or social significance." GEORGE W. PRING & PENELOPE CANAN, SLAPPS: GETTING SUED FOR SPEAKING OUT 8-9 (1996).

176. *Id.* at 143-87.

177. *See, e.g.*, Robert A. Phillips & John Hoey, *Constraints of Interest: Lessons at the Hospital for Sick Children*, 159 CAN. MED. ASS'N J. 955, 955 (1998) (noting the failure of Dr. Nancy Oliveri's employers to provide legal assistance when she was threatened by a research funder with legal action); Cathy Sears, *Supreme Court Ruling Could Stifle Open Debate in Journals*, SCIENTIST, Oct. 1, 1990, at 1 (reporting that Prof. Michael Salamon was originally told by the University of Utah that it would not defend him when another scientist at the University threatened him with legal action over a published study).

178. *See, e.g.*, CAL. GOV'T CODE §825 (West 2005); 5 ILL. COMP. STAT. §350/2 (2005).

179. American Association of University Professors, *Institutional Responsibility for Legal Demands on Faculty* (1998), *reprinted in* AMERICAN ASSOCIATION OF UNIVERSITY PROFESSORS, POLICY DOCUMENTS & REPORTS 130 (9th ed. 2001).

180. *See, e.g.*, Johns Hopkins Bloomberg School of Public Health, *Faculty Research by Topic*, *at* http://faculty.jhsph.edu/researchguide.cfm (last visited Oct. 25, 2005); Massachusetts Institute of Technology, *News Office*, *at* http://web.mit.edu/newsoffice (last visited Oct. 25, 2005); *see also* Kevin Oates, *Professor Defend Thyself: The Failure of Universities to Defend and Indemnify Their Faculty*, 39 WILLAMETTE L. REV. 1063 (2003).

181. *See* Daniell, *supra* note 103, at S160; Glenn Harlan Reynolds, *"Thank God for the Lawyers": Some Thoughts on the (Mis)Regulation of Scientific Misconduct*, 66 TENN. L. REV. 801 (1999).

182. *See* Jock Friedly, *ORI's Self Assessment: A Batting Average of .920?*, 275 SCIENCE 1255, 1255 (1997) (reporting that fewer than 5% of allegations of misconduct forwarded to ORI result in a final finding of scientific misconduct).

183. UNIVERSITY OF ARIZONA, POLICY AND PROCEDURES FOR INVESTIGATIONS OF MISCONDUCT IN SCHOLARLY, CREATIVE, AND RESEARCH ACTIVITIES B.4, D (2003), *available at* http://vpr2.admin.arizona.edu/rie/Vpmemo_files/ResearchIntegrityPolicy-Final1.pdf (last visited Oct. 25, 2005).

184. UNIVERSITY OF SOUTH ALABAMA, FACULTY HANDBOOK ch.7, at 18 (2003), *available at* http://www.southalabama.edu/academicaffairs/handbook.pdf (last visited Oct. 25, 2005).

185. Steinberg, *supra* note 115, at 102.

186. RESTATEMENT (SECOND) OF TORTS §603 cmt. (1977).

187. Steinberg, *supra* note 115, at 101-03.

Bad-faith whistleblowers should be punished as if they committed scientific misconduct. Present misconduct regulations do not define misconduct to include bad-faith allegations nor do they require research entities to develop policies for punishing bad-faith whistleblowers.[188] Although 65% of nonfederal institutional policies warn against making bad-faith allegations, only 3% specify the disciplinary actions that will be taken against persons who make unfounded allegations.[189] In the absence of a realistic threat of disciplinary action, the distant loss of the conditional privilege defense in a defamation action may not be sufficient to deter bad-faith allegations of misconduct.

Efforts to counter retaliation for scientific environmental speech also would be strengthened by expanding the coverage of statutory employee protection provisions. Although at least eight federal environmental statutes contain employee protection provisions, the absence of a provision in federal natural resource statutes leaves resource scientists with only the largely ineffective Whistleblower Protection Act to rely on for relief. This absence of whistleblower protection provisions in most natural resource laws, and the increasingly political nature of many natural resource decisions, make resource scientists particularly vulnerable to retaliation for unwelcome research. The addition of employee protection provisions to the federal Endangered Species Act (ESA),[190] National Environmental Policy Act (NEPA),[191] and other natural resource statutes would provide natural resource scientists with the same level of protection enjoyed by scientists working on pollution control and hazardous waste.

In addition, an expanded view of the scope of employee protection provisions in federal environmental statutes would help counter the suppression of environmental science. The Court has noted the need for broad protection under whistleblower protection provisions "to prevent [an agency's] channels of information from being dried up by employer intimidation."[192] Courts interpreting employee protection provisions in environmental statutes also have noted the need for a broad construction of the remedial purposes of shielding employees from retaliatory actions.[193] As the Secretary of Labor explained: "[E]mployees must feel secure that any action they may take that furthers the Congressional policy and purpose, especially in the area of public health and safety, will not jeopardize either their current employment or future employment opportunities."[194] Narrow interpretations of employee protection provisions interfere with the remedial environmental protection and public health purposes of the statutes.

It is important, therefore, to ensure that employees are protected when their work or disclosure involves something other than reporting a violation of an environmental statute. The CWA protects an employee who filed or instituted, caused to be filed or instituted, or testified or is about to testify "in any proceeding resulting from the administration or enforcement of the provisions of [the Act]."[195] The Energy Reorganization Act shields any employee who assisted or participated, or is about to assist or participate, "in any manner" in a proceeding or "in any other action to carry out the purposes" of the Act.[196] Superfund provides for protection where the employee "provided information to a State or to the Federal Government" or caused to be instituted or testified in "any proceeding resulting from the enforcement of the provisions of [Superfund]."[197] As Stephen Kohn explained, these provisions "were passed in order to help enforce U.S. environmental laws, enhance environmental quality, and protect public health and safety."[198] Accordingly, agencies and courts should interpret employee protection provisions broadly to protect an environmental scientist whenever the employer seeks to retaliate for work of the scientist that may aid in implementing an environmental statute, even where that work is simply research that may assist the agency in administering the law or indicates that the agency is not following a statutory requirement.[199]

IV. Conclusion

If the calls for "good science" in environmental law and policy are sincere, then environmental scientists must be able to work without fear of being punished or otherwise suppressed for unpopular or contrary findings or views. Unfortunately, existing laws and agency policies have too often not protected the scientific freedom of environmental scientists. Legislators, government agencies, and the legal profession, working with scientific professional societies and research institutions, must join together to develop and enforce laws and regulations that will effectively protect the right of environmental scientists to express professional opinions. The credibility of environmental science, and ultimately public health and the environment, depend on the success of those efforts.

188. *See* 65 Fed. Reg. at 76262. The Office of Science and Technology Policy explained that although the federal policy would not punish bad-faith whistleblowers, "non-Federal institutions may adopt policies to address the consequences of false, malicious, or capricious allegations and to respond to retaliation against informants. Agencies may also address this issue in their implementation of this policy." *Id.*

189. *See* ORI, *supra* note 112, app. D.

190. 16 U.S.C. §§1531-1544, ELR STAT. ESA §§2-18.

191. 42 U.S.C. §§4321-4370d, ELR STAT. NEPA §§2-209.

192. National Labor Relations Bd. v. Scrivener, 405 U.S. 117, 122-23 (1972).

193. *See, e.g.*, American Nuclear Res., Inc. v. Department of Labor, 134 F.3d 1292, 1295 (6th Cir. 1998); Passaic Valley Sewerage Comm'rs v. Department of Labor, 992 F.2d 474, 478-79 (3d Cir. 1993); and DeFord v. Secretary of Labor, 700 F.2d 281, 286 (6th Cir. 1983).

194. KOHN, *supra* note 133, at 143 (quoting from Egenrieder v. Metro. Edison Co./G.P.U., No. 85-ERA-23 (Dep't of Labor Apr. 20, 1987)).

195. 33 U.S.C. §1367(a).

196. 42 U.S.C. §5851(a)(1)(F); *see also* Stone & Webster Eng'r Corp. v. Herman, 115 F.3d 1568, 1575 (11th Cir. 1997) (noting that "purpose" is an open-ended word that should be broadly interpreted to protect employees).

197. 42 U.S.C. §9610(a).

198. KOHN, *supra* note 133, at 144 (citing Chase v. Buncombe County, 85-SWD-4 (Dep't of Labor Nov. 3, 1986)).

199. Nathaniel v. Westinghouse Hanford Co., 91-SWD-2 (Dep't of Labor Feb. 1, 1995) (holding that whistleblower provisions protected employee where her actions "'touched on' subjects regulated under the pertinent statutes"); Dodd v. Polysar Latex, 88-SWD-4, at 5 (Dep't of Labor Sept. 22, 1994) ("Concerns such as these that 'touch on' the environment and statutory compliance are protected.").