UNITED STATES OF AMERICA, *ex rel*. DAVID L. LEWIS, PH.D., R. A. McELMURRAY, III, and G. WILLIAM BOYCE *v*. WALKER *et al*.

US District Court, Middle District of Georgia, Athens Division
Civil Action File No. 3:06-CV-16

Affidavit of David L. Lewis, Ph.D., Exhibit A

Condensed Version

THE GATEKEEPERS

How senior-level U.S. EPA employees violated the False Claims Act by funding a national network of "gatekeepers" to promote land application of sewage sludge (biosolids) and cover up adverse health effects

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OVERVIEW OF EXHIBIT A

The "Gaskin study," which was conducted by the University of Georgia in 1999, is the subject of Plaintiffs' qui tam lawsuit. *See*, Appendix I: Why the Gaskin Study was Fraudulent.

The Gaskin study relates to a National Biosolids Public Acceptance Campaign in which two senior EPA officials in the Office of Water (OW), Defendant John Walker and Defendant Robert Bastian, used a cooperative agreement funded with congressional earmarks to establish a national network of "gatekeepers." *See*, Section I B, The Gatekeepers. The purpose of the gatekeepers was to promote land application of sewage sludge (biosolids) and cover up adverse health effects from heavy metals and other hazardous industrial wastes contained in the material. In doing so, Walker and Bastian effectively thwarted President Jimmy Carter's mandate to Congress when he announced a 10-year program to construct municipal sewage treatment plants and stated: *we need to be sure that sewage projects supported by Federal money do not create additional environmental problems*.

This qui tam lawsuit focuses on the following sequence of events related to the Gaskin study. They begin with a major research effort funded by EPA's Office of Research & Development (ORD), which indicated that significant public health problems could develop from land application of biosolids. They end with Walker and Bastian establishing the "Gaskin Study" at the University of Georgia to cover up Clean Water Act violations by the City of Augusta regarding its sewage sludge land application program. The City's biosolids contained hazardous wastes that destroyed two of Georgia's most productive dairy farms, which were owned by the McElmurray and Boyce families.

Sequence of Events

(1) 1981. The University of Florida's Institute of Food and Agricultural Sciences conducted a 5-year, multidisciplinary study of the effects of heavy metals and pathogens in biosolids on cattle, swine, and poultry (Exhibit 259).[1] (*See*, Appendix IIA) It was funded by EPA-ORD's Health Effects Research Laboratory in Cincinnati, OH. The authors concluded: *certain metals, including cadmium, lead, nickel, and chromium*, [are] *accumulative in animals consuming forage or grain from sludge-amended soils and therefore have potential hazard to animal health and mankind…*

(2) 1992. EPA-OW proposed a regulation developed by Walker and others known as the "503 sludge rule," but it failed to pass an internal peer-review in ORD. OW promised ORD at least $10 million to conduct research aimed at rendering the

[1] Exhibit 259. US EPA Report: EPA-600/S1-81-026, 232 p. (Apr. 1981). "Sewage Sludge – Viral and Pathogenic Agents in Soil-Plant-Animal Systems." G.T. Edds and J.M. Davidson, Institute of Food and Agricultural Systems, University of Florida. Project Summary available online at http://nepis.epa.gov/ by searching 600S181026 or key words in the title of the report.

rule protective of public health. Walker and Bastian, however, established a "National Biosolids Public Acceptance Campaign" and OW reneged on its promise to fund ORD to fix the rule. The objective of OW's public acceptance campaign was to establish a national network of "gatekeepers" to create a body of science supportive of the 503 rule and discredit any evidence of adverse health effects.

(3) 1998. The McElmurray and Boyce families, whose dairy farms businesses were destroyed by heavy metals and other hazardous wastes in biosolids produced by City of Augusta, GA, filed suit against Augusta.[2]

(4) Also in 1998. Responding to the McElmurray and Boyce lawsuits, Walker and another EPA employee, Defendant Robert Brobst, solicited a grant application from Julia Gaskin and others at UGA to fund the "Gaskin study."[3] The principal purpose of this study was to support the 503 rule by providing Walker, Bastian and Brobst with false and fabricated environmental data, which they needed to discredit allegations that hazardous wastes in Augusta's biosolids killed hundreds of head of cattle owned by the McElmurray and Boyce families and destroyed their dairy farm businesses.

(5) Also in 1998. EPA transferred me to the University of Georgia (UGA) to apply my previous infection-control research to EPA's mission.[4] I assembled a team of researchers and published the first peer-reviewed scientific studies linking illnesses and deaths to land application of sewage sludge.[5] My coauthors included Dr. David Gattie, a professor of biological and agricultural engineering in UGA's Driftmier Engineering Center; Professor Susan Sanchez, a medical microbiologist in UGA's School of Veterinary Medicine; Dr. Charles Pumphrey, a pediatrician treating children exposed to sewage sludge in California; and Marc Novak a biologist in UGA's Department of Marine Sciences.

(6) Also in 1998. The Oak Ridge National Laboratory Study (Exhibit D to my Affidavit) was rejected by EPA. It was the only major project that OW ever funded to address weaknesses in the 503 rule identified by ORD.[6] (*See*, Appendix

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[2] For a detailed summary of the McElmurray and Boyce cases, see Section II, Letter by EPA Assistant Administrator G. Tracy Mehan, III.

[3] For a detailed summary of the Gaskin study, see Appendix I.

[4] My previous work at UGA concerning HIV transmission in dentistry, which I published in *Lancet* and *Nature Medicine*, was funded from my own personal funds. This work led the CDC and most public health organizations worldwide to adopt the current heat-sterilization standard for dentistry (CDC. Recommended infection-control practices for dentistry. 1993. *Morbid. Mortal. Wky. Rep*. **42**:1-12).

[5] The circumstances surrounding my transfer to UGA are briefly discussed in the introduction to Section III, Silencing Scientific Debate. For a more detailed discussion, see a review by Dr. Caroline Snyder: The Dirty Work of Promoting Recycling of America's Sewage Sludge. IJOEH 2 (4): 415-27 (2005). http://www.sludgefacts.org/IJOEH_1104_Snyder.pdf

[6] Efroymson, Rebecca A., Bradley E. Sample, Robert J. Luxmoore, M. Lynn Tharp, and Lawrence W. Barnthouse. Final Report: Evaluation of Ecological Risks Associated with Land

IIB) This study focused on forests and included field tests as well as predictive mathematical modeling of the long-term effects of land application of biosolids. Results indicated that animals, plants and soil processes in some major forest ecosystems could be at risk from zinc in even a single application of sewage sludge. Zinc is often present at high levels in sewage sludge.

A 2002 report by EPA's Inspector General states that the study was not peer reviewed and exists only in draft form. However, an actual copy of the report obtained by Plaintiffs in this qui tam lawsuit from the Oak Ridge National Laboratory is clearly marked "FINAL REPORT" and indicates that it was peer-reviewed by a panel of 14 national experts.

(7) 1999. The EPA Region 4 laboratory in Athens, GA, evaluated Augusta's wastewater treatment plant and found that many mechanical components of the digesters were non-functional and that the City's biosolids were contaminated with high concentrations of priority pollutants. (*See*, Appendix IIC.) The cover memo by Mike Bowden at EPA states: "We have made no distribution of this report." In ten years of the Plaintiffs litigating over Augusta's biosolids program, this report was never produced under FOIA or in discovery. Plaintiffs learned about it for the first time in September of 2009 after the Court ordered Madolyn Dominy of EPA Region 4 to be deposed.

(8) Also in 1999. The UGA Research Foundation, Inc. submitted the Gaskin grant application to EPA, which Walker, Gaskin, Brobst and others at UGA and EPA knew contained at least 21 false claims concerning the purpose of the study and how it would be conducted. This grant application is the subject of Plaintiffs' False Claims Act (qui tam) lawsuit. *See*, Appendix I.

(9) 2000. Gaskin provided EPA Defendant Brobst with a final report of the Gaskin study, which contained data from soil and forage samples that falsely indicated that Augusta's biosolids did not pose a risk to animal health. This report was later revised to include data fabricated by the City of Augusta and published in the *Journal of Environmental Quality* (JEQ) by Gaskin, Brobst, and other UGA faculty.

Authors of Gaskin's EPA report and JEQ article failed to disclose that their study represented EPA's investigation into cattle deaths on the McElmurray and Boyce farms. The authors also chose not to disclose the results of autopsies performed at UGA, which showed that two cows on one of the farms in the Gaskin study had kidney damage from toxic levels of zinc. This heavy metal was present at high concentrations in Augusta's sewage sludge and had been found at toxic levels in tissue samples from the Boyce herd.

Application of Municipal Sewage Sludge. Oak Ridge National Laboratory. ORNL/TM-13703. September 30, 1998.

The authors of the report and JEQ article also failed to disclose their previous results from soil and forage samples collected on the McElmurray and Boyce farms near the time of the cattle deaths. These earlier results indicated that Augusta's biosolids contained levels of heavy metals and nitrogen that could pose a risk to animal health. The authors also chose not to disclose analytical results from soil and forage samples by experts hired by the McElmurray and Boyce families. These results were collected from the McElmurray and Boyce farms over a period of approximately ten years, including at or about the time that the dairy cattle died. These samples proved that Augusta's biosolids contained levels of heavy metals and other hazardous wastes that posed a risk to animal health.

(10) 2001. Walker and one of his superiors, Michael Cook, met with executives of Synagro Technologies, Inc., the leading U.S. company in the biosolids business, which also applied Augusta's sewage sludge during the Gaskin study. The purpose of the meeting was to discuss an internal EPA peer review of my research at UGA linking biosolids to adverse health effects.

Several weeks later, Synagro e-mailed an anonymous white paper to Walker and Cook alleging that EPA had not approved my research and publications on biosolids and that my papers were not peer-reviewed.[7] Walker and Cook knew that these allegations, which Walker provided to Synagro,[8] were false.

Walker widely distributed the allegations in Georgia and elsewhere, including to Augusta's attorney using EPA letterhead. Synagro later filed the allegations with the UGA Research Foundation as a formal petition to investigate scientific misconduct (Exhibit 105), and provided copies of the petition to Gaskin and one of her coworkers. EPA's Asst. General Counsel determined that the allegations had no basis in facts;[9] and EPA disciplined Walker for distributing them.

To stop UGA from dismissing the allegations, Synagro hired Georgia Senator Kasim Reed to pressure the UGA Research Foundation. As a result, UGA has refused to rule on Synagro's allegations. They still hang over me and my coauthors almost seven years after Synagro filed its misconduct petition. By contrast, the UGA Research Foundation quickly dismissed allegations of scientific misconduct against Ms. Gaskin, which were filed by my attorney, Ed Hallman, and immediately informed the Office of the President of UGA of Ms. Gaskin's purported innocence.

(11) Also in 2001. Defendant Robert Bastian of the EPA presented an *outdated draft* version of Gaskin's EPA report to the National Academy of Sciences

[7] "Analysis of David Lewis' Theories Regarding Biosolids" printed on Synagro letterhead, September 20, 2001. *Lewis v. EPA*, Department of Labor Case Nos. 99-CAA-12, 2000-CAA-10, 2000-CAA-11, Exhibit 93. See also, Exhibit 105 in Plaintiffs' qui tam case against EPA and UGA employees.
[8] Exhibit 2G.
[9] Exhibit 42G. Joint Stipulation, Mar. 4, 2003.

(NAS). The Academy used it in its 2002 report to dismiss the cattle deaths on the Plaintiffs' dairy farms and conclude that there is no evidence that the 503 sludge rule has ever failed to protect public health. Bastian provided this draft version in March of 2001, approximately six months after Gaskin submitted the final version of her report to EPA in October of 2000, which EPA accepted.

Bastian's draft version falsely stated that *no* toxic levels of heavy metals were found in soil and forage samples in the Gaskin study and that no other study like the Gaskin study has ever been done. The final version of Gaskin's report, which Bastian did not provide to the NAS, does not contain these false statements.

(12) 2003. I began investigating complaints from workers spreading hay grown in Jefferson County, GA, on land treated with Augusta's biosolids. The workers suffered severe respiratory problems and possible liver damage.[10] I reported the cases to my local EPA research director and EPA Region 4 Biosolids Coordinator Madolyn Dominy.[11] EPA terminated me later that year.[12]

Defendants' Motions for Summary Judgment

Defendants submitted Motions for Summary Judgment in September of 2009 arguing that our lawsuit is improper and should be dismissed for a variety of reasons that are untrue and irrelevant. For example, Defendants claim that I have a grudge against EPA. Based on documents that I produced in discovery, however, Defendants know that EPA Administrator Carol Browner awarded me EPA's Science Achievement Award for my research article critical of the 503 sludge rule, which *Nature* published in 1999.[13] Defendants also know that EPA's Office of Research & Development awarded me a Science & Technology Achievement Award for this same research article in 2001.

Defendants also know that Dr. Bernard Goldstein invited me to speak about my environmental research at a United Nations conference, including my research related to the 503 sludge rule. Dr. Goldstein was appointed Assistant Administrator for EPA's Office of Research & Development by President Ronald Reagan. Dr. Goldstein, as Defendants know, also recommended me for a promotion based on my research published in *Nature*, which was coauthored by Dr. Jerry Melillo, Associate Director for the White House Office of Science & Technology Policy under President Clinton.[14] In his letter of recommendation, Dr. Goldstein wrote of my research published in *Nature*:

[10] Exhibit 1B. Lee, J., "Sewer Sludge Spread on Fields is Fodder for Lawsuits," *New York Times*, June 26, 2003.
[11] Exhibit 1A. EPA Memorandum from David Lewis to Harvey Holm re: adverse health effects from Augusta-sludged hay. May 8, 2003.
[12] *See*, Section III. Silencing Scientific Debate.
[13] Lewis, DL., W Garrison, KE Wommack, *et al*. 1999. Influence of environmental changes on degradation of chiral pollutants in soils. *Nature* **401**:898-901.
[14] Bernard D. Goldstein, M.D. to Rosemarie C. Russo, Ph.D.. Sep. 18, 2000.

It is excellent science of major environmental importance, it is published in a superb journal of great value to EPA's credibility … This is the kind of work which identifies Dr. Lewis as having a direct influence on environmental policy as well as an indirect role through improving the scientific stature of EPA. … He is thoughtful, articulate, well-informed and cares very much about the role of science in general, and the Athens laboratory in particular, in environmental protection.

Defendants' also complained to the Court that Plaintiffs have subjected them to "costly litigation." Defendants, however, know that we offered to settle this lawsuit before either side accrued any legal expenses, and that Plaintiffs agreed among themselves to settle *at no cost* if Defendants would simply correct the scientific record by submitting an *erratum* to JEQ.[15] Defendants refused to even discuss settling the case.

Section I: Background

A. EPA Biosolids Managers vs. President Jimmy Carter

In 1977, President Jimmy Carter made controlling water pollution EPA's highest priority; and, he announced a 10-year program to construct municipal sewage treatment plants.

When announcing these steps in 1977, President Carter advised Congress:[16]

But at the same time, we need to be sure that sewage projects supported by Federal money do not create additional environmental problems…We also must ensure that the systems are operated properly…that there is an effective pretreatment program to remove harmful industrial wastes from these systems; and that we are carefully considering alternative solutions…

John Walker and Robert Bastian began working at EPA's Office of Water (OW) in the mid-1970s. Their responsibilities included developing regulations for converting sewage sludge into fertilizer for agricultural use. Sewage sludges are the semi-solid wastes in sewage that enter sewerage lines and are separated from water at municipal wastewater treatment plants by settling. They are comprised of complex mixtures of human feces, household products and industrial wastes and must be treated to meet federal Clean Water Act standards prior to disposal. In 1978, Walker advised OW Assoc.

[15] David L. Lewis' Responses to Dr. Joe L. Key and University of Georgia Research Foundation, Inc.' s Interrogatories, Requests for Production, and Requests for Admission, May 4, 2009. p. 6-10.

[16] President Jimmy Carter, The Environment Message to the Congress. May 23, 1977. www.presidency.ucsb.edu/ws/index.php?pid=7561

Deputy Asst. Administrator Henry Longest: "The application of some low levels of toxic substances to land for food crop production should not be prohibited …"[17]

Bastian, Walker, and their colleagues in OW, in collaboration with Rufus Chaney at USDA, developed various regulations and interim agency guidance for land application of sewage sludge from the late 1970s through the early 1990s. In 1992, Dr. Alan Rubin led the group to develop EPA's current 503 sludge rule.[18] Dr. Rufus Chaney was their primary collaborator at USDA.[19]

Scientists in EPA's Office of Research & Development (ORD) in Athens and elsewhere rejected the proposed 503 rule, primarily because of the lack of scientific studies supporting claims by Rubin and Chaney that pharmaceuticals, heavy metals, pesticides, PCBs, and a myriad of other constituents in biosolids are rendered harmless by virtue of what Rubin called "sludge magic."[20] Rubin testified in 1999: "The processes, some of them are understood, some of them are not that well understood, but the whole thing taken together is called magic. So I coined the term [sludge] magic." [21]

OW promised ORD a minimum of $10 million to conduct research studies that would be used to render the rule protective of public health. OW reneged on its promise to ORD, [22] however, and Walker and Bastian established a cooperative agreement with the Water Environment Federation to run a "National Biosolids Public Acceptance Campaign."[23] In 1995, Walker amended the EPA-WEF Cooperative Agreement to fund land grant universities, such as the University of Georgia, to promote biosolids and create

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[17] Memorandum: Walker JM, EPA Municipal Technology Branch to Longest II HL, EPA Assoc. Deputy Asst. Administrator for Water Program Operations. September 12, 1978. www.sludgefacts.org/Ref15.jpg

[18] Deposition Transcript of John Walker, p. 10-11. Oct. 4, 1999. Lewis v. EPA, U.S. Department of Labor Case No. 99-CAA-12.

[19] Deposition transcript of Rufus L. Chaney, Ph.D., Beltsville, Maryland, Jun. 26, 2009, p. 19-21.

[20] Rufus Chaney, USDA. "Sludge Mess in EPA's Back Yard," USCC March 26, 2002.

[21] Deposition transcript of Alan Rubin, Ph.D., Apr. 27, 1999, p. 168-169.

[22] EPA Office of Inspector General (OIG), "Land Application of Biosolids," Status Report 2002-S-000004, p. 18. Mar. 28, 2002. This report represents the OIG's investigation into allegations that I filed with the OIG through the National Whistleblower Center.

[23] To counter the negative impact of ORD's criticisms and public concerns over adverse health effects, Walker and Bastian established a cooperative agreement with the Water Environment Federation (WEF) from 1992-1999 to run the National Biosolids Public Acceptance Campaign (Exhibit B to my Affidavit). The WEF represents municipalities and industries with a strong financial interest in defending EPA's 503 sludge rule. The 503 rule gives them a way to dispose of hazardous wastes on land with little risk of becoming accountable for any damages. This is because the rule exempts all organic chemicals, including priority pollutants, and some toxic heavy metals widely used by industry, *e.g.*, thallium, antimony, barium and chromium. Also, enforcement of federal pretreatment regulations has historically been lax; states rarely monitor land application programs or audit environmental data submitted by wastewater treatment plants; and there is no system for tracking adverse health effects. EPA no longer regulates composted Class A biosolids or requires that it be tracked or identified as biosolids (Deposition transcript of Dr. Rufus Chaney, Jun. 26, 2009, p. 221, 226-228).

a body of science supportive of the 503 sludge rule.[24] Rufus Chaney of the U.S. Department of Agriculture oversaw most of the research that EPA uses to support the 503 rule.[25]

B. The Gatekeepers

In the EPA-WEF Cooperative Agreement, no one defined the term "gatekeeper," which literally means someone who controls a gate. It is clear from the agreement, however, that gatekeepers working for the National Biosolids Public Acceptance Campaign were expected to control the flow of technical and scientific information to the public. EPA managers and the wastewater industry, that is, wanted to put a gate between the scientific community and the public. Scientific data indicating that biosolids were beneficial and safe could pass through the gate, but negative information, especially about adverse health effects, would not be allowed to reach the public.

Such an effort would probably have little impact on well-established areas of science. The influx of large amounts of funding into a new area of research to support a national network of "gatekeepers," however, could effectively lock down that whole area of research. Government and private organizations receive grant proposals, which they send out to be reviewed by the most prolifically published scientists in the field. Naturally, when Federal officials establish a nationwide effort to fund gatekeepers and silence dissent, the most productive scientists will be gatekeepers and their minions. Hence, gatekeepers control the flow of scientific information to the public by controlling the flow of research funding to scientists.

In their own words…

Dr. Eliot Epstein was the Chief Environmental Scientist for Tetra Tech, Inc., who held a position with the WEF and was funded by EPA's Office of Water. He was an exemplary gatekeeper who frequently published scientific articles dismissing health and environmental concerns attributed to biosolids. In 2001, Epstein wrote to the head of Boston University's Department of Environmental Health to protest me being invited to speak at a conference on biosolids:[26]

> *I feel that the way the conference is arranged will diminish Boston University School of Public Health's credibility. The selection of speakers is extremely poor… Dr. Lewis has absolutely no standing in the scientific community in this area; he has been involved in several sensational legal cases. Dr. John Walker or Bob Bastian of EPA would have been much more credible than David Lewis.*

[24] Exhibit B to my Affidavit, EPA-WEF Cooperative Agreement, pages 65-72.
[25] Deposition transcript of Rufus L. Chaney, Ph.D., Beltsville, Maryland, Jun. 26, 2009, p. 19-21.
[26] Exhibit 4. Letter from Dr. Eliot Epstein to Prof. David Ozonoff, Chair, Department of Environmental Health, Boston University School of Public Health. September 28, 2001.

> *… In the future, if the Boston University School of Public Health is interested in seeking funds for research on health aspects on this subject, it must have the reputation of a credible scientific institution. There are numerous sources of funds for research available. University of New Hampshire, Pittsburg University, Tulane University, University of Arizona, Johns Hopkins University, and numerous others have received considerable grants on this subject.*

In 2002, Synagro Vice President Robert O'Dette unabashedly sent the same message to Tom Stavinoha, a commissioner in Fort Bend County, TX.[27] Mr. O'Dette defended Synagro's funding of special projects as a Board Member of the University of Arizona's Water Quality Center, and supported efforts to end my research at UGA:[28]

> *While Synagro has contributed some funding to the organization, most of the money has come from the State of Arizona's Proposition 301 and other municipalities in California and Arizona. … Dr. Ian Pepper and the NSF are not going to compromise their reputations, independence or any research work for a few dollars… What we don't need are more so-called scientists whose research findings are predetermined by scientific or personal bias. These people will find their work rightly discredited and their funding will disappear while credible researchers continue to have funding.*

Editors of scientific journals also choose reviewers who are most prolifically published in the area. Thus, a well-funded system of gatekeepers can control the flow of scientific information at both ends – by determining who gets funded and whose research gets published. Even when accomplished scientists are willing to risk their careers and pay for research out of their own pockets – which few scientists are willing or able to do – they cannot beat the system. Just look at what the EPA Defendants and their gatekeepers were able to do with a little Federal funding, industry muscle, and local politicians to shut down my research at UGA.

The approach taken by Walker and Bastian was very simple and effective. Gatekeepers quickly dominated the peer-reviewed scientific literature with their sheer numbers of research articles. Alan Rubin, Rufus Chaney and others often boast of the thousands of peer-reviewed research articles demonstrating the benefits of biosolids and dispelling public concerns over adverse health effects. But "biosolids science" has

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[27] Letter from Robert O'Dette, Vice President, Synagro Technologies, Inc. to Tom D. Stavinoha, Commissioner Precinct 1, Fort Bend County, TX. November 18, 2002. http://sludgefacts.org/ref45.html

[28] In October of 2000, Robert O'Dette offered to fund my research at UGA, but I declined. Instead, I covered all of the costs of our research on sewage sludge, which my coauthors and I conducted at UGA from 1998 to 2003. Coverage of our work by *Time* magazine (Sep. 27, 1999, p. 26), and the resulting congressional hearings, prompted the CDC to issue guidelines for protecting workers handling Class B biosolids (Cocalis, J., et al. 2000. Workers exposed to Class B biosolids during and after field application. DHHS (NIOSH) Publication No. 2000-158).

become a government-industry monopoly supporting a National Biosolids Public Acceptance Campaign. It is no longer science. And, since it is grounded in tenured faculty at universities and career employees working in state and federal agencies, it is a monopoly endowed with exceptional security and longevity.

C. Biosolids Acceptance Programs in Academia

Walker amended the EPA-WEF Cooperative Agreement in 1995 to promote biosolids research and development.[29] According to the WEF,[30] the objective was to "provide scientifically credible results that can serve as the basis for future rulemaking efforts by EPA and state agencies." The Federal Grants and Cooperative Agreement (FGCA) Act of 1977 prohibits the use of Federal assistance agreements (grants and cooperative agreements) to support Federal rulemaking efforts. The EPA-WEF Cooperative Agreement specifically targeted land grant universities with agricultural extension services to promote biosolids and included a "strategic alliance" with Colorado State University (CSU).[31] EPA Defendant Brobst is currently a Ph.D. candidate at CSU while working at EPA-Region 8 in Denver.[32]

Walker, Bastian, Brobst and Rufus Chaney also developed a strategic alliance with the University of Georgia as soon as the McElmurray and Boyce cases surfaced and EPA transferred me to UGA. This relationship reached its zenith in 2005, when UGA President Michael Adams selected Dr. Jay Scott Angle, who coauthored research articles on biosolids with Rufus Chaney, as dean of the UGA College of Agricultural and Environmental Sciences. When announcing the appointment, Dr. Adams and UGA Senior Vice President and Provost Dr. Arnett Mace praised Angle for his research dispelling concerns over land application of biosolids.[33]

In 2001, EPA funded the NAS to reevaluate the scientific basis supporting the 503 sludge rule. EPA took this action in response to Congressional hearings into retaliations against me and my local EPA Director, Dr. Rosemarie Russo, by EPA employees managing the Agency's biosolids programs. In 2002, the NAS published a report concluding: *There is no documented scientific evidence that the Part 503 rule has failed to protect public health*.[34]

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[29] Exhibit B to my Affidavit, EPA-WEF Cooperative Agreement, pages 66-74.
[30] Exhibit B to my Affidavit, EPA-WEF Cooperative Agreement, page 67.
[31] Exhibit B to my Affidavit, EPA-WEF Cooperative Agreement, page 44.
[32] Deposition transcript of Defendant Robert Brobst, Apr. 14, 2009. p. 7-8.
[33] U. of Maryland administrator named dean of UGA College of Agricultural and Environmental Sciences, Jun 3, 2005. www.uga.edu/news/artman/publish/050603angle.shtml
[34] Exhibit 103 and National Research Council. Biosolids Applied to Land: Advancing Standards and Practice, p. 4. National Academy Press. Washington, DC, 2002. www.nap.edu/books/0309084865/html

To discredit the McElmurray and Boyce cases, EPA Defendant Bastian provided the NAS with draft reports from CSU Veterinary Pathologist Dan Gould and Julia Gaskin at the University of Georgia in March of 2001.[35] The NAS report (p. 52) states:

- *There have been several allegations of human deaths and illnesses caused by land application of biosolids. However, there has been no documented scientific evidence to substantiate those claims.*

- *There have also been several allegations of animal deaths caused by land application of biosolids (e.g., cases in Colorado and Georgia). Supporting evidence to substantiate these allegations has not been documented in the scientific literature, but EPA did investigate them and has produced reports on their findings.[2,3] It found no substantiation for the allegations.*

  > *[2] D.H. Gould, G.H. Loneragan, Integrated Livestock Management Group; G.K. Beck, and H.D. Fraleigh, Colorado State University; and R.B. Brobst, EPA, unpublished data, no date.*
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  > *[3] J.W. Gaskin and E.W. Tollner, University of Georgia, unpublished data, no date.*

Plaintiffs in our qui tam case requested copies of the two draft reports submitted to the NAS by Robert Bastian and any veterinary data associated with the reports. EPA and UGA, however, never produced copies of these draft reports, and they refused to release any veterinary records.[36, 37] The NAS, however, did send me a copy of the unpublished UGA report that Bastian provided to the NAS in 2001.[38] It is an *outdated draft* version of Gaskin's EPA report. The Academy used it in its 2002 report to dismiss the cattle deaths on the Plaintiffs' dairy farms and conclude that there is no evidence that the 503 sludge rule has ever failed to protect public health. Bastian provided this draft version in March of 2001, approximately six months after Gaskin submitted the final version of her report to EPA in October of 2000.

The draft version Bastian provided to the NAS falsely stated that *no* toxic levels of heavy metals were found in soil and forage samples in the Gaskin study and that no

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[35] Exhibit 103, E-mail from Robert Bastian to National Academy of Sciences panel. March 13, 2001. Subject: "Investigations into allegations of health effects caused by exposure to biosolids."
[36] Deposition transcript of Defendant Robert Brobst, Apr. 14, 2009. p. 138-140.
[37] Deposition transcript of Arthur Leed, Jan. 28, 2009. p. 10.
[38] Metals Assessment for Burke and Richmond County Hay Fields Receiving Biosolids. Julia W. Gaskin, Biological & Agricultural Engineering Dept., Univ. of Georgia; William P. Miller, Crop & Soil Science, Univ. of Georgia; Ernest W. Tollner, Biological & Agricultural Engineering Dept., Univ. of Georgia; Myron Fowler, Burke County Cooperative Extension. Contains the handwritten word "DRAFT" in upper right hand corner of title page. As indicated in the NAS report, Gaskin's and Tollner's names appear to the far left such that, at first glance, it appears that they are the only authors.

other study like the Gaskin study has ever been done. The final version of Gaskin's report, which Bastian did not provide to the NAS, does not contain these false statements.

Plaintiffs did obtain one UGA veterinary record. It revealed that a UGA pathologist concluded that two cows from one of the farms in the Gaskin study had kidney damage from toxic levels of zinc. Both of these cows had contracted a rare type of bacterial infection, which the pathologist associated with immune system depression related to the kidney damage. The pathologist suggested that soil samples should be collected on the farm and tested for zinc.[39] High levels of zinc were present in Augusta's sewage sludge, and toxic levels of this heavy metal were also found in tissue samples from several of the Boyce's sick cows tested by UGA's diagnostic laboratory in Tifton and Michigan State University.

As discovery in this case drew to a close, EPA Region 8 finally provided a different draft report in which Gould and others reviewed data collected by the City of Augusta and experts hired by the McElmurray and Boyce families.[40] In this draft report, Gould *et al*. concurred that some liver and kidney copper concentrations in cows from the McElmurray and Boyce farms were in the high to toxic range (p. 2-3). Gould also agreed that cattle on the two dairy farms were infected with intestinal parasites commonly found in sewage sludge (*Sarcosporidia, Trichostrongylus and Eimeria*, p. 22, 33-34).

The Boyce herd also experienced increased morbidity and mortality rates and declining milk production. Gould attributed their poor overall condition to herd expansion and a lack of good hygiene (p. 28). Gould, however, failed to address a comprehensive study of the Boyce herd conducted by animal nutritionist Dr. Holly Ballantine, which was carried out in cooperation with the UGA dairy sciences department and Mr. Boyce. This study found that sewage sludge alone was responsible for the Boyce herd's poor health. In Ballantine's study, approximately 500 cows were monitored after removing sludge-fertilized forage from the herd's diet. Within approximately two years, milk production recovered and morbidity and mortality rates dropped below that of a group of approximately 100 healthy cattle that were added to the Boyce herd at the beginning of the study.

One thing that is clear from my review of Gould's and Gaskin's draft reports (a.k.a. "EPA's investigation") is that they do not comport with Bastian's description published by the NAS. Specifically, the NAS stated that "EPA's investigation" found *no substantiation* for the McElmurray and Boyce allegations. Gould's draft report clearly substantiates the McElmurray's and Boyce's allegations that their cattle absorbed toxic levels of metals from ingesting forage grown on fields treated with Augusta's sewage sludge.

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[39] David L. Lewis' Responses to Dr. Joe L. Key and UGA Research Foundation, Inc.' s Interrogatories, Requests for Production, and Requests for Admission, May 4, 2009. p. 32-33.
[40] "Evaluation Of Suspected Problems On Two Georgia Dairy Farms" by Daniel H. Gould, DVM, PhD; Department of Pathology; Franklyn Garry, DVM, MS; Page Dinsmore, DVM, MS; Dept. of Clinical Sciences. College of Veterinary Medicine and Biomedical Sciences. Colorado State University, Fort Collins, CO 80523 USA. June, 2001.

Moreover, the outdated draft version of Gaskin's EPA report that Bastian provided the NAS falsely stated that *no* toxic levels of heavy metals were found in soil and forage samples in the Gaskin study. It also stated that no other study like the Gaskin study had ever been done, which is also false. Gaskin's final EPA report states that forage grown in three fields in the Gaskin study contained cadmium at or near the maximum tolerable level (MTL) for beef cattle (Exhibit 19C, p. 12). Gaskin also reported that two fields were also near the MTL for molybdenum (Exhibit 69, p. 150).

Gaskin testified about EPA using her study to dismiss the McElmurray and Boyce cases:[41] *Now, you have characterized that the EPA has used this against them. There is certainly data in here that could have been used to support them as well…The fact that we had high cadmium and molybdenum in three fields … and forages in three fields that had been greater than six years. The fact we saw a reduction in copper and molybdenum ratios with long-term biosolids application.* Bastian submitted Gaskin's outdated draft report to the NAS approximately six months after Gaskin had provided EPA a copy of her final report. Bastian, therefore, clearly intended to mislead the NAS, which used the outdated draft of Gaskin's report to conclude that EPA found *no substantiation* for the McElmurray and Boyce allegations.

Bastian's mischaracterizations of the projects EPA funded at Colorado State University and the University of Georgia cleared the way for the NAS to conclude that there is no evidence that the 503 rule has failed to protect public health. The purpose of the two projects was the same. It was to provide EPA with reports that the EPA Defendants could use to discredit the McElmurray and Boyce cases. Yet, the EPA Defendants used a contract at CSU and a cooperative agreement at UGA. This proves that the EPA Defendants do not distinguish between Federal contracts and assistance agreements. Their wanton disregard of the Federal Grants and Cooperative Agreement Act, and their misuse of science, proves that the EPA Defendants have but one self-serving goal for supporting biosolids research in academia. It is to support and defend the 503 sludge rule by whatever means necessary.

D. "Biosolids Science"

The University of Arizona (UA) Water Quality Center (WQC) is the academic hub for biosolids science. It is run by Ian Pepper, and Dr. Charles Gerba is the group's leading microbiologist. EPA's response to the 2002 National Academy of Sciences report, which was drafted by EPA Defendant Walker,[42] restated EPA's commitment to support the WQC for addressing scientific issues related to the 503 rule.[43]

[41] Deposition of Julia Gaskin Jan. 20, 2009, p. 140.
[42] USEPA. 2003. "Standards for the Use or Disposal of Sewage Sludge; Agency Response to the National Research Council Report on Biosolids Applied to Land and the Results of EPA's Review of Existing Sewage Sludge Regulations." *Fed. Reg*. 68: 17379-17395.
[43] Exhibit 21B EPA draft response to National Research Council.

The WQC receives Federal research grants from EPA, the National Science Foundation and other Federal and state agencies and then sells "votes" to private companies, industrial firms and others to "influence research areas." Members who purchase $30,000 or more worth of votes may appoint representatives to an Industrial Membership Board to direct the design and publication of special research projects carried out on their behalf by the WQC.[44] These industry representatives pay only direct costs and are not charged overhead for using facilities paid for, maintained and staffed with Federal funds.

Synagro VP Robert O'Dette explained the inner workings of the WQC as follows:[45]

> *Synagro or any individual member contributes a very small percentage of the overall research monies which total in the millions of dollars. I know that NSF contributes a fairly large sum and I believe that the State of AZ has Prop 301 monies that go into these research projects…*
>
> *Essentially, the way the process works is that all monies are put into a pot and the advisory board rates and votes on projects. There is no guarantee that any one project will get funded unless a large number of the members believe it has merit. This process is similar to what was done at the WERF Research Summit.*

In other words, the WQC sells control over public funds to private companies and others with vested interests in what research is done and what the results are. Thus, private industry leverages control over public monies for research on biosolids by contributing only a small fraction of the total funding. Since much of these resources are used for constantly quashing any scientific dissent that stands to document any adverse effects from land application of sewage sludge, the flow of scientific information about biosolids is substantially controlled by private industry.

When publishing the results of special projects funded by industry board members, the WQC acknowledges only the National Science Foundation (NSF) Water Quality Center as the funding source. This gives the appearance that special industry projects were funded by the NSF and were subject to strict Federal requirements regarding QA/QC, open competition, and the elimination of financial conflicts of interest.

For example, Director Ian Pepper and Charles Gerba, a WQC microbiologist, published a peer-reviewed journal article in *Environmental Science & Technology* (*ES&T*) in 2003 to demonstrate that *Staphylococcus aureus* is not found in biosolids. The paper purportedly debunked our research at UGA linking *Staphylococcus aureus* infections to irritation of the skin, eyes, and respiratory tract (Exhibit 1C).

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[44] *See*, http://wqc.arizona.edu/ Link: Member Benefits. Last accessed 10/21/08.
[45] Exhibit 6E. E-mail from Robert O'Dette to National Research Council (NRC) panel member Ellen Harrison. Aug. 2, 2005.

In a 4-page article entitled: "Biosolids Safe for Land Application, UA Researchers Find," Susan McGinley summarized the Center's findings on the university's website "Information For News Media from the College of Agriculture and Life Sciences, University of Arizona."[46] Nowhere does the article acknowledge the fact that Synagro, which was being sued over illnesses and deaths linked to biosolids, funded the study.

In the article, the UA press release states:

> *Biosolids are frequently applied to cropland, pastures or timberland, where they decompose, furnishing nitrogen, phosphorus and potash to growing plants. The method offers a more ecologically sound and practical alternative to domestic waste disposal than landfills or incineration, that may result in water or air pollution.*
>
> *Over the past 18 months questions have arisen over whether Staphylococcus aureus, a human disease pathogen present in raw sewage, remains in treated biosolids with the potential for causing illness…*
>
> *The center has gained national recognition, with the EPA using WQC studies on land application of biosolids as a response to a 2002 National Academy of Sciences report on land application….*
>
> *"We detected S. aureus in samples of raw sewage and undigested primary sewage sludge," the scientists state in their report. "However, we did not detect S. aureus in Class A or Class B biosolids after aerobic or anaerobic digestion, lime stabilization, heat-dry pelleting and/or composting." These are conventional methods that treatment plants use to remove disease-causing organisms from raw sewage.*

Pepper notes his opinion that allegations regarding the safety of biosolids are often not based on good science. "Overall we need more scientific studies to resolve potential issues of concern," Pepper says. "Our study was science-based and indicates that biosolids are an unlikely source of *S. aureus*."

In 2004, EPA Defendant Walker worked with microbiologists at USDA and discovered that *Staphylococcus aureus* was present in biosolids and aerosols samples collected at a land application site. These results were presented at a conference in Orlando, Florida in 2004.[47] Selected conference papers, including papers by Charles Gerba, Rufus Chaney, Alan Rubin, Robert Bastian, and Robert Brobst, were published in

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[46] Exhibit 6C. S. McGinley. Sep. 3, 2003.

[47] Millner, P.D., McConnell, L.L., Harper, L.A., Walker, and J., Giani, R. "Bioaerosol and VOC emissions measurements associated with land application of biosolids." Proceedings of the Sustainable Land Application Conference, Jan. 4-8, 2004, Orlando, Florida. www.ars.usda.gov/research/publications/publications.htm?SEQ_NO_115=153820

2005 by the *Journal of Environmental Quality*.[48] The paper by Walker and his USDA colleagues, which found *Staphylococcus aureus* is present in biosolids, was not included.

Also in 2004, scientists at Bowling Green State University conducted a study of aerosols downwind of a land application site and found persistently high concentrations of *Staphylococcus aureus* in biosolids particulates that could potentially present a health risk as far as one mile away from the site.[49] While concentrations of other bacteria dropped, levels of *Staphylococcus aureus* in the air continued to rise for 13 days after sludge was applied, thus demonstrating regrowth of *Staphylococcus aureus* after the sludge was treated at the wastewater treatment plant to reduce pathogen levels:

> *All of the data show higher numbers of bacteria colonies collected from the downwind direction than from upwind. Compared to the data collected on the day of application, total bacteria, Staphylococcus aureus, and gram-negative bacteria were elevated 2 days after biosolids application. Levels decreased to control level 13 days after application, except for Staphylococcus aureus, which was highest 13 days after application. It can be concluded that pathogenically non-treated class B biosolids are capable of generating potential pathogens in the air. This increased content might be responsible for reported health problems in nearby residents during the post-application period. Also there is a possibility that the finer particles, which constitute approximately 50% of the total bioaerosols generated from the fields, can be transported some distance away from the class B biosolids-applied field. These finer particles containing pathogens might be responsible for health problems in residents a mile away from the field.*

Dr. Pepper, who was one of the authors of the 2002 NAS report, cited preliminary results from his and Dr. Gerba's preliminary study at the University of Arizona to dismiss "speculation" that *S. aureus* infections are linked to land application of sewage sludge. The NAS report also cited a draft version of the Gaskin JEQ article as its basis for dismissing allegations by Relators McElmurray and Boyce that Augusta's sewage sludge killed their cattle. Both studies were also used by EPA Assistant Administrator G. Tracy Mehan to dismiss a public petition, which called for a moratorium on land application of sewage sludge until questions about the cattle deaths in Augusta and three human deaths, which were the subject of my research at UGA, could be resolved.[50]

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[48] *J Environ Qual*. Vol. 34, 2005.

[49] Ghosh, J. 2005. Bioaerosols Generated From Biosolids Applied Farm Fields In Wood County, Ohio. Master of Science Thesis, Graduate College of Bowling Green State University. Abstract by Robert K Vincent, Advisor. Downloaded Aug. 24, 2009. www.ohiolink.edu/etd/send-pdf.cgi/Ghosh%20Jaydeep.pdf?bgsu1131322484

[50] Exhibit 22. U.S. Environmental Protection Agency. Office of Water. [Letter] Assistant Administrator G. Tracy Mehan, III to J. Mendelson, III. December 24, 2003. p. 10-13.

The body of "science" that EPA Defendants Bastian and Walker created with Dr. Rufus Chaney and a national network of "gatekeepers" yielded four pillars of biosolids science, which are widely used by the biosolids industry to support the 503 sludge rule:

1. Nine regulated metals (As, Cd, Cu, Pb, Hg, Mo, Ni, Se, Zn) are the only chemical pollutants in sewage sludge (biosolids) that need to be regulated in order to protect public health and the environment.

2. Once sewage sludge is land applied, metals remain in the topsoil and their concentrations undergo little, if any, change for decades or longer.

3. Pollutants of all kinds (metals and organic chemicals) are non-bioavailable once they are mixed with sewage sludge; *i.e.*, they cannot be taken up by plants or animals in harmful amounts.

4. The peer-reviewed scientific literature and a lack of documented cases prove that land application under the 503 rule presents little, if any, risk to public health and the environment.

If these principles of biosolids science were true, then EPA Defendants with help from Rufus Chaney accomplished the primary purpose for which Congress originally created EPA and passed the Clean Water Act. That purpose was to have wastewater treatment plants remove municipal and industrial pollutants from the nation's waters, concentrate them in sewage sludge, and dispose of them safely.[51] However, as Plaintiffs in this qui tam lawsuit discovered, the EPA Defendants have systematically covered up and maligned valid scientific studies that contradict each of the principles of biosolids science described above. (*See*, Appendices IIA-C.)

One must also consider what it takes to sustain the view that land application of biosolids is the perfect solution to water pollution; it takes a national network of gatekeepers to publish studies supportive of the 503 sludge rule and the combined efforts of EPA program managers, the wastewater industry, and local politicians to stop independent research and quash reports of adverse health effects.

E. Rufus Chaney at the USDA

Dr. Rufus Chaney provided the following sworn testimony concerning his position at USDA:[52]

> *My official job title is senior research agronomist. I've been appointed in a category which is above GS-18 called senior scientific research*

[51] Dr. Chaney emphasized that many pollutants are biodegraded in the course of wastewater treatment. When pressed to say whether biodegradation products are always less toxic, he answered: "At least temporarily there can be more toxic biodegradation intermediates than the parent compound." (p. 218)

[52] Deposition transcript of Dr. Rufus Chaney, Jun. 26, 2009, p. 13-17.

service. Within that, there are no sub-grades. There is a group -- there is only about ten of us in all of my agency that have reached that level… I would say I'm the U.S. Department of Agriculture's most knowledgeable scientist about biosolids.

Regarding his level of authority, Chaney stated: "[Scientifically,] I represent USDA (ARIS) to EPA, Food and Drug, state regulatory agencies, and so on … and I don't have to have a supervisor come and tell me what I can say."

During his deposition in this case, Dr. Chaney staunchly defended the Gaskin study and brought more than a dozen research articles to support his position (Exhibits 230-232, 235-238, 242-248). He believes that the results and conclusions of the Gaskin study, and the data upon which they are based, are scientifically accurate. The reason is, according to Chaney, that they are consistent with the fundamental principles of biosolids science that he developed. He is not aware of any evidence to the contrary; and, he believes that any such evidence, if it exists, is false because it would contradict the body of biosolids science derived largely from his own work.

Dr. Chaney believes that biosolids are safe regardless of which pollutants enter wastewater treatment systems and regardless of whether treatment plants are working properly, if at all. And, he claims that a lack of documented cases of adverse effects proves his case.

Below are selected examples from Chaney's deposition supporting his position on biosolids.

DEPOSITION OF RUFUS L. CHANEY, PH.D., BY MR. ED HALLMAN. PAGES 47-48, 53, 187, 194, 233, 238-239. JUNE 26, 2009:

Page 47 [RE: The 1998 Georgia Environmental Protection Division audit of Augusta's wastewater treatment plant.]

Q. [MR. HALLMAN:] And has Ms. Gaskin or Mr. Brobst or anyone else ever told you that EPD found that virtually none of the systems were working in that plant?
A. [DR. CHANEY:] I have no knowledge about that.
Q. And the EPD found that the management was, quote, a joke of the plant? Are you aware of that?
A. I am not personally knowledgeable about that, although I've read news reports that the

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facility had management problems.
Q. Well, does that cause you concern about the

data used in the Gaskin study which is the same data being generated during that time period?
A. Actually I consider the composition of the sludge as reported by anybody irrelevant to the Gaskin study.

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Q. And you believe that all the studies you've seen, including the ones that you have co-authored and worked on, indicate that the land application of sewage sludge in accordance with 503 is safe agronomic, as they say, agronomic practice and is not a danger to human health and welfare, is that correct, if it's applied in accordance with those regulations – created and applied?
A. I won't disagree with that. …

Biosolids has become remarkably less contaminated because of what we've done with the 503 and because of the publications, such as mine, which showed adverse effects of previous practices.

Page 187

Q. Do you have any literature that supports your position that plants, alfalfa, Bermuda grass, whatever, growing on a contaminated property does not take the contaminants into those plants?
A. I could give you a hundred papers, but – you can calculate it for yourself.

Page 194 [RE: Whether toxic wastes other than the nine regulated metals could be present in sewage sludge that is spread on land.]

A. The probability is very small, but it's always possible.
Q. How do we ever know that it's all not dangerous –
A. How do you know that the Chinese dog food was dangerous? Only after the fact. We have a lot of experience with biosolids across the United States, thousands of cities, without having adverse effects. Tens of thousands of farms with dairy cattle without having the kind of problems that occurred on those farms.

Q. And you don't know what's in it other than these nine metals and the pathogens; isn't that correct?
A. We know from the – we talked earlier about what goes into the biosolids and what goes into the effluent. We know a lot about what gets into biosolids. We know a lot about the rarity of certain contaminants reaching biosolids. And the fact that, if many of them did reach biosolids, it wouldn't matter a damn in the first place because they are not bioavailable.
So, you know, you'd like to believe that anything that ever got there was going to poison something, but that's not technically correct.

Page 233

Q. …How can the United States government, Department of Agriculture, take the position regarding that situation in Augusta that destroyed two families without looking at any of the primary data in the possession of the City of Augusta?

A. I have indicated that the data reported here from farms that received sludge over the same period as those farms show no evidence of excessive accumulation of toxic elements and the forages produced on those fields show absolutely no evidence of risk to livestock or humans. Plain, simple. That's my answer.

Page 238

Q. Well, how can you draw any conclusions about whether there was damage to the farms if you haven't looked at any of the expert reports – the city's, the farmers'? …

A. The e-mail that you had a copy of from me to Gaskin and my discussion of the science in that study is based on the comparison of farms with and without biosolids application over the same period. I've discussed before that it would be exceptional that, if there were contamination on those farms, there would not be contamination on the sample farms.
Q. Because they were dairy farms too?

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A. Because they were farms. They were receiving biosolids in the same general – general – period.

Last year, Rick Stevens in EPA's Office of Water took "Biosolids Science" to its ultimate conclusion. In a series of postings on the U.S. Composting Council's blog, Dr. Chaney first took issue with industry pressure to drop all 503 requirements once sewage sludge is composted and allow the material to be spread without anyone having to identify it as biosolids. After Chaney was directed to contact EPA officials including Rick Stevens, Robert Bastian and James Smith, Chaney reversed his opinion just two weeks later.

[Exhibit 251]

May 15, 2008: Bob Engel posts:

Subject: [USCC] Composted biosolids vs. biosolids under 503

I have a question that I have not been able to find in the EPA 503 regulations.
At least not stated real clearly! Once biosolids are composted at a approved facility and have undergone treatment are the land application guidelines for biosolids still applied?

It is my feeling that once composted they are not biosolids anymore but a complete new product bearing no resemblance to the feedstock used to make the compost…

May 16, 2008: Rufus Chaney replies:

503 is clear that once biosolids, always biosolids… So, no matter how much the material is changed/improved by composting, it technically remains a biosolids product which requires labeling and compliance with 503.

Knowing what we know about composting, it is not unreasonable to feel that a material that has been composted properly is so changed that it should not be considered in the same thought as the smelly, germy feedstocks. …But the law is clear, once a biosolids, always a biosolids….

[Exhibit 252]

May 28, 2008: Rufus Chaney corrects the bottom line:

> *At the request of several participants, I contacted EPA officials (Rick Stevens, Bob Bastian, Jim Smith) who manage the biosolids regulator program to obtain a clear statement on the questions raised about whether a proper biosolids compost was still biosolids.*
>
> *The bottom line: If a biosolids meets the APL requirements, has undergone a Class A pathogen reduction treatment and a vector reduction treatment complying with the rule, it no longer has any of the management or other requirements of the 503 Rule. It is no longer biosolids, but a commercial product derived from biosolids…*

The significance of this decision can hardly be overstated. As Franklin D. Roosevelt once said, *The nation that destroys its soil destroys itself*. Defendants in this case, through their fraud and deception, have done nothing less than create a back door to the Clean Water Act through which municipal and industrial wastes can be incorporated in soil and just magically deemed wastes no more.

Earlier this year, Attorney Ed Hallman questioned Dr. Chaney under oath in our False Claims Act lawsuit. Chaney initially agreed that his opinion on May 16, 2008 was "once biosolids, always biosolids," and he denied that his opinion had changed. Then, after being presented with a copy of his reversal on May 28, 2008, Chaney explained how EPA's Office of Water works.

> **DEPOSITION OF RUFUS L. CHANEY, PH.D., BY MR. ED HALLMAN.** PAGES 221, 226-228. JUNE 26, 2009:
>
> Page 221
>
> 5 Q [MR. HALLMAN:] Okay. And do they have to label this
> 6 material as being from sewage sludge or biosolids?
> 7 A [DR. CHANEY:] The best of my understanding there needs to
> 8 be a label somewhere that says that the feedstock was
> 9 biosolids. The products that I've seen in the
> 10 marketplace disclose that it's manufactured from
> 11 biosolids.
> 21 Q And do you stand by this statement today?
> 22 A I can't imagine any reason why I wouldn't.
> 23 I mean, that's a simple statement of fact.
>
> Page 226
>
> 10 Q Did you ever obtain a legal opinion from

11 anyone in USDA about the conclusion Mr. Bastian and
12 Mr. Smith and Mr. Stevens drew that you don't have
13 to -- that once you treat a biosolid, it's no longer a
14 biosolid?
15 A I sought no other opinion because Stevens
16 is the official biosolids regulatory writer at EPA.
20 Q How does he interact with Bob Bastian and
21 Bob Brobst? Do you know?
22 A Just as other professionals that deal with
23 biosolids with EPA. He's the regulatory shop and they
24 are the get-it-done shop.

Page 227

14 Q In your e-mail, which is Exhibit 251, you
15 say, 503 is clear, once biosolids, always biosolids.
16 A Yep. I was wrong.

Page 228

1 Q Okay. And do you typically make decisions
2 about plant application of biosolids or sewage sludge
3 based upon what Mr. Smith, Mr. Stevens and/or
4 Mr. Bastian say to you is the law?
5 A You asked about whether I make my own
6 opinion about that. My opinion is always based on the
7 whole body of information. My opinion is not
8 congruent with those gentlemen. As it happens, my
9 opinion is nearly always congruent with Dr. Smith.
10 He's an authority. He's a scientist. He looks at it
11 as carefully as I do.
12 Mr. Stevens is less well informed. And I asked
13 him information about specific EPA policy and
14 interpretation. That's what I was asking for.

Mr. Hallman questioned Dr. Chaney about certain claims he made when defending the Gaskin study in e-mails that Chaney sent, in his official USDA capacity, to Julia Gaskin, UGA Dean Jay Scott Angle, Robert Brobst and others.[53] Chaney claimed that *Nature*'s coverage of my research and the McElmurray and Boyce cases was based on articles published by John Heilprin, an Associated Press reporter who quoted Chaney in one of his articles.

According to Chaney's official USDA e-mails, the AP discovered that Heilprin had misstated the facts about biosolids. Consequently, according to Dr. Chaney, the AP removed Heilprin from his position as the Washington bureau's environmental reporter

[53] Exhibit 225. E-mails from R. Chaney to J. Gaskin, Scott Angle and others. Nov. 20, 2008.

and planned to publish a retraction. Chaney also said that *Nature* was unaware of these developments and that the USDA was considering responding with a letter to the editors. Chaney reiterated his statements under oath.

Mr. Hallman presented Chaney with an e-mail that Mr. Hallman received from AP Managing Editor Mike Silverman, which contradicted Chaney's claims that Heilprin was punished for misstatements about sewage sludge. Mr. Hallman also showed Chaney an announcement that Heilprin was awarded a gold medal for his reporting in Myanmar while traveling assigned to the United Nations. This reporting coincided with the time when Chaney claimed that Heilprin was being punished by AP. Chaney, nevertheless, stuck by his position that Heilprin was punished for misstating the facts in his articles on biosolids.

When interviewed by reporters, Chaney claimed that I concluded that Shayne Conner, who lived in New Hampshire near a field treated with biosolids, died from inhaling traces of ammonia. The ammonia causation theory was, in fact, held by one of the experts in *Marshall v. Synagro*, a lawsuit filed by Shayne Conner's family; but, I never agreed with this expert's conclusions.

According to Synagro's white paper, which is the most likely source of Chaney's misinformation, I purportedly held to the ammonia theory and then changed to a "toxic soup" theory after being deposed by Synagro's attorneys. EPA approved me to serve as an expert witness in *Marshall v. Synagro* in my private capacity. I filed my first expert report in the case in March of 2000,[54] before Synagro issued its white paper in September of 2001. In this report, and in another report I filed in January of 2001, I concluded that Mr. Conner and others living in his household and neighborhood experienced symptoms of chemical irritation of the skin, mucous membranes and respiratory tract from prolonged exposure to dusts blowing from sewage sludge stockpiled at the land application site. The dusts settled in noxious layers throughout Conner's house, covering all exposed surfaces including bed sheets and kitchen counters.

Chaney also tells reporters that he does not believe that I ever conducted DNA tests on biosolids applied in Conner's neighborhood. My coauthors and I, however, published our results of DNA and culturing tests in our *BMC-Public Health* article. We discovered that bacteria proliferating in the sludge spread near Conner's home at the time of his death included a pathogen, *Brevundimonas diminuta*. This organism is known to cause sudden respiratory failure and death when inhaled in dust particles.

Chaney's position on biosolids, which was adopted by EPA, projects a different universe of environmental stewardship compared with President Carter's advice to Congress when he initiated the largest public works program ever to build sewage treatments plants throughout the United States. Specifically, President Carter urged Congress to ensure that harmful industrial wastes are pretreated and removed before they

[54] *Marshall et al v. Synagro et al.* No. 99-C-45 Rockingham County, New Hampshire Superior Court. Expert reports of David L. Lewis, Ph.D., Mar. 29, 2000 and Jan. 23, 2001.

enter sewage treatment systems, that the systems are operated properly and do not create additional environmental problems, and that alternative solutions be carefully considered.

In closing, it should be noted that I reviewed one of Rufus Chaney's studies for the Civil Rights Division of the State of Maryland.[55] In the study, which was published in 2005, Chaney designed experiments that potentially exposed children in African-American neighborhoods in Baltimore, MD to lead-contaminated dusts.[56] The study was funded by USDA and HUD and carried out by Johns Hopkins' Kennedy Krieger Institute. Chaney claims that the study proved that biosolids can reduce risks of lead poisoning in children.[57] In a lawsuit filed in Maryland's Court of Appeals, however, the Court likened earlier lead abatement experiments, which were conducted by Chaney's coworkers at the Kennedy Krieger Institute, to the USDA's infamous Tuskegee experiments and Nazi war crimes.[58] The lawsuit at issue was filed by parents alleging that their children developed lead poisoning as a result of the experiments.

F. Science, Marketing and the False Claims Act

Science and marketing, in this case marketing biosolids, have nothing whatsoever in common. Science is intentionally designed to eliminate bias and has an uncertain outcome, while marketing is inherently biased and has a predetermined outcome. The two are also equally different in purpose. The objective of the scientific method is to answer a particular question correctly. The purpose of marketing is to persuade others to accept a particular answer, which is oftentimes incorrect. While science is grounded in full disclosure, marketing often involves deception concerning a product's true attributes. Although cleverly marketing certain government policies and commercial products through the peer-reviewed scientific literature is becoming increasingly common, this practice, too, is rooted in deception.

Proponents of land application believe that concentrating pollutants in sewage sludge, processing it into biosolids, and applying the biosolids to land is the perfect solution to water pollution. Biosolids, however, are being marketed based upon scientific studies funded under a National Biosolids Public Acceptance Campaign, the covering up of valid research studies supported by EPA's Office of Research & Development, and the silencing of scientific debate. This effort, which has been largely accomplished using false claims in applications for Federal assistance, has created the false impression that there is no evidence that the 503 sludge rule has failed to protect public health.

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[55] *See*, environmental justice section of my UGA website, www.researchcenter.uga.edu.
[56] Farfel, M.R., Orlova, A.O., Chaney, R.L., Lees, P.S., Rohde, C., and Ashley, P. 2005. Biosolids compost amendment for reducing soil lead hazards: A pilot study in urban yards. *Science of the Total Environment* **340**:81-95.
[57] Relator McElmurray's Responses to Dr. Joe L. Key and University of Georgia Research Foundation, Inc.' s Interrogatories, Requests for Production, and Requests for Admission, May 4, 2009. p. 215-218.
[58] Erika Crimes v. Kennedy Krieger Institute, Inc., Circuit Court for Baltimore City, Case Nos. 24-C-99-000925, 24-C-95066067/CL193461. Order dated Oct. 11, 2001. http://www.courts.state.md.us/opinions/coa/2001/128a00.pdf

The Federal False Claims Act enters the picture when someone seeks Federal funds to promote biosolids and then tries to weave his or her way around laws designed to ensure quality science. The Federal Grants and Cooperative Agreement Act, the Federal Acquisition Regulation (FAR) and other laws applicable to Federally funded research encourage full and open competition and seek to eliminate bias and conflicts of interests. These objectives are vital to science but anathema to anyone in the business of promoting a product. Applicants intent on using Federal research grants to support EPA's 503 rule and promote biosolids include false claims in grant applications. The purpose of the false claims is to cover up conflicts of interest, publish unreliable data, and discourage competition from scientists who may not support the 503 sludge rule.

With regard to a lack of documented cases, it is worth noting that EPA and the wastewater industry have directed much of their effort toward discrediting and silencing scientists who question the virtues of biosolids. When scientists who may document adverse effects on public health and the environment are eliminated from the process of scientific inquiry, the absence of documented cases is rendered completely meaningless. The approach taken by Defendants is comparable to someone shooting a criminal investigator and then claiming that the absence of his report proves that no crime was committed.

If the body of "science" from which the principles of biosolids safety were derived were reliable and accurate, then it should not have required a cooperative agreement with an industry trade association to produce it. Instead, it could have been accomplished consistent with the FGCA Act through full and open competition within the scientific community at large. And, it would not have been necessary to quash scientific debate, which is the process by which science eventually gets it right.

G. Civil Rights Violations

EPA requires that all applicants for Federal assistance certify that they will "ensure, to the fullest extent possible" that a fair share of the Federal funds for contracts and subcontracts for supplies, construction, equipment or services goes to certain disadvantaged groups. Specifically, EPA requires that a fair share must go to organizations owned or controlled by "socially and economically disadvantaged individuals, women, disabled Americans, Historically Black Colleges and Universities, Colleges and Universities having a student body in which 40% or more of the students are Hispanic, minority institutions having a minority student body of 50% or more, and private and voluntary organizations controlled by individuals who are socially and economically disadvantaged" (Exhibit 9K, Attachment A)

Defendants at EPA and UGA made no efforts to fulfill these requirements by subcontracting any of the field work or laboratory analyses to disadvantaged groups. Ms. Gaskin callously responded during her deposition that none of the work was offered to any other groups and it was "understood that we would be using our labs."[59]

[59] Deposition transcript of Julia Gaskin,, Jan. 20, 2009, p. 228-229.

Current land application practices, in which sewage sludge from large metropolitan areas is dumped in rural areas and inner-city neighborhoods, disproportionately impact educationally, economically and socially disadvantaged groups. The EPA and UGA Defendants knew that a major theme of our research at UGA was to address these issues. We highlighted the plight of these groups in our peer-reviewed journal articles published by *Environmental Science & Technology*[60] and *Environmental Health Perspectives.*[61] Specifically, we recommended that EPA "Require that industry ensure that land application practices do not disproportionately target low-income and minority subpopulations in rural communities."

On the one hand, Defendants at EPA and UGA never made any attempt to involve disadvantaged groups in the Gaskin study. On the other hand, they never missed an opportunity to thwart our efforts to address the disproportionate impact land application of sewage sludge has on educationally, economically and socially disadvantaged groups.

For example, Defendant UGA Research Foundation quashed a national press release on the article written by Professor Gattie and me and published in the National Institutes of Health's environmental health journal, *Environmental Health Perspectives* (Exhibit 3A). It was prepared by Professor Alan Flurry in UGA's engineering department where Professor Gattie and Ms. Gaskin work. The article called upon EPA to address environmental justice problems with land application of sewage sludge. Materials associated with the press release, which I prepared, described a rural African-American community in Grand Bay, Alabama where Synagro disposed of sewage sludge.[62]

Children living in the community, who drank water from wells close to the sludge-treated land, experienced gastrointestinal problems and had difficulty walking from painful cramps in their legs. They could not attend school for weeks at a time and their symptoms recurred whenever sewage sludge was reapplied around their homes where the wells were located. They also had severe respiratory problems from inhaling dusts blowing from sludged fields that spread out in all directions from their homes and reached as far as the eye could see. Parents and grandparents stayed cooped up in houses with no air conditioning in hot summers and breathed through rags to filter the dusts.[63]

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[60] Lewis, D.L. & D. K. Gattie. 2002. Pathogen risks from applying sewage sludge to land. *Environ. Sci. & Technol.* **36**:286A-293A.

[61] Exhibit 3A. Gattie, D.K. and D. L. Lewis. 2004. A high-level disinfection standard for land-applied sewage sludge (biosolids). *Environ. Health Perspect*. **112**:126-31.

[62] Exhibit 52. Relator Lewis E-mail to Kim Carlyle, National Press Coordinator, UGA Office of Public Information. Nov. 16, 2003.

[63] Later, I reviewed a similar situation involving the Louisiana Office of Public Health (Exhibits 54B, 55). EPA Region 6 and state public health officials dismissed health problems reported by 185 residents, primarily African-Americans, living near land-applied sewage sludge in Convent, LA. Biosolids produced by the City of Kenner, LA, was spread in fields of sugar cane from 2000 through 2004 and residents began complaining of "burning skin, boils and rashes" when the spreading started. Health officials identified *Staphylococcus aureus* as causing skin and eye infections, but, with no evidence to support their decision, ruled out biosolids as playing any role. Instead, they blamed poor personal hygiene and addressed the complaints by holding a "health

UGA, however, did not allow any of this information to be distributed by the UGA press office. Dr. Regina Smith, the UGA Research Foundation's Science Integrity Officer, informed me in November of 2003 that the Research Foundation and the office of UGA President Michael Adams were under pressure from Synagro and its attorneys to quash the press release.[64]

Actions taken by UGA, under pressure from Georgia Senator Kasim Reed and other Synagro attorneys went beyond just failing to comply with Civil Rights requirements in research grants and cooperative agreements. They were part of a longstanding effort by the Defendants in this case to support EPA's 503 sludge rule by silencing dissent. Because land application of sewage sludge often targets educationally and economically depressed communities, their efforts to silence dissent include covering the mouths of the poorest of the poor in America and taking away their only chance of being heard.

Section II. Letter by EPA Assistant Administrator G. Tracy Mehan, III

Section Summary

EPA Defendant Robert Bastian worked with Madolyn Dominy at EPA Region 4 to draft a letter issued by EPA Assistant Administrator G. Tracy Mehan, III. This letter, which was issued on December 24, 2003, represented EPA's response to a public petition filed by the Center for Food Safety in Washington, DC.[65] This petition called for a moratorium on land application of sewage sludge until scientific issues raised by a jury verdict in favor of the Boyce family could be resolved. The petition also addressed several human deaths linked to biosolids, which were the subject of my research at UGA.

EPA Defendant Robert Brobst used the Mehan letter in an attempt to defeat an application for preventive planting credits, which the McElmurray family submitted to the USDA. The family applied for the credits in order to recover losses suffered from not being able to plant food-chain crops on portions of their land contaminated by Augusta's sewage sludge. The USDA rejected the McElmurrays' application based on Brobst's testimony and the Mehan letter. The McElmurray family filed suit against the USDA; and, in 2008, Judge Anthony Alaimo in the Southern District of Georgia ruled in favor of the Plaintiffs. [66] Judge Alaimo determined that Brobst's based his arguments on data that were widely known to be unreliable and, to some extent, "invented." Alaimo commented

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fair" to instruct residents, who were predominantly African-Americans, in proper bathing and cleanliness. EPA and state health officials did not assess the personal hygiene habits of affected versus unaffected residents in the area and did not acknowledge any of our published research linking *S. aureus* infections to biosolids.

[64] Deposition of Regina Smith, Ph.D., Apr. 27, 2009, p. 81-83.

[65] Exhibit 22. U.S. Environmental Protection Agency. Office of Water. [Letter] Assistant Administrator G. Tracy Mehan, III to J. Mendelson, III. December 24, 2003. p. 10-13.

[66] Exhibit 63. *McElmurray v. United States Department of Agriculture*, United States District Court, Southern District of Georgia, Case No. CV105-159, p. 17, Order issued Feb. 25, 2008.

on the EPA Defendants' handling of my research, saying: "senior EPA officials took extraordinary steps to quash scientific dissent, and any questioning of the EPA's biosolids program."

The McElmurray and Boyce Cases

Morbidity and mortality rates among dairy herds began to increase on two dairy farms in Georgia, which were owned by the McElmurray and Boyce families and had received large amounts of sewage sludge from the City of Augusta, Georgia. These effects occurred first on the McElmurray farm in 1987 and then on the Boyce farm in 1996. The families worked with experts that they hired to test soils and forages on their farms and analyze milk and tissue samples from their cattle.

Hugh B. Kaufman, Chief Investigator for the EPA Ombudsman, investigated the history of sludge applications on the McElmurray farm for several years in his official EPA capacity beginning in 1998 (Exhibit 131). Based on his review of the information collected by the McElmurray and Boyce families and City of Augusta, Kaufman concluded:

> *All of this material demonstrated conclusively to me that the City of Augusta violated numerous rules applicable to the creation, management and proper disposal and land application of sewage sludge. My investigation further concluded that the City's records which do exist show high and excess levels of many hazardous materials, including cadmium, were in the sewage sludge which went on to the McElmurray lands, without the McElmurrays' prior knowledge.*
>
> *Based upon my review of all of this data, it is my opinion that the McElmurrays' lands which received sewage sludge applications are unsuitable for the growing of food chain crops.*

By 1998, the McElmurray and Boyce families had determined beyond any reasonable doubt that their cattle had died from ingesting hazardous wastes originating in Augusta's biosolids. These wastes included high levels of heavy metals and organic industrial chemicals, such as chlordane and PCBs. Both families filed separate lawsuits against Augusta that year.

In 2003, a jury in Augusta, GA, awarded the Boyce family $550,000 in damages caused by hazardous wastes in the city's sewage sludge.[67] This was the first legal judgment ever to link land-applied sewage sludge under EPA's sludge regulations to adverse health and environmental effects.

[67] *Boyce v. Augusta, Georgia*, Civil Action File No. 2001-RCCV-111, Richmond County Superior Court, Augusta, GA, Jury Verdict. June 24, 2003.

The McElmurray case was dismissed by the Richmond County Superior Court and appealed to the Georgia Court of Appeals. On July 27, 2005, the appeals court reversed the lower court's dismissal and ordered that the case proceed to jury trial. Based on analyses of soil samples from the McElmurray farm, the Court found that "there were unquestionably concentrations of at least some of the metals at issue exceeding state and federal regulatory limits at levels so high as to classify the tested soil as containing hazardous wastes."

The Georgia Court of Appeals also ruled that the McElmurrays established a reasonable causal connection between hazardous wastes in Augusta's sewage sludge and the cattle deaths. Specifically, the Court ruled that the McElmurrays' experts presented reasonable evidence that forage contaminated by Augusta's sewage sludge caused liver damage and other adverse health effects, which impaired the dairy cows' defenses to infection and other diseases. The McElmurrays agreed on September 11, 2007, to settle the case for $1.5 million.

In February of 2008, Judge Anthony Alaimo of the Southern District of Georgia ruled in *McElmurray v. USDA*. He described Brobst's use of Augusta's data as follows:[68]

> *USDA employees Ronald Carey and Tommy Weldon also asked Robert Brobst, a member of the EPA's Biosolids Incident Response Team ("BIRT"), about the contamination averments made by the McElmurrays. AR 1227-1229. In response, Brobst opined in a letter that the McElmurrays' land was not contaminated." AR 1230-1240.* (p. 33)… *Because Brobst concedes that his conclusion is based on Augusta's unreliable, and to some extent invented, data, Brobst's finding has little merit on its own.* (p. 35)

Judge Alaimo further concluded (p. 17):

> *There is also evidence that the City fabricated data from its computer records in an attempt to distort its past sewage sludge applications. … In January 1999, the City rehired* [former supervisor Allen] *Saxon to create a record of sludge applications that did not exist previously.*

At the same moment in time when Brobst worked on the Gaskin study, Augusta fabricated some of the data EPA needed to publish with the Gaskin study. This leaves little doubt that at least some of Augusta's bogus historical data were manufactured specifically for the Defendants' use in the Gaskin study. Although fabrication of environmental monitoring data required under the Clean Water Act is a violation of Federal law, and is punishable by fines and imprisonment, no action has ever been taken against any of the individuals involved in the fabrication of Augusta's data reported to the State of Georgia.

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[68] *R.A. McElmurray III et al. v. United States Department of Agriculture*. U.S. District Court, Southern District of Georgia. Case No. CV105-159. Order issued Feb. 25, 2008.

False Information on Human Deaths

As with Mehan's use of false and fabricated data in the Gaskin JEQ article, the Mehan letter used equally false and fabricated information to dismiss three human deaths: Shayne Conner (26 yrs old) in New Hampshire; Tony Behun (11 yrs old) in Pennsylvania; and Daniel Pennock (17 yrs old), also in Pennsylvania. In our study published in *BMC-Public Health*,[69] we examined family medical records and land application data associated with these three deaths.

Shayne Conner died in his sleep of unknown causes while having difficulty breathing. His family and neighbors were being treated for these same symptoms and for *S. aureus* infections. Workers at the wastewater treatment plant that produced the biosolids applied in Conner's neighborhood built enclosures to protect workers who complained that the sludge made them ill. Tony Behun developed *S. aureus* infections and died within days after riding a three-wheeler through a field of biosolids used for mining reclamation. Workers exposed to this sewage sludge filed complaints with the CDC after developing skin infections.

Defendants Bastian, Walker, and Brobst served as internal reviewers of our manuscript (Exhibit 58) documenting these cases, which was later published in a peer-reviewed medical journal, *BMC-Public Health* (Exhibit 59). In addressing these cases, nowhere did Mehan's letter mention our *BMC-Public Health* article or address any of our findings. For example, Mehan ignored our finding that Shayne Conner's family and other residents in his neighborhood were being treated for severe breathing difficulties and *S. aureus* infections from inhaling sewage sludge dusts. Mehan also ignored our DNA analyses, which showed that an unusual type of bacteria, *Brevundimonas diminuta*, was proliferating in the sludge applied in Conner's neighborhood at the time of his death. This organism is known to cause rapid death when inhaled.

Instead of using our peer-reviewed research article based on medical records from Shayne Conner and members of his family, Mehan quoted a medical examiner's preliminary report that incorrectly stated that no one else in Conner's family experienced symptoms at the time of his death and that the sewage sludge had been treated to kill any pathogens.

To dismiss Daniel Pennock's death, Mehan ignored our peer-reviewed research based on Daniel Pennock's medical records. We found that Daniel Pennock frequently traversed the sludge-treated fields and that his pneumonia grew out of a rotavirus infection. Rotavirus is contracted from contact with feces or sewage. Mehan, instead, quoted a Pennsylvania newspaper article, which stated "The cause of death for Daniel Pennock was viral pneumonia combined with staph pneumonia." Mehan also quoted Pennsylvania officials who claimed, falsely, that Daniel Pennock never came in contact with the treated land and that the Pennock family would not release Daniel's medical records. The Pennock family released them to me as an EPA researcher investigating the

[69] Exhibit 59. *BMC Public Health* **2**:11 (28 Jun) www.biomedcentral.com/1471-2458/2/11

case, and gave me permission to make the records available to appropriate public health officials at EPA and elsewhere.

To dismiss Tony Behun's death, Mehan ignored our findings in *BMC Public Health* that exposure to certain chemicals in biosolids can lead to an increased susceptibility to *Staphylococcus aureus* infections. Instead, Mehan quoted Joel Hersh at the PA Department of Health, who speculated that "the death had as a probable underlying cause a pathogen, which is not known to be found in biosolids, nor is the biosolids environment known to be a suitable media for propagation of this pathogen."

Section III. Silencing Scientific Debate

Acting EPA Asst. Administrator Henry Longest, who developed EPA's polices on biosolids in the Office of Water before transferring to the Office of Research & Development where I worked, dead-ended my career for publishing research questioning the 503 sludge rule. In 1998, Longest offered me an opportunity to continue my research at UGA under an Intergovernmental Personnel Act (IPA) assignment for four years if I would resign my EPA position at my first eligible date. I accepted the offer when UGA promised to seek a tenured full professorship for me in the Department of Marine Sciences. UGA later reneged on this offer under pressure from Georgia Senator Kasim Reed and other attorneys hired by Synagro Technologies, Inc.

In 2003, EPA headquarters instructed my local EPA director, Dr. Rosemarie Russo, to unilaterally process my termination even though IPA regulations require Federal employees to work an equal amount of time for the government after their IPA assignments end. Dr. Russo provided the following public statement after retiring from EPA: "Dr. Lewis' involuntary termination over his research articles was not supported by the local lab management in Athens. He was an excellent researcher and an asset to EPA science."

A. National Campaign Covers Up Health Effects (1992)

Instead of funding ORD as promised in 1992, Defendants Bastian and Walker established the National Biosolids Public Acceptance Campaign to fund scientific research through the Water Environment Federation (WEF), whose members are financially dependant on land application of sewage sludge. Walker's EPA director, Michael J. Quigley, described the endeavor as an "important project" needed to gain "acceptance of the science and the substance of the Part 503 Rule" and overcome "misinformation" spread by opponents.[70, 71]

The ultimate goal of the National Biosolids Public Acceptance Campaign, according to Walker's EPA Branch Chief, Robert E. Lee,[72] was to make "beneficial use

[70] Exhibit B to my Affidavit, EPA-WEF Cooperative Agreement, page 56.
[71] Exhibit B to my Affidavit, EPA-WEF Cooperative Agreement Decision Memorandum from Michael J. Quigley to Michael B. Cook, July 28, 1992.
[72] Deposition transcript of Defendant John Walker, Apr. 11, 2009, p. 37.

of biosolids non-controversial by the Year 2000."[73] To quell controversy surrounding biosolids, the EPA-WEF Cooperative Agreement specifically focused on debunking "unsubstantiated claims" of adverse health effects from biosolids:[74]

> *Unsubstantiated claims of horror stories that have been attributed to the use of biosolids are an important weapon of groups that are opposed to the use of biosolids. WEF will assemble and evaluate information that fully explains what really occurred and translate this information into facts sheets that are readily understandable to the general public.*

At that time, OW officials handling the sludge issue targeted environmental activists who stepped up their efforts to force EPA to close gaps in the science used to support land application practices and address growing reports of adverse health effects. While EPA regulates certain indicator pathogens and nine potentially toxic heavy metals, organic compounds including priority pollutants are not regulated under the 503 sludge rule. This means that any amounts of such pollutants can be present in land applied sewage sludge without detection.

Environmental activists were primarily concerned with chemical pollutants and not so much with pathogens associated with human excreta. Abby Rockefeller, a leader in the anti-biosolids movement, wrote in 1996:[75]

> *The claim that "biosolids" are beneficial is based on the presence in the sewage sludge of nutrients deriving from human excreta. But the benefit of this content compared to the dangers of the toxic matter in it is a key point in the debate about land application of sludge*.

Some of the stiffest opposition to the 503 sludge rule, however, came not from outside activists but from EPA's own scientists at ORD. These scientists posed a clear threat to OW's plans to support the 503 rule with "science" generated under a National Biosolids Public Acceptance Campaign. When deposed by Attorney Stephen Kohn in 1999, Rubin was asked about this opposition to the 503 rule[76]: "Do you feel, in any way, hurt or upset to have someone like Dr. Lewis criticizing it?" Rubin replied:

> *Well, I think my professional reputation, to a large extent, is based on my association with biosolids, 503 and its technical basis. So I feel my reputation would be somewhat disparaged if*

[73] Exhibit B to my Affidavit, EPA-WEF Cooperative Agreement, page 90.
[74] Exhibit B to my Affidavit, EPA-WEF Cooperative Agreement, page 61.
[75] Abby A. Rockefeller. "Civilization and Sludge: Notes on the History of the Management of Human Excreta." Current World Leaders Vol.39, No. 6, p. 99-113 (December, 1996).
[76] Deposition transcript of Dr. Alan Rubin, p. 149. *Lewis v. EPA*, US Dept. Labor, Office of Administrative Law Judges. Case No.99- CAA-12, Apr. 27, 1999.

the basis of the rule, and the scientific findings were shown to be in error.

Rubin's answer reveals what was at stake not only for him, but for each of the scientists who built their careers on promoting biosolids. It also shows the sheer folly of giving employees who develop government regulations control over scientific studies aimed at evaluating problems with the regulations. When these employees have free reign to use federal funds to support like-minded scientists in academia, harass scientists who question their regulations, and leverage the lobbying power of the regulated industry to support the regulations, false claims and scientific fraud will abound.

Walker amended the EPA-WEF Cooperative Agreement in 1995 to "establish a Biosolids Cooperative Research and Development (R&D) Coordination Project." [77] Under this project, EPA and the WEF used land grant universities to create a national database identifying all biosolids research projects. Land grant universities, such as the University of Georgia, have agricultural extension services that work with local farmers. This link was essential to Defendants Bastian, Walker, Gross, Brobst and others involved with EPA's efforts to promote biosolids. With it, the Defendants were able to fund scientists supportive of the 503 rule in geographical areas where problems occurred and then work hand in hand with the universities and local farmers to debunk reports of adverse effects from biosolids. It also gave these Defendants a network of supportive scientists who, for a little Federal funding, were willing to help silence critics of the 503 sludge rule.

To supplement this effort, Walker created the Biosolids Incident Response Team (BIRT) to help investigate "horror stories," such as the cattle deaths on the McElmurray and Boyce farms, and tell "what really occurred." According to Brobst, during his recent deposition in this case, BIRT was never recognized by the EPA as an official EPA organization and has never had any standing as an actual operational unit of the EPA.[78] After discovery closed in our qui tam case, Brobst turned over an internal memo in which EPA Assistant Administrator Robert Perciasepe requested EPA funds to create BIRT in 1998. Perciasepe stated that the purpose of BIRT was to investigate "alleged problems due to biosolids" in order to "provide additional assurances to the public about the integrity and soundness of biosolids management in the United States."[79]

BIRT's mission, therefore, was to support EPA's biosolids program by investigating and debunking reports of adverse effects. The Gaskin study, which Brobst solicited, demonstrated the lengths to which Walker, Bastian, Brobst and others would go to fulfill BIRT's mission, even if it required submitting false claims to gain Federal assistance for projects that directly benefited EPA. *See*, Appendix I.

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[77] Exhibit B to my Affidavit, EPA-WEF Cooperative Agreement, pages 65-72.
[78] Deposition transcript of Defendant Robert Brobst, p. 13, Apr. 14, 2009.
[79] Memorandum. EPA Office of Water Assistant Administrator Robert Perciasepe to Steven A. Herman, Assistant Administrator, Office of Enforcement and Compliance Assurance. Subject: Request for Additional OECA Resources for the Biosolids Program. Apr. 29, 1998. Defendant Robert Brobst produced this document on Sep. 23, 2009 after discovery in this case ended.

C. National Academy of Sciences Deletes References (2002)

EPA called upon the National Academy of Sciences (NAS) in 2001 to reevaluate the scientific basis supporting the 503 sludge rule.[80] NAS Panel Member Ellen Harrison provided the panel with copies of my presentations and two in-press peer-reviewed journal articles (*BMC Public Health*, 2002; and *ES&T*, 2002). Harrison was Director of Cornell University's Waste Management Institute. She testified before the House Science Committee hearings into retaliations against me by EPA employees over the Agency's sewage sludge programs.[81] She was part of a group of NAS panel members selected to brief EPA on the Academy's findings when their report was electronically released on July 2, 2002.

My in-press, peer-reviewed journal articles and presentations at scientific conferences, which Harrison provided to the NAS panel, reported the results of our investigations into human illnesses and deaths at ten land applications sites. This included our investigations into the deaths of Shayne Conner, Tony Behun and Daniel Pennock in New Hampshire and Pennsylvania.

DEPOSITION OF ELLEN HARRISON BY MR. STEPHEN KOHN. PAGES 22-23, 34-35, 74-76. MAR. 21, 2003:

Pages 22-23

Q. And what would be your assessment of Dr. Lewis' role in making the agency aware that there was a big gap in terms of the science that needed to be done concerning pathogens.

A. Well, as I say, David was really the first, the only strong voice saying there is, there's a lack of knowledge here that we need to fill… I don't know within the agency who and how they were listening to people, but nationally. Internationally David was really the pioneer in this and a lone voice for quite a while.

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[80] *See*, p. 12 of ALJ Recommended Decision: www.oalj.dol.gov/PUBLIC/WHISTLEBLOWER/DECISIONS/ALJ_DECISIONS/CAA/03CAA05A.HTM *Lewis v. EPA*, Department of Labor Case Nos. 99-CAA-12, 2000-CAA-10, 2000-CAA-11.

[81] U. S. House of Representatives, Committee on Science. EPA's Sludge Rule: Closed Minds or Open Debate? March 22, 2000. No. 106-95; U.S. House of Representatives, Committee on Science. Intolerance at EPA - Harming People, Harming Science? Oct. 4, 2000. No. 106-103. As a result, Congress passed the Notification and Federal Employee Antidiscrimination and Retaliation Act of 2002 (Public Law 107-174). Retaliations against me and my local EPA director by government officials in charge of EPA's biosolids programs are specifically cited in Law, which was signed by President George W. Bush. The Lexington Institute awarded me its 2000 Leadership Award at a dinner held at the Hay Adams Hotel in Washington, DC to recognize the impact of my work on public policy.

Pages 34-35

Q. …I'm looking for a larger picture questions here, what would you state would be Dr. Lewis' major contribution in terms of the concerns he was raising to the National Academy review process?

A. I think, as I mentioned, David is the only scientist that to that time had raised the scientific issues that might lead to exposure and disease and so David's ideas in that regard, I think, were important to sort of framing the National Academy panel's in recognizing that…there are a lot of gaps here, there are plausible routes of exposures that we haven't assessed.

So David's role was – I mean in my book David was a hero in this regard basically. Despite the incredible flack he was getting, [he] put forward reasonable scientific theories, backed by some research to suggest that there were plausible routes of exposure and that in fact illness might be resulting. He, I mean as far as I'm concerned, he kind of turned the whole thing around.

Pages 74-76

Q. Now, given Dr. Lewis' expertise, as you understand it, and again you were involved in his promotional package and you've seen him speak and you've had a lot of interaction with him, and given your involvement with the National Academy, do you believe that Dr. Lewis is qualified to work on these follow-up issues regarding biosolids as recommended by the Academy?

A. Absolutely… and I said as much when I gave a presentation as part of the EPA briefing on the National Academy, I think it's essential that David be involved.

Q. Why would Dr. Lewis' involvement in the post Academy process be essential?

A. There are a couple of reasons…One from the scientific perspective, as I said, David is the only person who's done any scientific investigation of alleged health incidents. David has probably thought the most deeply of any of the scientists I'm aware of about how people might be getting sick and what we therefore might need to do to find out about that. And there is also such distrust now on the part of the citizens who believe they're getting sick, such distrust of the agencies, of the EPA, of the state agencies, that to engage in research involving those people is going to take the involvement of somebody like David who they trust. If EPA goes

in and sends in some of the folks who have done some of the investigations so far of other kinds of incidents … the doors will not be open.

Q. Now…what I want you to do is kind of give an overview response on this question as someone who's been involved for a long period of time in biosolids issues and has written on it and has workshops and worked at the Academy. You know, based upon all of that involvement, and someone who has had the ability to observe Dr. Lewis from his first presentation on biosolids back in '96 through his interactions with you on the Academy and the Inspector General and other processes, based upon that background and your observations, can you just provide a synopsis, an overview, of your assessment of Dr. Lewis' contribution to ensuring that the land application of biosolids is safe?

A. I think without David's involvement we wouldn't be at all where we are today in terms of looking at the safety issues anew. David raised – David gave a legitimacy to the allegations that has made it impossible to ignore the alleged health issues. And I think without David we would still be seeing EPA saying nobody's gotten sick and it's safe. So I think David has probably been the most important player in all this.

Despite Harrison's favorable opinions of our research at UGA, the NAS report deleted references to my peer-reviewed research articles and presentations. The electronic version of the report published on July 2 (Exhibit 20B) still cited our 2002 *ES&T* article.[82] This reference was removed when a member of the NAS panel, Wisconsin biosolids coordinator Greg Kester, sent an e-mail to Thomas Burke at Johns Hopkins School of Public Health and Susan Martel at the NAS. [83] Burke chaired the NAS panel.

In his e-mail, which he copied to his fellow NAS panel members, Kester wrote:

Hi Tom and Susan – In contrast to your message that the briefings went well, I am quite disturbed by what I have heard transpired at the EPA briefing this morning. Among other items, I heard that EPA staff in the biosolids program were referred to as 'the usual suspects' and basically denigrated for their work in the program. The message was also taken that their work should be devalued and the work of David Lewis should be elevated. I did not agree to such representation nor

[82] Lewis, D.L. & D. K. Gattie. 2002. Pathogen risks from applying sewage sludge to land *Environmental Science & Technology* **36**:286A-293A.

[83] Exhibit 250. Kester, Greg B to Tom Burke and Susan Martel. July 2, 2002. Copied to Larry Curtis, Chuck Haas, Ellen Harrison, Bill Halperin, John Kaneene, Steve McGrath, Tom McKone, Ian Pepper, Suresh Pillai, Fred Pohland, Bob Reimers, Rosalind Schoof, Don Sparks and Robert Spear.

do I believe much of the committee did. We specifically noted that EPA should not be criticized for the work they did. … While EPA may not have been moved by the criticism, there are those on the Hill who would love nothing more than to criticize EPA.

After receiving Kester's e-mail, Burke removed the *ES&T* reference before the final version of the NAS report was published.[84]

Kester was a member of John Walker's Biosolids Program Implementation Team (BPIT). While serving on the NAS panel, Kester urged EPA's Office of Research & Development to "respond to the public's health concerns" about sewage sludge and "do more to proactively confirm safety of land applied biosolids."[85] Kester also supported the previously mentioned Synagro white paper, which contained false allegations of scientific misconduct against me and Professor Gattie. Kester e-mailed it to numerous EPA officials (Exhibit 42H),[86] writing: *This paper presents many of the issues raised by Dr. Lewis in the New Hampshire case and provides compelling refutation. It was written by Bob O'Dette of Synagro.*

In 2008, *Nature* reported that our findings on illnesses had been independently confirmed and applauded the NAS for citing our work in their 2002 report. *Nature* later published the following correction:[87]

Correction. The 2002 biosolids study from the National Academy of Sciences (NAS) did not reference research into health impacts by Environmental Protection Agency (EPA) whistleblower David Lewis, as reported in our News story 'Raking through sludge exposes a stink' (Nature 453, 262–263; 2008). The citation was included in a prepublication draft that is still posted on the EPA's internet site, but the NAS panel voted to remove the reference before final publication. An NAS spokesman[88] said the panel decided the information was not relevant as the panel was not charged with evaluating health impacts.

Harrison posted the following response to *Nature*'s correction at *Nature.com*:[89]

Editor:

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[84] E-mail: Susan Martel, National Academy of Sciences, to Ellen Harrison, Cornell Waste Management Institute. March 5, 2003.

[85] Exhibit 249. Russo e-mail to Lewis dated 10/03/02 and titled "Notes from 9/25 Biosolids Implementation Team (BPIT) meeting," p. 2.

[86]

[87] *Nature* Vol. 453, p. 577. May 28, 2008. www.nature.com/news/2008/080528/full/453577d.html

[88] William J. Skane, Executive Director, Office of News and Public Information, National Academy of Sciences, 500 Fifth St. N.W., Washington, D.C. 20001.

[89] E-mail from E. Harrison to Correspondence@nature.com. June 17, 2008.

Having served on the National Research Council panel that wrote the 2002 Biosolids report published by the National Academy of Sciences (NAS), I am compelled to correct an error that was contained in Nature News (Nature 453, 577; 2008). This short piece was a "correction" to a previously published Nature News story "Raking through sludge exposes a stink" (Nature 453, 262-3; 2008). It correctly stated that a reference to work by David Lewis, a US Environmental Protection Agency researcher, was not cited in the final published report. However, the "correction" stated that the NAS panel "voted to remove" that reference because it was not relevant to the committee's charge. In fact the panel was not even made aware of the change to the report between the "final prepublication draft" that we all approved that contained this reference and the published version. The NAS made this change to the report without permission from the panel. This is a violation of the NAS procedures requiring full committee consensus on reports. I would not have approved the removal of this reference since it was clearly relevant to the work of the committee. I do not know who approved the removal of this citation, but it was not authorized by the committee. Given the controversial nature of the sewage sludge (aka "biosolids") issue and of Lewis's work in particular, the unilateral action of NAS to remove the reference was highly inappropriate.

Sincerely,
Ellen Z. Harrison

A reporter who interviewed NAS panel chair Thomas Burke at Johns Hopkins in 2008 asked Burke why references to my papers were airbrushed from the final version of the 2002 report. Burke claimed that my studies did not include any controls and that I did not include residents that were asymptomatic. The source of this misinformation was Synagro's white paper.[90]

Our paper published in *BMC-Public Health* shows that instead of using "exposed" and "unexposed" controls, we used dose-response curves. This analysis considers changes in responses over a wide range of exposures, rather than just comparing two groups of individuals. Dose-response curves are considered to be the gold standard in controlled studies. To produce dose-response curves, we evaluated the proportions of family members who did and did not experience symptoms with distances the families lived from the treated field and with total exposure times.[91] It is difficult to imagine how

[90] "Analysis of David Lewis' Theories Regarding Biosolids" printed on Synagro letterhead, September 20, 2001. *Lewis v. EPA*, Department of Labor Case Nos. 99-CAA-12, 2000-CAA-10, 2000-CAA-11, Exhibit 93. See also, Exhibit 105 in Plaintiffs' qui tam case against EPA and UGA employees.

[91] Lewis DL, Gattie DK, Novak ME, Sanchez S, Pumphrey C. 2002. Interactions of pathogens and irritant chemicals in land applied sewage sludges (biosolids). *BMC Public Health* 2:11. www.biomedcentral.com/1471-2458/2/11

Dr. Burke missed this, assuming that he read our paper. A similar approach was employed in a multi-university study published in 2007,[92] which independently confirmed the findings we published in *BMC-Public Health*.

C. Georgia Senator Pressures UGA Research Foundation (2003)

On February 5, 2004, Attorney F. Edwin Hallman, Jr., sent Julia Gaskin and her UGA co-authors various documents proving that the data Robert Brobst provided for their JEQ article had been fabricated by the City of Augusta to cover up levels of heavy metals and nitrogen in its biosolids. (*See*, Exhibit 53C.) Among the documents, Mr. Hallman included a copy of a letter he sent to U.S. Representative Barbara Cubin on March 12, 2004. This letter supplemented my testimony about the fabricated data, which I presented at a congressional hearing.[93]

In his letter to Rep. Cubin, Hallman stated:

> [Page 2] *Mr. Brobst is the second author of the peer-reviewed journal article published by Julia Gaskin and other faculty members of the University of Georgia, which, as Dr. David Lewis testified before your Subcommittee, was based upon data about sludge applications by the City of Augusta which these persons represented to be scientifically reliable and accurate. These representations by Mr. Brobst and the UGA authors that Augusta's data were accurate were made when Mr. Brobst knew that the data were found by State government officials to be completely unreliable. …More importantly, sworn testimony in the Boyce and McElmurray lawsuits proved conclusively that the data were fraudulently created to hide the truth about the contents of Augusta's sewage sludge.*
>
> [Page 7] *The data … were "re-created" after the fact as the City tried to establish a record for the Court based on laboratory records that auditors found to be incomplete and completely unreliable. In the end, the City ended up with four different sets of calculations for the same data, none of which could be shown to be accurate. It is simply not possible that, out of this mess, Gaskin and co-authors created a scientifically reliable set of analytical data for publication.*
>
> [Page 27] *The City of Augusta re-hired a former Supervisor of the Messerly WWTP, Allen Saxon, in January of 1999, to attempt to create a record of sludge applications that never existed. Mr. Saxon*

[92] Khuder, S. *et al*. (2007) *Arch. Environ. Occup. Health* **62**: 5–11.

[93] Exhibit 50C. Letter from F. Edwin Hallman, Jr. to The Honorable Barbara Cubin, Chairman of the Subcommittee on Energy and Mineral Resources. U.S. House of Representatives, Re: The Impact of Science and Public Policy, Supplement to Testimony of Dr. David Lewis given on February 4, 2003; Reply to February 27, 2004 letter from James W. Ellison; and, Reply to EPA's Letter Denying the Request of the Center for Food Safety. March 12, 2004 (46 pages).

prepared spreadsheets in 1999 which allegedly showed cumulative loading calculations which were compiled and calculated for the first time in the 20-year history of the City of Augusta's land application program. See Saxon Deposition dated July 23, 1999, pp. 22-30 (Exhibit 18).

In February of 2004, F. Edwin Hallman, Jr. sent a letter to Julia Gaskin asking her to withdraw the publication of her study in JEQ. Mr. Hallman provided Gaskin and her coauthors proof that Augusta had fabricated the data, which Brobst provided for Table 2 of the JEQ article. UGA Associate VP Regina Smith, who is the UGA Research Foundation's Scientific Integrity Officer, investigated Mr. Hallman's allegations.

On April 19, Dr. Smith notified Dr. Gordhan Patel, the head of the Research Foundation, and other UGA officials including UGA Senior VP and Provost Dr. Arnett Mace, of her findings that Ms. Gaskin was innocent of any wrongdoing. In her memorandum, Dr. Smith excused Ms. Gaskin's use of the fabricated data based on the fact that they were fabricated by third parties independently of Ms. Gaskin. Ms. Gaskin then informed Mr. Hallman that she would not withdraw the fabricated data because UGA had found her innocent of Mr. Hallman's charges and because the journal makes no provisions for withdrawing papers containing fabricated data. (*See*, Exhibit 53E.)

When deposed in our qui tam case in January of 2009, however, Gaskin testified that she and Robert Brobst did know that there were problems with the data when they submitted their paper to JEQ:

DEPOSITION OF JULIA GASKIN BY MR. ED HALLMAN. PAGE 269. JAN. 20, 2009:

9 A. All I can say is what I have said before.
10 When we published this paper, Bob Brobst pulled
11 together this data summary. There was discussion
12 about the data, because we knew that there were some
13 problems, and we were -- you know, I was assured that
14 it had been looked at and evaluated so that it was
15 not totally fabricated.

When Brobst was deposed in April of 2009, he admitted that he knew the data were "sloppy," "poor quality" and "bad." [94] Judge Anthony Alaimo, in fact, threw out Brobst's testimony in *McElmurray v. USDA* in 2008, stating that Brobst based his opinions about Augusta's biosolids on Augusta's data, which he knew were unreliable and fabricated: [95]

[94] Deposition transcript of Defendant Robert Brobst, Apr. 14, 2009, p. 269.
[95] *R.A. McElmurray III et al. v. United States Department of Agriculture*. U.S. District Court, Southern District of Georgia. Case No. CV105-159. Order issued Feb. 25, 2008, p. 35.

> *Brobst opined in a letter that the McElmurrays' land was not contaminated." AR 1230-1240.* (p. 33)… *Because Brobst concedes that his conclusion is based on Augusta's unreliable, and to some extent invented, data, Brobst's finding has little merit on its own.*

In November of 2003, Regina Smith, who excused Gaskin's use of fabricated data, quashed UGA's press release on my last research article on sewage sludge, which Professor Gattie and I published in *Environmental Health Perspectives* (Exhibit 3A). Dr. Smith called me and explained that she objected to our article linking sewage sludge to illness. She also told me that Synagro's scientific misconduct petition (Exhibit 105) "was by no means a dead issue."[96] Smith's remark concerning Synagro's petition was a reference to pressure that Georgia Senator Kasim Reed was putting on UGA not to drop Synagro's allegations. According to letters Reed sent to UGA, including one on official Senate letterhead, Reed was hired by Synagro to handle the matter.[97] Other attorneys representing Synagro also pressured UGA President Michael Adams and other UGA officials, alleging that it was improper for UGA to allow me to conduct research on sewage sludge. (*See*, Exhibits 42F, 96, 97).

Less than a year prior to Regina Smith quashing UGA's press release on our research paper in *Environmental Health Perspectives*, UGA issued a national press release titled "Sludge study relieves environmental fears,"[98] which announced the publication of the Gaskin study. In UGA's press release, Gaskin was quoted:

> *"Some individuals have questioned whether the 503 regulations are protective of the public and the environment," said UGA scientist Julia Gaskin, who headed the research team. "This study puts some of those fears to rest."*

Clearly, the UGA Research Foundation discriminates between researchers who promote biosolids and support EPA's 503 sludge rule and those who do not. When deposed in our qui tam lawsuit in January of 2009, Gaskin admitted under oath that she believed that Augusta's biosolids harmed the McElmurray and Boyce farms.[99]

In April of 2009, Dr. Regina Smith was deposed about the pressure Sen. Kasim Reed put on UGA, and why the Research Foundation never dismissed Synagro's allegations against me and Professor Gattie. Smith stated that she and the Research Foundation's General Counsel, Dr. Judy Curry, determined that I was not a UGA employee.

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[96] Exhibit 53A. Record of communication by David Lewis of telephone conversation with Regina Smith, November 21, 2003.
[97] Exhibit 53B. Letters from Sen. Kasim Reed to Judy Curry, UGA Research Foundation dated Apr. 18, 2003; May 16, 2003; Jun. 2, 2003.
[98] University of Georgia. Sludge study relieves environmental fears. Cat Holmes, Georgia Faces. January 29, 2003. http://georgiafaces.caes.uga.edu/getstory.cfm?storyid=1770
[99] Deposition transcript of Julia Gaskin, Jan. 20, 2009, p. 293-294.

However, I was a Visiting Scientist in the Department of Marine Sciences and an Adjunct Senior Research Scientist in UGA's School of Ecology. Moroever, Professor Gattie was a UGA employee by anyone's definition. The Research Foundation's policy on "Procedures for Responding to Allegations of Scientific Misconduct" ("Procedures for Responding") defines "employees" as follows (Part "II" under "Definitions"):[100]

> *Employee means, for the purpose of these instructions only, any person paid by, under the control of, or affiliated with the UGA, including but not limited to scientists, trainees, students, technicians, support staff, and guest researchers.* [Emphasis in the original]

In March of 2003, Dr. Curry forwarded Synagro's petition to Dr. Rosemarie Russo, director of EPA's research laboratory in Athens (Exhibit 42N). Dr. Curry placed a follow-up call to Dr. Russo; and, Dr. Russo took notes of the conversation. Dr. Russo later provided the notes to me (Exhibit 42P). Smith was questioned under oath concerning this matter:

> **DEPOSITION OF REGINA SMITH, PH.D., BY MR. ZACHARY WILSON.** PAGES 66-67, 81-83. APR. 27, 2009:
>
> Page 66
>
> Q. [MR. WILSON:] So what is this?
> A. [DR. SMITH:] These are handwritten notes of Dr. Russo of a telephone call she had with Ms. Curry.
> A. Okay.
> Q. Have you ever seen this document before?
> A. No.
> Q. All right. You can see Ms. Russo indicates that, quote: We're under some pressure from Synagro to give them a decision.
>
> Page 67
>
> Q. What does that mean, what pressure?
> A. Doesn't mean a thing to me. That's not my words. That's Judy Curry's words, according to you.
> Q. Did you receive any pressure from Synagro to give them a decision?
> A. No. I was never in touch with any of -- anybody directly, I don't believe.
> Q. Do you know if Ms. Curry was ever in touch with anybody directly?

[100] Exhibit 98. UGA Research Foundation, Inc. "Research Integrity, Procedures for Responding to Allegations of Scientific Misconduct at the University of Georgia." Downloaded from UGA OVPR website on March 17, 2003.

13 A. I believe she was.
14 Q. Do you know who?
15 A. No.
19 Q. Do you know if she was under pressure from
20 Synagro?
21 A. No.

Dr. Smith later contradicted this testimony:

Page 81

5 [Mr. WILSON:] I believe you said, in your statement just
6 a few seconds ago, that you were under pressure from
7 Synagro. You remember saying that?
8 [Dr. SMITH:] No.
9 MR. WILSON: I would like to have the
10 court reporter read back her answer.
11 (Court reporter read as follows:
12 Answer: Somehow Gordhan Patel got a phone
13 call from either external -- public affairs, or maybe
14 the Provost, again, I do not remember, and said look
15 at this because they were aware that there was
16 activity and we were still getting pressure from
17 Synagro.)
18 MR. WILSON: Thank you. That's good.
19 BY MR. WILSON:
20 Q. So you were still receiving pressure from
21 Synagro?
22 A. I'm sorry. I wasn't listening. What did
23 you say?
24 Q. You were still receiving pressure from
25 Synagro?

Page 82-83

1 A. Are you repeating something that I said
2 earlier?
3 Q. Yes, ma'am.
4 A. Read it again, please.
5 (Court reporter read as follows:
6 Answer: Somehow Gordhan Patel got a phone
7 call from either external -- public affairs, or maybe
8 the Provost, again, I do not remember, and said look
9 at this because they were aware that there was
10 activity and we were still getting pressure from
11 Synagro. I read the article, and I read the press

release, and Gordhan Patel and I talked, I think, and my conclusions were just because you publish an article in some little-known journal is no reason to put out a press release.)
THE WITNESS: All right. Read it over again, the very first part of it.
(Court reporter read as follows:
Answer: Somehow Gordhan Patel got a phone call from either external -- public affairs, or maybe the Provost, again, I do not remember, and said look at this because they were aware that there was activity and we were still getting pressure from Synagro.)
THE WITNESS: All right. Forget that, that was a misspoke. I shouldn't have said that. There was still activity going on, the issue was not completely dead. From our perspective, we had done everything we needed to do, but attorneys were still pushing.

EPA investigated Synagro's allegations of scientific misconduct at the ORD research laboratory in Athens, GA, and at EPA Headquarters in Washington, DC. They determined that Synagro's allegations were not based in any facts and did not merit investigating me for scientific misconduct. Even Regina Smith testified that she did not believe Synagro's allegations of scientific misconduct against me and Professor Gattie were true and called the whole affair a "witch hunt."[101]

Yet, despite all of this, UGA still caved in to pressure from Kasim Reed and Beveridge & Diamond. UGA never dismissed Synagro's allegations of scientific misconduct against me and professor Gattie, which sprung forth from meetings John Walker and his boss at EPA headquarters had with Synagro executives in 2001. Moreover, as a result of pressure from Kasim Reed and others pushing Synagro's allegations at UGA, UGA decided it was no longer interested in seeking a tenured professorship for me in the Department of Marine Sciences.

Professor Robert E. Hodson, former director of the UGA School of Marine Sciences, testified in my U.S. Department of Labor case that UGA's handling of the allegations undermined support for my research and employment at UGA. UGA administrators, Dr. Hodson testified, were "kind of leery of being involved in anything that has sides to it … in other words an industrial side…such as the Synagro thing … I mean, basically, people whose livelihoods depended on contracts." See, Exhibit 42 I, p. 29-30.

Moreover, in his testimony, Professor Hodson explained that the College of Agricultural and Environmental Sciences told him to "stay away from things that could

[101] Deposition of Regina Smith, Ph.D., Apr. 27, 2009, p.73.

end up biting us in the rear-end…because we're dependent on this money … grant and contract money…money either from possible future EPA grants or [from] connections there might be between the waste-disposal community [and] members of faculty at the university."

Clearly, the UGA Research Foundation and UGA administrators let local political pressure and financial conflicts of interest drive their decisions regarding which research the University would support and what kinds of scientific conclusions were acceptable.

D. Alabama Reconnaissance Study Gets It Right (2009)

The "Decatur AL Reconnaissance Study" [102, 103] serves as a model for how EPA should have handled problems associated with the Messerly Wastewater Treatment Plant in Augusta and the cattle deaths on the McElmurray and Boyce farms. In this study, which is currently ongoing, EPA Region 4 in Atlanta is investigating approximately 5,000 acres of privately owned agricultural fields in Lawrence, Morgan and Limestone Counties near Decatur, AL.[104] The land is contaminated with perfluorinated chemicals (PFCs) from treated sewage sludge (biosolids) applied by the Dry Creek Wastewater Treatment Plant over the past ten years.

To assess potential adverse health effects to humans and animals, EPA Region 4 is collaborating with USDA to conduct the research effort. Principal Investigators include scientists at EPA's ORD and Region 4 laboratories in Athens, GA and at EPA's Human Exposure and Atmospheric Science Division in Research Triangle Park, NC. The ORD laboratory in Athens is the same laboratory where I worked. EPA Region 4 personnel in Atlanta and EPA scientists in Athens are also working with the City of Decatur, AL and local industries and farmers to collect and analyze biosolids, soil, tissue and milk samples from beef and dairy farms. Drinking water samples are also being collected and analyzed. Federal, state and local government officials are holding regular public meetings to keep the farmers and other interested parties abreast of the results of the ongoing study.

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[102] U.S. EPA National Exposure Research Laboratory (NERL), Ecosystems Research Division (ERD). 960 College Station Road, Athens, GA 30605. Memorandum. "Final Report: Results of Analysis of Sludge and Sludge-Applied Soils from the September 2008 Decatur AL Reconnaissance Study." Eric J. Weber, Acting Director, ERD to Linda S. Sheldon, Acting Director, NERL. Feb. 10, 2009.

[103] U.S. EPA Region 4. Results of Analyses of Sludge and Sludge-Applied Soils from the September 2008 Decatur, AL Reconnaissance Study. Feb. 10, 2009. www.epa.gov/region4/water/documents/Soil%20and%20Sludge%20Sampling%20Decatur%20AL%20September%202008.pdf

[104] U.S. EPA Region 4. "Perflourochemical Contamination of Biosolids Near Decatur, Alabama." www.epa.gov/region4/water/PFCindex.html

APPENDIX I: WHY THE GASKIN STUDY WAS FRAUDULENT

FGCA ACT and FCA Violations:

Madolyn Dominy in EPA Region 4 made EPA Defendant Robert Bastian aware of the McElmurray and Boyce lawsuits against Augusta (Exhibit 24L). EPA Defendants Walker, Bastian and Brobst then contacted UGA Defendant Julia Gaskin and offered to fund UGA to collect soil and forage samples in Burke County where the McElmurray and Boyce farms were located.

On December 17, 1998, Defendant Brobst and Madolyn Dominy traveled to UGA and again offered Gaskin EPA funds to collect soil and forage samples from farms in Burke County.[105] According to Dominy, the Gaskin study was most likely conceived by Robert Brobst who informed Gaskin that EPA had funds for the study. An outline prepared by Defendant Brobst shows that Brobst and Dominy originally planned to offer Gaskin and EPA contract for $12,000 to collect the samples EPA needed in his investigation of the McElmurray and Boyce cases.[106, 107] Dominy and Brobst, however, met with Gaskin on December 17, 1998 to seal the deal and decided instead to use a cooperative agreement so that Brobst could be directly involved with the study.[108]

In accordance with the Federal Grants and Cooperative Agreement (FGCA) Act of 1977, EPA prohibits applicants from applying for Federal assistance to support projects that will have any direct benefit to EPA, *e.g.*, collecting and analyzing environmental samples EPA needs to support its programs.[109] This is true *regardless* of whether the principal purpose of the project directly benefits the public. EPA states in its Application Kit for Federal assistance (Exhibit 9C, p.1):

> *If the direct beneficiary is EPA, then a contract is the appropriate legal instrument to use, and an SF-424 is not appropriate.*

Hence, by submitting an application for Federal assistance (grant or cooperative agreement) for the Gaskin study, which Defendants knew would directly benefit EPA's investigation of the McElmurray and Boyce cases, Defendants violated the FGCA Act and the False Claims Act (FCA). Defendants violated the FCA because EPA's

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[105] Deposition of Madolyn Dominy, Sep. 3, 2009, p. 118-122.

[106] Anonymous, undated document outlining the BIRT Investigation of McElmurray and Boyce cases, including Region 4 Chronology. (21 pages.) Brobst produced this document on Sep. 23, 2009 after discovery in this case ended.

[107] Anonymous, undated document titled "EPA Current Plan of Action City of Augusta Dairy Cattle Case." Brobst produced this document on Sep. 23, 2009 after discovery in this case ended.

[108]

[109] *See*, EPA Order 5700.1 (Exhibit 228) and Exhibit C to Affidavit of David L. Lewis, Ph.D.: Memorandum from Christian Holmes (EPA) to Administrators re: when to use contracts or cooperative agreements and grants. Dec. 2, 1992.

application kit warns applicants not to apply for Federal assistance for projects that have any direct benefit to EPA. Thus, applying for a Federal grant or cooperative agreement for the Gaskin study, in and of itself, constituted a false claim that the Gaskin Study would not directly benefit EPA.

EPA also requires applicants to disclose whether principal investigators or other key personnel have any appearances of personal or organizational conflicts of interest. Applicants are required to answer questions about QA/QC measures and certify that they will make every reasonable effort to involve economically and educationally disadvantaged groups in performing the work. It is impossible for applicants to address these issues truthfully when applying for Federal assistance to conduct research for the purpose of supporting the 503 sludge rule with unreliable, false and fabricated data. Consequently, the Gaskin study and other similar studies initiated by the EPA Defendants to support the 503 rule inherently involve numerous false claims.

Scientific Fraud:

Gaskin, Brobst and other UGA employees conducted the Gaskin study in 1999 and published it in the *Journal of Environmental Quality* (JEQ) in 2003 (Exhibit 69). In the study, Gaskin and her coworkers collected soil samples from beef cattle farms treated with Augusta's biosolids. To determine whether Augusta's biosolids caused heavy metals regulated by EPA to accumulate in the soils in Burke County, Gaskin and her coworkers collected soil samples from farms in Burke County that had not been treated with biosolids. The untreated soils were used to indicate the natural background levels of these metals in Burke County.

Based on this comparison, Gaskin and her coauthors concluded that most metals regulated under the 503 rule were not elevated above background levels. Molybdenum, which was found at significantly higher concentrations in soils treated with biosolids, was an exception. A total of 30 fields on 16 farms were evaluated. The problem with this conclusion is that Gaskin, Miller and Brobst were aware of soil samples from the McElmurray and Boyce farms going back to approximately ten years prior to the Gaskin study. These samples indicated that soils on the dairy farms contained high levels of heavy metals, including cadmium, molybdenum, copper and thallium, which posed a risk to animal health. In November of 1998, Gaskin e-mailed one of her UGA colleagues, Dr. Glen Harris, regarding high levels of molybdenum on the McElmurray and Boyce farms [Exhibit 25B]. Harris responded:

> *… dairy cows sounds like a bad choice for this feed. To answer your question directly, I think this is going to be a problem for a long time (25 + years) and there is not an easy way around the problem. I think the best you can do is 1) try to maintain the pH around 6.0, 2) don't grow forages, 3) don't feed these forages to dairy cows, and 4) if you feed the forage to something other than dairy cows, make it a small percentage of the ration and supplement with copper.*

Beginning in 1998, however, Millers' analyses indicated that levels of metals in soil samples began dropping to near background levels. Apparently, leaching, harvesting forage crops and other agricultural or natural processes had stripped away much of the accumulation of heavy metals shortly before the Gaskin study was conducted. Gaskin and her coauthors did not acknowledge any of Miller's data collected prior to 1999.

In the Gaskin study, UGA only tested for the nine heavy metals regulated under EPA's 503 sludge rule. The 503 rule was developed by the EPA Defendants in collaboration with Alan Rubin in EPA's Office of Water and Rufus Chaney at the USDA. In other words, the EPA Defendants used the EPA cooperative agreement solely for the purpose of having UGA help them defend the 503 rule.

Other metals that were known to be a problem in Augusta's sewage sludge, which showed up in high concentrations on the McElmurray and Boyce farms, included thallium, antimony, barium and chromium. EPA does not regulate thallium, which was found to be as high as 61 ppm in soil samples on the McElmurray farm, because it was rarely detected in EPA's survey of wastewater treatment plants in 1988. A more recent survey, which EPA released in 2009 (Exhibit 88), shows that thallium is now present in most sewage sludges. Analyses of Augusta's sewage sludge also showed that it contained Cr[VI], which is the carcinogenic form of chromium.

When JEQ published the Gaskin study, UGA issued a national press release titled: "Sludge study relieves environmental fears."[110] The same year that the Gaskin study was published, the UGA Research Foundation quashed UGA's press release on our final research article, which Professor Gattie and I published in the National Institutes of Health's environmental health journal, *Environmental Health Perspectives*. Gaskin's press release included a section supportive of EPA's 503 sludge rule:

> ***503 regulations***
>
> *"Some individuals have questioned whether the 503 regulations are protective of the public and the environment," said UGA scientist Julia Gaskin, who headed the research team. "This study puts some of those fears to rest."*

The experimental design also revealed that the Gaskin study was all about supporting the 503 rule. To see whether the 503 rule, which was promulgated in 1993, had any impact on the farms, Gaskin and Brobst divided the 30 fields into three groups: fields treated prior to the 503 rule (*i.e*., treated >6 yrs), fields treated only after the 503 rule came into effect (*i.e*., treated <6 yrs), and control fields that were never treated with biosolids. Gaskin and her coauthors evaluated the quality of biosolids applied to the fields, and annual application rates, based on Augusta's environmental monitoring reports from 1987 through 1997. EPA Defendant Robert Brobst obtained these records from the

[110] University of Georgia. Sludge study relieves environmental fears. Cat Holmes, Georgia Faces. January 29, 2003. http://georgiafaces.caes.uga.edu/getstory.cfm?storyid=1770

Georgia Environmental Protection Division and summarized them in Table 2 of the JEQ article (Exhibit 69).

One of the major concerns about Augusta's land application program was that nitrogen levels in the City's biosolids were too high for agricultural use. Based on Brobst's summary of Augusta's data, however, Gaskin *et al*. reported that Augusta applied the nitrogen at safe (agronomic) rates. *See*, Exhibit 69, p. 149. Based on Augusta's data, Gaskin and her coauthors also concluded: *Although biosolids containing higher metals concentrations than would currently be allowed were applied to the fields in the >6YR group, our study indicated that toxic levels of metals have not accumulated in the soils.* (*See*, Exhibit 69, p. 151) This conclusion was based on Augusta's data concerning metals concentrations in its biosolids (Table 2 of the JEQ article) and comparisons of soil metals concentrations in fields treated before and after the 503 rule passed (>6 yr and <6yr, respectively).

The reason these conclusions are fraudulent is because the McElmurray and Boyce lawsuits had already established that Augusta's environmental monitoring reports, which Brobst summarized in Table 2 of the JEQ article, were unreliable and, in some cases, fabricated. Brobst and Gaskin knew this when they submitted their paper for publication. For example, Gaskin testified:[111]

> *All I can say is what I have said before. When we published this paper, Bob Brobst pulled together this data summary. There was discussion about the data, because we knew that there were some problems, and we were -- you know, I was assured that it had been looked at and evaluated so that it was not totally fabricated.*

Gaskin and her coworkers also collected and analyzed forage samples grown on farms in Burke County treated with Augusta's sewage sludge. These results were compared with concentrations of metals present in forage samples collected from farms that had not been treated with biosolids. Based on this comparison, Gaskin and her coauthors found that most metals regulated under the 503 rule were not elevated in forage samples grown on farms treated with Augusta's biosolids. Cadmium and molybdenum were found at or above levels that would be toxic to beef cattle in forage samples collected from several of the fields from farms treated with Augusta's biosolids.

The reason these conclusions are fraudulent is because Gaskin, Miller and Brobst and others at EPA and UGA were aware of forage samples from the McElmurray and Boyce farms going back to approximately ten years prior to the Gaskin study. These data indicated that forages on the dairy farms contained high levels of heavy metals, including cadmium and molybdenum, which posed a risk to animal health. Results from these samples, however, indicated that levels of metals in forage samples began dropping to near background levels by 1998 as soil metals concentrations dropped. Gaskin and her coauthors did not acknowledge the existence of any forage samples collected prior to the Gaskin study in 1999.

[111] Deposition of Julia Gaskin, Jan. 20, 2009, p. 269.

APPENDIX II A-C: HIDDEN STUDIES RAISE QUESTIONS

The 1981 University of Florida Study (Exhibit 259), 1998 Oak Ridge National Laboratory Study (Exhibit B to my Affidavit), and 1999 EPA Region 4 Diagnostic Evaluation of Augusta's sewage sludge facilities (Exhibit G to my Affidavit) are examples of investigations into problems with biosolids carried out or funded by EPA. In each case, potential problems with land application of biosolids were reported, which could put public health and the environment at risk.

These three studies share the same fate as my peer-reviewed research articles (Exhibits 3A, 59, and *ES&T*, 2002), certain conclusions in a Colorado State University report on the McElmurray and Boyce cases (Exhibit 260) and certain results in the Gaskin Study (Exhibit 69). Namely, Defendants in our False Claims Act lawsuit have mischaracterized them, denied their existence, prohibited public access to them, or retaliated against their authors.

APPENDIX IIA. **1981 University of Florida (UF) Study**

The UF Study (Exhibit 259) was a 5-year, multidisciplinary project concerning the effects of heavy metals and pathogens in land-applied sewage sludge on cattle, swine, and poultry.[112] It was conducted by the University of Florida's Institute of Food and Agricultural Sciences from 1976-80 and funded by the EPA Office of Research & Development's Health Effects Research Laboratory in Cincinnati, OH.[113]

UF researchers tested the effects of sewage sludges on soil nutrient compositions and measured their uptake by corn, bahiagrass, sorghum, and bermudagrass grown on sludge-treated fields. They also evaluated beef cattle, swine and poultry fed sludges and feed grown on fields treated with sewage sludge. They also fed steers recycled manure from cattle exposed to sewage sludge. Biosolids, animal feed, grasses, animal tissues, soil and groundwater samples were tested for bacteria, viruses and protozoa.

The sludges were obtained from waste treatment plants in Pensacola, Florida, the UF in Gainesville, and Chicago, Illinois. Seven of the ten metals that were later regulated under the 503 rule (Cd, Cr, Cu, Pb, Hg, Ni, Zn) were evaluated. Metals concentrations in these sludges are presented in Table 1 and compared with the metals concentrations listed in Table 2 of the Gaskin paper and 503 limits.

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[112] US EPA Report: EPA-600/S1-81-026, 232 p. (Apr. 1981). "Sewage Sludge – Viral and Pathogenic Agents in Soil-Plant-Animal Systems." G.T. Edds and J.M. Davidson, Institute of Food and Agricultural Systems, University of Florida. Project Summary available online at http://nepis.epa.gov/ by searching 600S181026 or key words in the title of the report.

[113] Note: After the UF study was completed, the U.S. EPA Municipal Environmental Research Laboratory in Cincinnati, OH, issued a contract to the City of Denver to test the effects of Denver's sewage sludge on cattle. The primary author was J.C. Baxter, who worked for the Metropolitan Denver Sewage Disposal District (District No. 1). The City reported to EPA that no adverse effects occurred from feeding cattle forage grown on its sewage sludge. *See*, J.C. Baxter, D. Johnson, W.D. Burge, E. Kienholz and W.N. Cramer. Effects on cattle of exposure to sewage sludge. EPA-600/S2-83-012. Apr., 1983.

Table 1. Comparison of sewage sludge metal concentrations (ppm) in University of Florida Study, Gaskin Study, and 503 Sludge Rule[114]

Metal	Pensacola Mean[a]	UF Mean[a]	Chicago Mean[a]	Augusta Mean/Max.[b]	503 Mean[c]	503 Max.[d]
Cd	12	13	163	88/1200	39	85
Cr	220	218	2888	--	[1200] [e]	[3000] [e]
Cu	548	517	1365	431/1243	1500	4300
Pb	485	465	774	199/828	300	840
Hg	7.9	82	5	8/38	17	57
Ni	35	32	376	126/657	420	420
Zn	2440	1217	2501	1705/3469	2800	7500

[a]1981 EPA-University of Florida Study, Table 1, p. xi. Mean Concentrations.
[b]2003 Gaskin *et al., J. Environ. Qual.*, Table 2. 1987-1993 Monthly Mean/Maximum Concentrations. Note: Data were falsified to appear lower.
[c]1993 EPA 40 CFR, Part 503.13, Table 3. Monthly Mean Concentration Limits.
[d]1993 EPA 40 CFR, Part 503.13, Table 1. Maximum (Ceiling) Concentration Limits.
[e] Cr was deregulated in 1994.

G.T. Edds in the University of Florida's College of Veterinary Medicine and Assistant Dean J.M. Davidson prepared the EPA report, which was internally peer-reviewed by EPA's Health Effects Research Laboratory in Cincinnati. Altogether, the UF study had 14 project leaders.

According to UF's final report to EPA, the researchers found:

- *Cadmium levels in forage from soils pretreated with certain sludges resulted in high levels in liver and kidney tissues of cattle consuming such forage… Clinical chemistry tests and pathogenic lesions suggested cumulative toxic effects including liver damage.* [Production measurements, *e.g.*, carcass weights, were unaffected.]

- *The 1979 steer trial, where animals grazed on forage from soils pretreated with Pensacola sludge and spraying of the sludge on growing plants, resulted in presence of Sarcosporidia sp. In the cardiac and skeletal muscles. This may be of public health significance.*

- *Having demonstrated that increased cadmium levels occurred in tissues from cattle and swine consuming feeds from sludge-amended soils, these liver and kidney tissues were dried, ground, and incorporated into mouse diets. The finished diets contained a 15 percent level of protein and five percent levels of kidney and liver tissue. Metals were translocated through the cattle and swine tissues with increased levels of cadmium,*

[114] Source: Lewis Goodroad, Ph.D., August 20, 2009.

nickel, chromium, and lead in liver and kidney tissues of mice. These increases in mice were associated with decreases in number of mice weaned in the treated versus control groups.

- *Incorporation of dried sewage sludge at ten to 20 percent of swine rations produced depressed weight gains and the 21 day weaning weights were lower in pigs from sows consuming the sludge-containing diets. The kidney cadmium levels of sows receiving the ten and 20 percent sludge levels were increased significantly, i.e., four ppm for controls and 17 and 24 ppm for the sludge rations; both lead and cadmium were increased in the liver and kidneys of weanling pigs. Reproductive performance was more suppressed in the second generation sows than in the first.*

- *Growth trials with Cobb broiler chicks compared the effects of poultry rations with 0, three, and six percent dried Chicago sludge. Increased levels of cadmium in the liver and kidneys occurred in those chicks receiving the increased levels of the sludge.* [Production measurements, *e.g.*, body and egg weights, were unaffected.]

Authors of the 1981 EPA-UF report concluded that present EPA guidelines on allowable levels of certain contaminants, including metals, would assure that urban sludges could be used for crop or forestlands. At the time the report was written, land application of sewage sludge was regulated under 40 CFR Part 257. Based on their experimental results, however, the authors cautioned that sewage sludge may not be safe for certain crops and meat producing animals and urged that additional studies be undertaken to protect animal and human health:

> *Since certain metals, including cadmium, lead, nickel, and chromium, have been shown to be accumulative in animals consuming forage or grain from sludge-amended soils and therefore have potential hazard to animal health and mankind, it is proposed that further research be done to establish safe guideline levels in feeds intended for meat producing animals.*
>
> *The presence of Sarcocystis sp. in muscle from cattle and swine consuming forage and grain fertilized with sewage sludge incorporated into their diets suggest that this potential animal and human health hazard may be associated with consumption of urban sludges. Methods to eliminate this hazard or prevent its infectivity must be established prior to utilization of sludges for crop or animal production.*

Sarcocystis (*Sarcosporidia*) was found in cardiac tissue of one of the Boyce cows; and, other intestinal parasites commonly found in sewage sludge were discovered in cattle from both Plaintiffs' dairy farms.

Staphylococcus aureus (1 sample), *Streptococcus pyogenes* (2 samples) and group B *Salmonella enteritides* (2 samples) were isolated in the UF study; but, because of their

rare occurrence, the researchers dismissed them as posing a risk from any of the sludges. However, they did not test the sludges for regrowth of these pathogens. For example, a study conducted by Bowling Green State University in 2004 found high concentrations of *S. aureus* in dusts blowing from a land application site at increasing concentrations for approximately two weeks after application of sewage sludge.[115]

The UF researchers also did not investigate whether *S. aureus* infections could be induced by chemicals in sewage sludge that impair the immune system. This phenomenon was addressed in my research as well as in the expert reports on the McElmurray and Boyce cases and the autopsies that UGA performed on two beef cows that contracted infections in the Gaskin study and exhibited kidney damage from zinc toxicity. UGA's diagnostic laboratory in Tifton and Michigan State University tested several of the Boyce cows and also found toxic levels of zinc, copper and cadmium in kidney and liver samples.

Four of the seven metals later regulated under 503 (Cd, Cr, Pb, and Ni) accumulated in soils, were taken up in high concentrations by bermudagrass and other forage plants, and accumulated to toxic levels in beef cattle and other farm animals that consumed the forage. Mean Cd, Cr, and Ni concentrations in the Florida sludges were well below 503 limits while Ni was below 503 limits in the Chicago sludge as well. Hence, the UF study provides strong evidence that the 503 sludge rule is not protective of public health in the southeastern United States.

Lead concentrations in the Florida sludges were approximately one and one-half times the 503 limits for mean concentrations but well under the maximum (ceiling) concentration. There again, the UF study produced clear evidence that the 503 rule may not be protective of public health. At a minimum, it completely undercuts the fundamental precepts of biosolids science created under the National Biosolids Public Acceptance Campaign that heavy metals in biosolids cannot be taken up in toxic amounts by plants or absorbed at toxic levels when ingested by humans or animals.

The UF study found that the toxic effects observed in farm animals were not manifested in productivity measurements such as carcass weights. This outcome probably reflected the fact that the five-year study involved multiple experiments in which farm animals ingested metals over short periods lasting for only several months. Nevertheless, beef cattle are often cycled in and out of farms over short periods. Consequently, meat products from animals fed forage crops fertilized with biosolids for several months could contain toxic levels of heavy metals even though the animals appear healthy when processed for public consumption.

The lack of documented cases of sick farm animals, therefore, does not mean that the 503 rule is protective of public health. Instead, it means that the 503 standards may be set at levels that usually just hide the problems associated with heavy metals. If true, then only in cases where the 503 standards are grossly exceeded would increases in animal morbidity and mortality rates likely draw attention. And, problems would most likely

[115] *See,* excerpts from the Bowling Green study in Section I D, Biosolids Science.

show up on farms with brood or dairy cows, such as the McElmurray and Boyce farms, where cattle are exposed to sewage sludge for many years.[116]

The Acting Director of EPA's Health Effects Research Laboratory, James B. Lucas, commented in the *Foreword* to the UF report:

> *The U.S. Environmental Protection Agency was created because of increasing public and governmental concern about the dangers of pollution to the health and welfare* [of] *the American people…Recycling digested municipal sludges in agricultural systems is an attractive alternative method for their utilization if "safe" management techniques can be devised that do not adversely affect plant productivity or animal and human health.*

Various results of the EPA-sponsored UF study were presented at agricultural research society meetings from 1977-1981 and published in proceedings and in specialty journals, such as the *Animal Science Research Report* and *Crop Science Society of Florida*. Basically, the entire study was buried in the grey literature and obscure journals.

Although the UF study directly related to the Gaskin study, it was not acknowledged by Gaskin and her coauthors in their final report to EPA or the JEQ article. When publishing scientific data, it is considered scientific misconduct whenever authors knowingly fail to acknowledge other data, published or unpublished, that contradict any of their conclusions. At least EPA Defendant Brobst, who coauthored the JEQ article, certainly knew about the UF study, which was funded by EPA's Office of Research & Development. None of the Defendants produced the UF study in discovery in this case.[117]

The UF study was also not acknowledged in the 2002 NAS Report, which addressed all of the known studies on health effects of sewage sludge to date. According to NAS panel member Ellen Harrison, the panel was never informed of the UF study.[118] Obviously, EPA Defendant Bastian selectively provided the NAS with unpublished data from Gaskin and Professor Gould to discredit the McElmurray and Boyce cases and withheld credible scientific data supporting the Plaintiffs.

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[116] *See,* Augusta data in Table 1 above, "Comparison of sewage sludge metal concentrations…" Cd, Cr, Pb, and Ni, which accumulated to toxic levels in beef cattle in the UF study, were present at similar or higher levels in sewage sludge spread on the McElmurray and Boyce farms. This comparison is based on data that EPA Defendant Brobst provided in the JEQ article, which Plaintiffs' proved were falsified by the City of Augusta to make metals concentrations in Augusta's biosolids appear to be lower than they really were.

[117] This raises the question as to whether EPA provided the UF report in discovery when 503 requirements for chromium were successfully challenged in court and chromium was deregulated in 1994. The UF study found chromium *to be accumulative in animals consuming forage or grain from sludge-amended soils and therefore have potential hazard to animal health and mankind.* (*See, e.g., Recommendations,* p. xii).

[118] E-mail from Ellen Harrison to David L. Lewis. August 21, 2009.

The 1981 UF report provided EPA Defendants with ample reliable data from EPA's Health Effects Research Laboratory to strengthen the Agency's existing regulations (40 CFR, Part 257[119]) to better protect public health and the environment from pathogens and industrial pollutants, such as cadmium, chromium, and lead, in sewage sludge (biosolids). Instead, Defendants Bastian, Walker and others in EPA's Office of Water actually raised the cumulative loading limits for cadmium, deregulated chromium, and eliminated the cumulative loading limits for molybdenum.

The UF study also found that corn plants took up heavy metals to potentially toxic levels, and a number of studies had shown that plant uptake is driven by soil pH and cation exchange capacity (CEC). Yet, soil pH and CEC requirements included in 40 CFR Part 257[120] were eliminated when the 503 rule was promulgated in 1993. Molybdenum and cadmium were of particular concern in the McElmurray and Boyce cases, as was soil pH and CEC.

In summary, Defendants Bastian, Walker and others in EPA's Office of Water raised the allowable levels of cadmium and other metals in sewage sludge above the levels that the EPA-UF study demonstrated were toxic to farm animals and a potential threat to human health; and, they eliminated other important safeguards in 40 CFR Part 257, such as soil pH and CEC requirements. Then Bastian, Walker and their superiors established the National Biosolids Public Acceptance Campaign in which thousands of studies were carried out at land grant universities using false statements to obtain federal grants to publish false, incomplete, misleading and even fabricated data to support the 503 rule and cover up adverse effects on public health and the environment.

APPENDIX IIB. **1998 Oak Ridge National Laboratory Study**

The "Oak Ridge Study" (Exhibit D to my Affidavit) was the only major project EPA's Office of Water (OW) ever funded out of the $10 million in research funding promised ORD in 1992 if ORD would approve the proposed 503 sludge rule.[121] In 2002, the EPA Inspector General (IG) issued a report based on EPA's investigations into allegations that I filed with the IG in March of 2001 through the National Whistleblower Center.[122] Specifically, I alleged that OW had reneged on its promises to have ORD assess risks associated with land application of sewage sludge and, instead, had funded the Water Environment Federation to promote biosolids. The IG agreed and concluded that because OW failed to do the research, EPA could not assure the public that land

[119] A Guide to Regulations and Guidance for the Utilization and Disposal of Municipal Sewage Sludge. EPA 430/9-80-015. September 1980.
[120] *Federal Register*, Vol. 44, No. 170, p. 53452. Thursday, September 13, 1979.
[121] Exhibit D to my Affidavit. Efroymson, Rebecca A., Bradley E. Sample, Robert J. Luxmoore, M. Lynn Tharp, and Lawrence W. Barnthouse. Final Report: Evaluation of Ecological Risks Associated with Land Application of Municipal Sewage Sludge. Oak Ridge National Laboratory. ORNL/TM-13703. September 30, 1998.
[122] U.S. EPA Office of Inspector General Status Report - Land Application of Biosolids, 2002-S-000004, Mar. 28, 2002.

application of biosolids is safe. Page 18 of the IG report states that the Oak Ridge Study was not peer reviewed, exists only in draft form, and is not endorsed by EPA.

Plaintiff Andy McElmurray and I obtained a copy of the report from the Oak Ridge National Laboratory for the first time this month (Oct. 2009). The report, dated September 30, 1998, shows that the Oak Ridge National Laboratory's Environmental Sciences Division transmitted it to EPA Assistant Administrator for Water, G. Tracy Mehan, III, Acting EPA Assistant Administrator for Enforcement and Compliance, Sylvia K. Lowrance and Acting ORD Assistant Administrator Henry Longest, II. Thus, EPA's Office of Water received the Oak Ridge report several weeks before Walker and Brobst first contacted Julia Gaskin and discussed their interests in UGA helping EPA with its investigations of the McElmurray and Boyce cases.

According to page ii of the Oak Ridge report, a *Peer Review Team* consisting of 14 national experts[123] reviewed the Study in 1995 and 1997; and, the Oak Ridge National Laboratory submitted its *FINAL REPORT* to EPA in September of 1998.[124] The 2002 IG Report does not reference the source of its information that the Oak Ridge report was never peer-reviewed or finalized.

The Oak Ridge report lists Dr. Rufus Chaney as a member of the Study's peer-review team and a contributor of data. Also, according to the report, Robert Bastian and two other EPA Office of Water employees, Cynthia Nolt and Robert Southworth, participated in workshops that reviewed the Study. In addition to William P. Miller, Wade Nutter at UGA is listed as having contributed to the Oak Ridge Study.

As it turns out, the Oak Ridge Study included a risk assessment of land application of biosolids in Athens, GA. The assessment was based on data that the Oak Ridge National Laboratory gathered from land application sites near Augusta and the authors' findings contradict those of the Gaskin study. Defendant William P. Miller is listed in the Oak Ridge report as a contributor, but he did not acknowledge the study in Gaskin's final report to EPA or the JEQ article.

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[123] Oak Ridge Peer Review Team: Mary Benninger-Truax, Hiram College; Anthony Carpi, Cornell University; Rufus Chaney, U.S. Department of Agriculture; David Chrohn, University of California, Riverside; Anne Fairbrother, ecological planning and toxicology; Philip Frequez, Los Alamos National Laboratory; Charles L. Henry, University of Washington; Charles M. Knapp, independent consultant; Sam Loftin, U.S. Forest Service, Albuquerque, NM; John Schmidt, former postdoctoral fellow, USEPA; William Sopper, Pennsylvania State University; Ronald Sosebee, Texas Tech University; Sylvia Talmage, Oak Ridge National Laboratory; and David Wester, Texas Tech University.

[124] The Environmental Sciences Division (ESD) of the Oak Ridge National Laboratory, Oak Ridge, TN, prepared the Oak Ridge Study's Final Report for the U.S. Environmental Protection Agency's Office of Research & Development (ORD) in Cincinnati, OH. The study was sponsored by ORD under Interagency Agreement DW89936514-01-1 (DOE1824-H085-A1) and under Lockheed Martin Energy Research Corp. Contract DE-AC05-96OR22464 with the U.S. Department of Energy.

Based on the Oak Ridge National Laboratory's assessments of four major ecosystems across the United States, authors of the Oak Ridge report (p.197) drew the following conclusions regarding the 503 regulatory limits in place in 1998 when the Gaskin study was done:

> ***Regulatory Levels of Contaminants.*** *There is a substantial uncertainty associated with estimates of the quantity of elements that remain in surface soils after a number of years (or for different periods of time in the case of multiple applications)…The bioavailability of elements that were applied in sewage sludge to soils decades ago is not easily estimated. An ecological risk assessment of cumulative loading limits for the application of municipal sewage sludge in forests and rangeland would not be very definitive at this time.*
>
> *A risk assessor could attempt to estimate protective cumulative loading limits based on multiple lines of evidence (single toxicity, ambient media toxicity, and field surveys), but such estimates would also not be definitive. These lines of evidence come from different ecosystems, soils, sludges, application rates, and organisms, and any estimate of protective loading limits would not be very precise.*

After carefully reviewing the Oak Ridge report, I find it to be an exhaustive scientific effort to address risks that biosolids pose to plants, animals, and critical environmental processes at both the individual species and ecosystem level. The science, in my opinion, is superb. To my knowledge, no other attempt has ever been made to conduct such a study. The EPA ORD laboratory where I worked in Athens was prepared to do very similar studies; however, managers and scientists at our laboratory "gracefully bowed out" of this area once they concluded that certain individuals in EPA's Office of Water were disingenuous about letting ORD address important gaps in the science used to support the 503 rule.

The Oak Ridge Study, in my opinion, would have dealt a devastating blow to Walker's and Bastian's National Biosolids Public Acceptance Campaign; and, in retrospect, it particularly focuses a bright light on the false and misleading data and conclusions of the Gaskin study. It even draws attention to potential problems with zinc, which turned out to be problematic in the Boyce herd and with at least two cows on one of the farms in the Gaskin study, which Gaskin chose not to report.

The Oak Ridge Study is based on a combination of field studies and mathematical modeling to predict the transport, fate, and effects of pollutants in biosolids for decades to centuries. Such an approach is essential to understanding the risks that land application of biosolids pose to public health and the environment. At EPA, predictive mathematical modeling of the transport, fate and effects of pollutants was my main area of expertise (Exhibit 126).

From 1991-1993, I served on the Editorial Board of the peer-reviewed journal *Environmental Toxicology and Chemistry*, which published papers dealing with predictive mathematical models. The approach, methodology and conclusions in the Oak Ridge Study are scientifically sound. There was no reason for Bastian, Walker, Chaney or any other managers over EPA's biosolids programs, who I personally know are not experts in this area of science, to trash the Oak Ridge Study. As with the University of Florida Study and my research at UGA, the EPA Defendants clearly had to silence such objectionable science and focus on funding the Gaskin study and similar projects if they had any hope of defending the 503 sludge rule.

Much of the harm associated with extracting water pollutants, which we know pose a clear threat to public health and the environment, concentrating them in sewage sludge, and applying them to agricultural lands, forests, and other public and private lands may not manifest itself for decades or even centuries. By then, it may be too late to prevent most of the damage to public health and the environment and too costly to clean it up. The Oak Ridge Study clearly suggests that many of the agricultural benefits attributed to organic nutrients in biosolids will dissipate in time as adverse effects begin to manifest themselves in many ways, some expected and some unexpected.

The Study in Detail

The Oak Ridge National Laboratory stated in its Final Report to EPA (Exhibit D to my Affidavit) that the purpose of the Study was to provide a detailed, ecosystem-specific evaluation of the risks that certain pollutants in sewage sludge present to a wide variety of terrestrial ecological receptors. Terrestrial features associated with the following four ecosystems were emphasized:

(1) A northwestern Douglas-fir forest near Eatonville, Washington

(2) A southeastern loblolly pine forest in Athens, Georgia

(3) An eastern deciduous forest (the Hubbard Brook Experimental Forest) in central New Hampshire

(4) Southwestern semiarid rangelands in the Rio Puerco Valley and the Sevilleta National Wildlife Refuge of New Mexico

Pollutants of concern included the 503 metals (As, Cd, Cu, Pb, Hg, Mo, Ni, Se, Zn), chlorinated dioxins, chlorinated dibenzofurans, PCBs and nitrogen. Risks were assessed both qualitatively and quantitatively based on treating field plots with biosolids and using predictive mathematical models to predict the transport, transformation and effects of pollutants in biosolids over decades to centuries.

Inputs to the models included baseline ecosystem data concerning vegetation, wildlife, geography, soils, nutrient cycles, and management practices. Sources of data included, for example, field studies undertaken by the U.S Forest Service Rocky

Mountain Forest and Range Experiment Station, the University of Washington, Texas Tech University, Colorado State University and the Savannah River Plant as well as information about sewage sludge gathered from the 1988 National Sewage Sludge Survey (EPA, 1990). Biosolids application rates covered a range that was expected for municipalities and commercial operations.

To ensure that all modeling data met high standards for QA/QC, the authors performed rigorous uncertainty analyses on the various databases and model outputs (Section 2.5). For example, when assessing the effects of biosolids on three kinds of forests in the Northwest and Eastern United States, the authors determined how various nutrient and pollutant levels in biosolids affected their model outputs. They also determined how growth rates responded to variations in biosolids composition, vegetation and soil properties by comparing computer simulations of biosolids applications with control plots.

To determine the range of uncertainty associated with these input variables, the authors used the Latin hypercube sampling method by combining the PRISM code (Gardner *et al*., 1983) with the LINKAGES model employed in their risk analyses. To perform this analysis, they divided input distributions of the variables into 200 equal-probability classes. Then they used PRISM to generate 200 sets of input values by sampling each input distribution without replacement. Finally, the authors executed the LINKAGES model 200 times using the 200 input datasets for each of seven biosolids scenarios with the three forest types.

In their Executive Summary (p. xvi), the authors listed the following specific findings:

- ***Wildlife*** Individual foxes, shrews, American robins and meadow larks and their populations in the four forest ecosystems are not likely to be at risk from a single application of 40 metric tons of biosolids per hectare (Mg/ha). However, white-tailed deer living in the eastern deciduous forest may be at risk from cooper and/or zinc in this application.

  In addition to potentially toxic pollutants, biosolids contain nutrients that have been shown to alter plant community composition and structure. These effects can indirectly affect wildlife communities present at sites treated with biosolids.

- ***Plant community*** Although short-term tests show no adverse effects on plant growth from high levels of zinc in biosolids, the Oak Ridge study suggests that, long-term, zinc may present a hazard to plant growth in the three forests studied.

  Zinc, copper, cadmium and nitrogen-catalyzed growth combined with drought were identified as potential biosolids-related hazards to plant growth and survival in the rangeland ecosystem.

Herbaceous community composition and biomass are likely to change with biosolids application to forests.

- ***Soil invertebrate community*** Because of nutrient impacts, biosolids applications have the potential to alter the soil invertebrate community in all three forest ecosystems.

- ***Microbial processes*** The total biomass of soil microorganisms is likely to increase with biosolids applications. Changes in the balance of processes comprising the nitrogen cycle would be similar in the Douglas-fir and eastern deciduous forests but less certain in the loblolly pine plantation and rangeland.

Specific conclusions contained in the body of the Oak Ridge National Laboratory's Final Report include the following:

- Due to their high nitrogen content, biosolids applications would cause substantial increases in aboveground growth and net primary productivity (photosynthesis) for Douglas-fir forests in the state of Washington. These increases would more than double within 50 years after seven applications of at least 10 Mg/ha. (Tables 2.4, 2.5; 95% confidence intervals, $n = 100$)

- Increased growth rates for Loblolly pines in Athens, GA, however, would be only about half of that predicted for Douglas fir in the Northwest. (Table 2.6; 95% confidence intervals, $n = 100$)

- Eastern deciduous forests would receive even less benefit, exhibiting only a small (14.8%) increase in growth rates after 200 years, which would dissipate by 350 years. (Table 2.8 and associated text; 95% confidence intervals, $n = 500$)

- High rates of biosolids application would cause significant changes in community structure of Eastern deciduous forests by enhancing the growth rates of species that readily respond to increases in available nitrogen, *e.g.*, yellow birch (*Betula allegheniensis*), compared with sugar maple (*Acer saccharum*) and beech (*Fagus grandifolia*) trees, which would remain largely unaffected by the nitrogen increases (p.50). This effect would cause a decline of some tree species, *e.g.*, red spruce (*Picea rubens*).

- Increases in soil organic matter from biosolids would be temporary. Generally, they would decline during the first two decades, rapidly increase for a time, and then dissipate completely after 400 years. (p. 49)

In a field study in Rio Puerco Valley, NM (Section 2.6.1, p. 52-53), authors of the Oak Ridge Study reported that applications of municipal biosolids from the City of Albuquerque resulted in statistically significant decreases in plant density, species richness and species diversity with increasing rates of application. The number of plant species decreased from 16 to 10 with the 90 Mg/ha treatment and these effects continued through the fourth growing season following biosolids application (Fresquez *et al*. 1990b).

In a similar study of the effects of Albuquerque biosolids at the Sevilleta National Wildlife Refuge, NM (Section 2.6.2, p. 53-54), the authors reported that a single application of 45 Mg/ha caused plant cover to decrease compared with control plots (Loftin and Agulilar, 1994). Plant root growth was much lower on plots treated with biosolids compared with control plots.

Little if any beneficial plant growth occurred at various biosolids application rates in similar studies at Meadow Springs Ranch, Larimer County, CO; Wolcott, CO, and Sierra Blanca Ranch, TX. (p. 54) Growth failure at one application rate (90 Mg/ha) was attributed to biosolids absorbing what little rainfall occurred, preventing plants from taking up the water.

In conclusion, the authors pointed out that nutrients in biosolids applied to semi-arid rangeland have numerous effects, many of which are dependent upon precipitation. Plant density, species diversity, species richness and diversity of soil fungi decreased with biosolids amendments. The colonization of sagebrush roots by mycorrhizae, which the plants need to absorb nutrients, was also adversely impacted by biosolids. "There are indications that plant response depends on seasons of application, number of years of application, growing condition during the year of application, and growing conditions following application."

APPENDIX IIC. **1999 EPA Region 4-Athens Diagnostic Evaluation**

Former EPA Region 4 Biosolids Coordinator Madolyn Dominy disclosed in her deposition in September of 2009 that EPA's Region 4 laboratory in Athens, GA, evaluated Augusta's wastewater treatment plant in 1999.[125] Many mechanical components of the digesters, however, were non-functional and the final sewage sludge (biosolids) was contaminated with high levels of priority pollutants.

Specifically, the Region 4 report (Exhibit G to my Affidavit) contains the following results concerning organic pollutants in grab samples of the Messerly Plant's final sludge (biosolids) collected on February 23 and 24, 1999:

[125] Exhibit G to my Affidavit. USEPA Region 4 Enforcement and Investigations Branch, 980 College Station Road, Athens, GA 30605. Memorandum from Mike Bowden, Air and Water Enforcement Section, to Mike Hom, Clean Water Act Enforcement Section. Subject: Diagnostic Evaluation of Sludge Facilities for Messerly Wastewater Treatment Plant, Augusta, Georgia. July 1, 1999. The existence of this document was first disclosed by Madolyn Dominy in her deposition taken on Sep. 3, 2009 (p. 24). It was produced to Plaintiffs through FOIA on Oct. 28, 2009.

> *One* [priority pollutant] *purgeable organic compound (toluene) and 32 extractable organic compounds were detected in the final sludge, of which 13 were listed priority pollutants. Toluene was detected at estimated concentrations of 264,151 and 227,698 ug/kg, respectively. The highest priority pollutant extractable organic compound detected was bis (2-ethyhexyl) phthalate at 6,918 and 8,422 ug/kg, respectively.*

Other priority pollutants found in the final sewage sludge and their concentrations (ug/kg, U = undetected) were: 2,4-dimethylphenol (535; 655), acenaphthene (692; 686), benzo(a)anthracene (440; 343), benzo(b)fluoranthene (409; U), benzo(a)pyrene (377; U), chrysene (472; 374), fluoranthene (818; 624), fluorene (597; 593), naphthalene (2,547; 2,620), phenanthrene (1,226; 1,216), pyrene (786; 686). One priority pollutant pesticide, dieldrin, was also detected (0.3, 0.21 ug/l).

Except for molybdenum (15, 14 mg/l), all EPA regulated metals were below 1988 national mean concentrations. Some non-regulated metals were present in high concentrations, including Al, Ba, Cr, and Mn. Rare metals, including Yt and Va, were present in the elevated ppm range.

Whether the levels of non-regulated metals found at the Messerly Plant posed a risk to public health depends primarily on the chemical species that were present. For example, high concentrations of Cr[VI] when present in clay dusts blowing from treated fields in the southeastern U.S. could present a significant risk of lung cancer. Barium sulfate, which is widely used as an x-ray contrast medium, is found in all sewage sludges and is generally non-toxic. Barium chloride, however, can be quite toxic and is used in veterinary medicine and to poison rats and mice. Sewage sludge containing high levels of this form of barium could pose a risk. EPA, however, does not require any determinations the chemical species present under the 503 rule.

No reference to the Athens Diagnostic Evaluation appears in any documents produced in discovery or provided under FOIA and Georgia Open Records despite Plaintiffs litigating over Augusta’s biosolids program for over a decade. We would never have known the report existed had the Court not ordered Madolyn Dominy to submit to deposition.

EXHIBIT LIST

Disclosure Memorandum and Deposition Exhibits [126]

1A 05/08/03 Memorandum from David Lewis to Harvey Holm re: adverse health effects from Augusta-sludged hay.

1B 06/26/03 Lee, J., Sewer Sludge Spread on Fields is Fodder for Lawsuits, *New York Times*.

1C 08/21/03 Renner, R., *Staphylococcus* not found in sludge, but controversy continues, *Environmental Science & Technology*

1D 04/14/05 E-mail from Julia Gaskin re: Committee Meeting Minutes for GWPCA Residuals Recycling Committee

2A 10/__/05 Snyder, C., The Dirty Work of Promoting "Recycling" of America's Sewage Sludge, Int. J. Occup. Environ. Health, 2005, 11:415-427

2B 1999-2000 National Biosolids Partnership Annual Report

2C 10/13-17/01 Presentation to WEF Residuals and Biosolids Committee - Overview of WERF and WERF's Research Program in Biosolids and Residuals Management

2D 2001. New England Biosolids and Residuals Association (NEBRA) website re. mission.. (Currently, "North East Biosolids and Residuals Association")

2E 01/22/01 NEBRA Information Update

2F 04/10-11/00 Proceedings of the Workshop: Biosolids Management in the 21st Century

2G 07/23/01 Affidavit of Robert O'Dette

2H 03/28/02 Letter from Alvin Thomas (Synagro) to Alexandra Dapolito Dunn (AMSA) re: letter to EPA on biosolids issues

2I 04/02/02 Letter from Ken Kirk (AMSA) to Henry Longest (EPA) re: research article on *Staphylococcus aureus* infections among residents reporting chemical irritation with land-applied Class B biosolids

2J 02/13/02 Letter from Albert Gray (WEF) to Christine Todd Whitman (EPA) re: article on Class B biosolids

[126] Deposition exhibits are indicated with boldfaced type.

3A 02/__/04 Gattie, Lewis, A High-Level Disinfection Standard for Land-Applied Sewage Sludges (Biosolids), Environmental Health Perspectives, Vol. 112, num. 2 (Feb. 2004)

3B 10/28/99 Lewis, Garrison, Wommack, Whittemore, Steudler, Melillo, Influence of environmental changes on degradation of chiral pollutants in soils, *Nature*, Vol. 401, p. 898 (1999)

3C 09/__/04 E-mail exchanges between Carolyn Snyder, Rufus Chaney, and David Lewis

4 09/28/01 Letter from Eliot Epstein (Tetra Tech) to David Ozonoff (Boston University) re: Public Health Sludge Conference

5 1992-99 EPA Cooperative Agreement CR-820725-01-01 and renewals

6A 08/02/05 E-mail from Ellen Harris to Bob O'Dette re: bioaerosols paper

6B [Redacted, Undated] Letter to the Editor Environmental Science & Technology from Paul Chrostowski, Sarah Foster, Robert McClellan, Ian Pepper, Charles Gerba, and Gale Hoffnagle.

6C 09/03/03 McGinley, S., Biosolids Safe for Land Application, UA Researchers Find, Information for News Media from the College of Agriculture and Life Sciences, University of Arizona

6D 12/20/00 Letter from Charles Gerba (University of Arizona) to James Slaughter and Barry Needleman (Beveridge & Diamond) re: microbial pathogens being transmitted by aerosol route from the land application of Class B biosolids

6E 08/23/05 E-mail from Bob O'Dette to Ellen Harrison and H. Shields re: membership list for the National Science Foundation's Water Quality Centers in Arizona

7A 01/15/03 Curriculum Vitae for L. Mark Risse UGA 04067

7B 10/26/98 Curriculum Vitae for Julia Gaskin UGA 00159

7C 04/28/03 Curriculum Vitae for Ernest W. Tollner UGA 04005

7D Curriculum Vitae for William P. Miller

8A 08/07/03 E-mail from Julia Gaskin re: Residuals Recycling Committee for 2003-2004 UGA 03461

8B 01/23/04 E-mail from Julia Gaskin to Bob Bastian re: nonylphenol UGA 03510

8C 11/24/03 E-mail from Julia Gaskin to K Xia, Cling Truman, Jim Ippolito, and Bob Brobst re: NP Grant UGA 04108

8D 02/21/05 E-mail from Julia Gaskin re: voluntary certification for biosolids UGA 03560

8E 12/12/05 E-mail from H. Shields to Carolyn Snyder, Ellen Harrison, and Paul Adams re: Maryland Synagro burning sludge pellets in cement kiln

9A 08/24/99 Letter from Melissa Brock (UGA) to EPA Grants Administration Division re: executed copy of agreement CX 827759-01-0

9B 12/14/98 Memorandum from Julia Gaskin to Bobby Tyson re: Augusta biosolids summary UGA 00062

9C 05/27/99 Memorandum from Charles Gross to Julia Gaskin re: application for federal assistance - Metals Assessment for Burke and Richmond County Hayfields Receiving Biosolids including grant application kit UGA 00066, etc.

9D 05/27/99 Memorandum from Charles Gross to Julia Gaskin re: application for federal assistance - Metals Assessment for Burke and Richmond County Hayfields Receiving Biosolids UGA 00066

9E 06/28/99 Preaward Compliance Review Report for all Applicants Requesting Federal Financial Assistance - Metals Assessment for Burke and Richmond County Hay Fields Receiving Biosolids

9F 07/19/99 E-mail from Charles Gross to Julia Gaskin and Bob Brobst re: UGA Grant UGA 00129

9G 06/16/99 E-mail from Bob Brobst to Julia Gaskin re: EPA Metals Grant UGA 00135

9H 06/28/99 Application for Federal Assistance - Metals Assessment for Burke and Richmond County Hay Fields Receiving Biosolids UGA 01146

9I 02/15/96 §§ 30.26-32, Federal Register, Vol. 61, No. 32 UGA 01125

9J 07/13/99 Letter from Barbara Rochon (EPA) to Julia Gaskin re: receipt of grant application project #X827759010 UGA 00128

9K 08/26/99 Memorandum from Ed Gross to Julia Gaskin and Bob Brobst re: UGA Grant Award UGA 00067

9L 07/13/99 Decision and Approval Recommendation - Metals Assessment for Burke and Richmond County (Georgia) Hayfields Receiving Biosolids

9M 07/12/99 Memorandum from Charles Gross to Frank Roth (Grants Specialist) re: proposed cooperative agreement with University of Georgia Research Foundation

9N 07/19/99 E-mail from Charles Gross to Julia Gaskin and Bob Brobst re: UGA Grant UGA 00129

9O 07/19/99 E-mail from Charles Gross to Francis Roth, Julia Gaskin, Bob Brobst re: UGA Grant UGA 00130

9P [Undated] Review of Metals Assessment for Burke and Richmond County Hayfields Receiving Biosolids prepared by Brobst

9Q 1999 Grant application requirements UGA 00050

9R 1999 Grant application requirements [duplicate of 9Q] UGA 00050

9S 11/30/99 E-mail from Bob Brobst to Charles Gross and Julia Gaskin re: UGA visit UGA 00220

9T [Undated] Application for Federal Assistance - Metals Assessment for burke and Richmond County Hay Fields Receiving Biosolids [Duplicate of 9H - this one is not signed] UGA 00142

10 04/02/02 Memorandum from Teresa Sussman (Grants Specialist) to John McKissick (Ag Economics) re: Award from USDA for $15,000, Proposal 024562-01 UGA 03616

11 01/01/05 - 12/31/07 Project Abstract and Description - Using Cropping Alternatives to Improve Water Quality in High Nutrient Status Farms UGA 03858

12 07/11/05 Memorandum from Ginger Vickery (Grant Specialist) to Julia Gaskin re: award from USDA for $32,137, proposal 030914-01 UGA 03663

13 04/15/05 Letter from Julia Gaskin and Mark Latimore (UGA) to Jim Horne (SARE) re: Southern SARE Model State Program UGA 03919

14 11/20/03 Southern Region SARE Professional Development Program Plan of Work for 2004-2005 UGA 03656

15 Fate of Nonylphenol in Surface-Applied Biosolids (Sewage Sludge) by Gaskin, Xia, Truman, and Ippolito UGA 04420

16 [Undated] USDA Current and pending support UGA 04655

17 01/27/05 Proposal for An approach to determining the fate of endocrine disruptors in surface-applied biosolids (sewage sludge) UGA 04516

18 09/04/03 Modification of Assistance - Soil, water, and land use in Cotacachi Canton, Ecuador

19A 12/03/01 E-mail from Bob Brobst to Julia Gaskin re: biosolids paper UGA 02431

19B 01/__/03 Gaskin, J.W., et seq., Long-Term Biosolids Application Effects on Metal Concentrations in Soil and Bermudagrass Forage, 2003, J. Environ. Qual. 32: 146-

19C 10/__/00 Gaskin, Miller, Tollner, Fowler, Metals Assessment for Burke County Hay Fields Receiving Biosolids, A report prepared to fulfill grant no. 827759-01-0 Gaskin 00044

19D 01/29/02 Holmes, Sludge study relieves environmental fears, UGA Press Release

19E 07/14/03 Proposal for Agricultural Pollution Prevention Program Scope of Services UGA 03958

19F 01/__/05 Journal of Environmental Quality, special issue promoting biosolids (Vol. 34, No. 1, 2005)

19G 06/05/00 Letter from Julia Gaskin to Myron Fowler (Burke and Jefferson County Extension) re: results of analysis of soil and hay UGA 00230

19H 12/10/01 E-mail from Bob Brobst to Julia Gaskin re: wording changes UGA 00376

20A 07/02/02 Biosolids Applied to Land: Advancing Standards and Practices, National Academy Press, 2002

20B 07/02/02 Biosolids Applied to Land: Advancing Standards and Practices, Advance Copy

20C 07/02/02 Biosolids Applied to Land: Advancing Standards and Practices

21A 04/09/03 Federal Register, Standards for use or disposal of sewage sludge

21B 12/04/02 E-mail from Rosemarie Russo to David Lewis re: draft of EPA summary response to NRC recommendation

22A 12/24/03 Letter from G. Tracy Mehan to Joseph Mendelson and Thomas Alan Linzey

22B 11/25/03 E-mail from Bob Bastian to Madolyn Dominy and Bob Brobst re: coverage of Augusta case in response to Biosolids Petition

23 2003 Rusin, Maxwell, Brooks, Gerba, and Pepper, Evidence for the Absence of *Staphylococcus aureus* in Land Applied Biosolids, *Environ. Sci. & Technol*.

24A 11/17/98 Letter from William Miller to David Moore (Messerly WWTP) UGA 00027

24B 08/31/99 Excerpt from deposition of William Miller, pp. 106-108

24C 12/01/98 Facsimile from John Walker to Frank Post re: Notes on Augusta Biosolids SC 00005

24D 1998 Death of a Farm (Boyceland Dairy and R. A. McElmurray and Sons)

24E 05/19/00 Record of Telephone Conversation from Westby Slade to Ed Hallman re: telephone call with Laura Liggett

24F 10/25/99 Memorandum from Laura Liggett to Jeff Larson and David Bullard re: City of Augusta land application of sludge EPD 15400

24G [Undated draft] Memorandum from Robert Perciasepe to Steven Herman re: request for additional OECA resources for the biosolids program

24H 12/03/98 Facsimile from John Walker to Nancy Prock re: issues to consider for the investigation: Augusta biosolids dairy cattle EPD 15407

24I 12/16/98 Quick Trip Permit for Madolyn Dominy [last page] and milk data

24J 05/27/99 Letter from John Walker to P. A. Rheney (Brier Creek) EPD 15593

24K 03/06/00 Article: “So far, no proof of molybdenosis at McElmurray, Boyceland farms,” Sludge, Vol. 25, p. 42

24L 03/15/00 EPA-Region 4 Chronology of events, City of Augusta EPD 19057

25A 11/19/96 Letter from Nancy Prock to Tom Wiedmeier re: sludge management plan 1995 annual report EPD 03234

25B 11/24/98 E-mail from G. Harris to Julia Gaskin, William Miller, W. Jordan, and L. Guthrie re: Molybdenum in soil and tissue UGA 00061

26 [Undated] Gaskin’s copy of graph of Augusta’s NOVs UGA 00010

27 12/16/98 Memorandum from Compliance Evaluation Task Force (EPD) to Alan Hallum, Jeffrey Larson, and James Sommerville re: investigation of Messerly WWTP December 7-11, 1998 UGA 00221

28 [Undated] Draft Long-term Biosolids Application Effects on Metal Concentrations in Soil and Bermudagrass Hay UGA 00435

29 03/03/04 E-mail from Bob Brobst to Julia Gaskin re: question ref. Augusta UGA 03519

30A 11/10/03 Letter from Robert Brobst to Tommy Weldon UGA 00269

30B [Undated] Preliminary notes by Laura Liggett EPD 11540

30C 11/02/99 E-mail from Doug Mundrick to Bob Lee, Madolyn Dominy, and Roosevelt Childress Re: Decker & Hallman documents. EPA 11161

30D 05/11/99 Notes of phone conversation with Bob Brobst

31 07/23/99 Excerpt from Deposition of Allen Saxon, pp. 165-166

32 05/06/99 Excerpt from Deposition of Hugh Avery, pp. 19-23
12/14/01 Excerpt from Deposition of Hugh Avery, pp. 39-41, 52-53

33A [Undated summary] UGA soil samples from McElmurray farm

33B [Undated summary] Augusta soil samples from McElmurray and Boyce farms

34 [Undated summary] UGA soil samples from Boyce farm

35 [Undated summary] A&L Laboratories soil samples from McElmurray farm

36A 02/24/99 Expert report of Lewis Goodroad

36B 02/25/99 Expert report of William L. Hall

36C 02/18/99 Expert report of Holly Ballantine

37 [Undated summary] Necropsy tissue results from Boyce and McElmurray cows

38 1998-1999 Milk samples from Boyce and McElmurray cows

39 04/22/93 E-mail from Bob O'Dette to Bill Segars, Alvin Thomas, and Julia Gaskin re: petition for scientific misconduct

40 2004 Kuehn, R., Suppression of Environmental Science, American Journal of Law & Medicine, 30:333-69

41 05/21/03 Letter from James Inhofe and Charles Grassley to Christine Todd Whitman (EPA)

42A 06/09/04 Recommended Decision and Order Lewis v. EPA, U.S. Department of Labor, Case Nos. 2003-CAA-00005, 2003-CAA-00006

42B 10/15/04 Complainant's Exceptions to the Factual Findings of the ALJ, Lewis v. EPA, ARB Case No. 04-117, ALJ Case Nos. 2003-CAA-6, 2003-CAA-5

42C 01/03/05 Respondent's Reply Brief, *Lewis v. EPA*, ARB Case No. 04-117

42D 09/04/01 Letter from Rosemarie Russo to Tim Hollibaugh

42E 04/22/03 Memorandum from Frank Stancil (EPA) to Rosemarie Russo re: allegations by Synagro

42F 04/17/03 Letter from Judy Curry (UGA) to James Slaughter (Beveridge & Diamond representing Synagro) re: Petition to Investigate Alleged Research Misconduct

42G 03/04/03 Joint Stipulation, Lewis v. EPA, Case Nos. 2003-CAA-5, 2003-CAA-6

42H 09/24/01 E-mail from Greg Kester to Walker, Walker's supervisors, Madolyn Dominy and others forwarding and supporting Synagro's White Paper.

42I 01/31/03 Deposition of Robert Hodson *Lewis v. EPA*, U.S. Department of Labor. CA 2003-CAA-00005, 00006.

42J 01/31/03 Deposition of David Keith Gattie. *Lewis v. EPA*, U.S. Department of Labor. CA 2003-CAA-00005, 00006.

42K 10/06/98 Letter from David Guerrero (EPA) to Stephen Kohn (Kohn, Kohn & Colapinto) re: Lewis v. EPA Case No. 98-CAA-13 [included in 42O]

42L 11/20/00 Sludge Management Program, Dewatered Sludge Amendment prepared by Operations Management International, Inc. EPD 19203

42M 10/30/96 Letter from Newt Gingrich, Charlie Norwood, and John Linder to Robert Huggett (EPA)

42N 04/08/03 Letter from Judy Curry (UGA) to Rosemarie Russo re: Allegations raised by Synagro Technologies against David Lewis

42O 10/06/98 Letter from David Guerrero (EPA) to Stephen Kohn (Kohn, Kohn) re: *Lewis v. EPA* Case No. 98-CAA-13, with enclosures

42P 04/09/03, 04/16/03 Handwritten notes by Rosemarie Russo of conversations with Judy Curry

42Q 06/28/05 Memorandum from David Lewis to Judy Curry re: scientific misconduct proceedings

42R 07/25/05 Record of communication by David Lewis

42S 11/17/04 Letter from James Hollibaugh (UGA) to Garnett Stokes (UGA)

42T 07/22/05 Letter from Regina Smith to David Lewis

43A 06/09/03 Excerpt from jury trial Boyce v. City of Augusta

43B 07/27/05 Opinion, McElmurray v. Augusta, Georgia, Georgia Court of Appeals, Case No. A05A0262

43C 06/24/03 Judgment, *Boyce v. Augusta, Georgia*, Superior Court of Richmond County, Civil Action File No. 2001-RCCV-111

44A 02/27/04 Letter from Pennock and McElmurray to James Yager (Johns Hopkins) re: scientific misconduct complaint against Thomas Burke

44B 03/17/04 Letter from Alfred Sommer (Johns Hopkins) to Pennock and McElmurray re: scientific misconduct complaint against Thomas Burke

45 06/15/05 False Claims Act Complaint and Demand for Jury Trial, McElmurray v. Augusta-Richmond County, United States District Court, Northern District of Georgia, Civil Action File No. 1:05-CV-1575

46 03/31/93 Office of Inspector General, Report of Audit - Management of Extramural Resources, Audit Report E1JBF2-04-0300-3100156 (revised)

47 03/28/02 Office of Inspector General Status Report - Land Application of Biosolids, 2002-S-000004

48 03/22/00 Hearing before the Committee on Science, House of Representatives, EPA's Sludge Rule: Closed Minds or Open Debate?

49 10/04/00 Hearing before the Committee on Science, House of Representatives, Intolerance at EPA - Harming People, Harming Science?

50A 01/28/04 Letter from Barbara Cubin to David Lewis

50B 02/04/04 Hearing by the Committee on Resources, Subcommittee on Energy and Minerals, U.S. House of Representatives, The Impact of Science on Public Policy

50C 03/12/04 Letter from Ed Hallman to Barbara Cubin re: impact of science and public policy, supplement to testimony of David Lewis

51 03/04/05 Complaint, U.S. v. Poehlman, United States District Court of Vermont, Case No. 2:05-CR-00038

52 11/16/03 E-mail from David Lewis to K. Carlyle and D. Gattie re: research paper to be published

53A 11/21/03 Record of communication by David Lewis of telephone conversation with Regina Smith

53B 04/18/03 Letters from Kasim Reed (Georgia Senate representing Synagro) to Judy Curry (UGA) re: Petition to investigate alleged research misconduct

53C 02/05/04 Letter from Ed Hallman to Julia Gaskin re. fabricated data in JEQ article

53D 04/19/04 Letter from Regina Smith (UGA) to Arnett Mace and Gordhan Patel re: initial notification and pre-inquiry analysis of allegations asserted against Julia Gaskin

53E 04/21/04 Letter from Julia Gaskin to Ed Hallman

53F 11/15/00 Letter from Arthur Leed (UGA) to Finis Williams and James Slaughter re: Marshall v. WWT

53G 11/16/00 Memorandum from Alvin Thomas to Robert O'Dette re: David Lewis

53H 12/22/05 Letter from Arthur Leed to Stephen Kohn re: David Lewis

53I 08/10/05 Memorandum from David Lewis to Arthur Leed re: scientific misconduct investigations

53J 10/11/04 Letter from David Black to David Lewis re: James Slaughter

53K 05/24/04 Letter from Ed Hallman to Regina Smith re: Gaskin article

53L 01/19/06 Letter from Ed Hallman to Arthur Leed

54A 10/11/02 Carroll, Politics of sludge determine who gets dumped on

54B 07/19/05 Environmental Public Health Review prepared by Louisiana Department of Health and Hospitals

55 08/12/05 E-mail from Ellen Harris to The Rubins ... re: Louisiana Convent - more sludge victims?

56A 11/10/05 Letter from Valerie Herberger (USDA) to Ed Hallman

56B 06/03/05 Dendy, L., U. of Maryland administrator named dean of UGA College of Agricultural and Environmental Sciences, UGA Press Release re. Jay Scott Angle

56C 2003 Brown, Chaney, Hallfrisch, Xue, Heavy Metals in the Environment, Effect of Biosolids Processing on Lead Bioavailability in an Urban Soil, *J. Environ. Qual.*, 32:100-108

57 03/20/05 Farfel, Orlova, Chaney, Lees, Rohde, Ashley, Biosolids Compost Amendment for Reducing Soil Lead Hazards: a Pilot Study in Urban Yards, *Science of the Total Environment*, 340(1-3):81-95

58 2001 Draft of "Adverse interactions of irritant chemicals and pathogens with land-applied sewage sludge" by Lewis, Gattie, Novak, Pumphrey, and Sanchez reviewed by Brobst, Bastian, and Walker.

59 06/28/02 Lewis, D.L., et al., Interactions of pathogens and irritant chemicals in land-applied sewage sludges (biosolids), BMC Public Health, 2002, 2:11 (28 Jun). www.biomedcentral.com/1471-2458/2/11

62 01/08/04 Millner, P., et seq., Bioaerosol and VOC Emissions Measurements Associated with Land Application of Biosolids, Sustainable Land Application Conference, p. 44

63 02/25/08 McElmurray v. United States Department of Agriculture, 535 F.Supp.2d 1318 (2008) 2404/002 [a/k/a Judge Alaimo's order]

67 03/15/08 Editorial, Stuck in the mud - the Environmental Protection Agency must gather data on the toxicity of spreading sewage sludge, Nature, 2008, Vol. 453, p. 258

68 05/15/08 Raking through sludge exposes a stink, Nature, Vol. 453, p. 262, May 15, 2008

69 01/__/03 Gaskin, J.W., et seq., Long-Term Biosolids Application Effects on Metal Concentrations in Soil and Bermudagrass Forage, 2003, J. Environ. Qual. 32: 146-152

70 07/23/99 Deposition Excerpt - Durwood Allen Saxon, Jr. 1987/1998 depositions [duplicate of 31]

71 05/06/99 Deposition Excerpt - Hugh Elbert Avery, Jr. 1987/1998 depositions

72 12/16/98 Augusta Biosolids Discussion Group Agenda
Lewis v Walker D000058

77 03/23/91 EPA Position Description for John M. Walker

78 01/29/02 EPA performance appraisal for John M. Walker

86 01/29/02 Holmes, Sludge study relieves environmental fears, UGA Press Release [Duplicate of 19D]

88 01/__/09 U.S. EPA. Targeted National Sewage Sludge Survey Sampling and Analysis Technical Report. EPA-822-R-08-016

93 12/23/98 Letter from Arthur Leed (UGA) to Ed Hallman re: Death of a Farm

94 01/04/99 Letter from Ed Hallman to Arthur Leed (UGA) re: Hallman RE: Death of a Farm

95 12/23/98 Letter from Arthur Leed (UGA) to Ed Hallman re: Hallman RE: Death of a Farm

96 09/28/00 Letter from Dvosha Roscoe (Synagro) to Michael Adams (UGA)

97 07/27/01 Letter from Alvin Thomas (Synagro) to Arthur Leed (UGA)

98 03/17/2003 (Download date) UGA OVPR Publication "Research Integrity"

99 08/30/04 Swiss ReSources (Lewis/McElmurray UGA project)

100 12/01/04 Memorandum from David Lewis to James T. Hollibaugh (UGA) re. Lewis ending his research on biosolids.

101 2/18/99 E-mail McDaniel to Gaskin re: program results

102 1/13/99 Fax McDaniel to Gaskin attaching comments on the draft Biosolids fact sheet - beneficial reuse of municipal biosolids in agriculture

103 3/13/01 E-mail from Robert Bastian to National Academy of Sciences attaching draft of Gaskin's final report to EPA.

104 Gaskin, Brobst, Miller, Brobst article Application History and Metals Concentrations in Soil and Hay from the SE Coastal Plain

105 3/8/03 Synagro's Petition to Investigate Dr. David Lewis and Prof. David Gattie

106 10/14/08 Declaration of Arthur H. Leed

107 03/28/06 Complaint, Lewis, McElmurray & Boyce v. Walker et al.

108 09/27/07 Second Amendment to Complaint, Lewis, McElmurray & Boyce v. Walker et al.

109 Westlaw printout. 31 U.S.C.A. § 3729

110 03/07/07 Plaintiffs' Response to Gaskin, Risse, Miller & Tollner's Motion to Dismiss

111 09/14/07 Order from Judge Clay D. Land

112 Plaintiffs' Initial Disclosures

113 9/3/08 Letter from Ed Hallman to Clarence Lee Lott and George Weaver re: settlement proposal

114 12/05/08 Plaintiffs' Responses to Gaskin's First Continuing Interrogatories, Requests for Production and Requests for Admission

115 3/12/98 Fax from William Miller to Holly Ballantine re: preliminary analysis of samples from Boyce dairy

116 11/16/00 Letter Frank Roth (EPA) to Joe Key

117 12/08/99 Memorandum from Ed Gross (EPA) to Frank Roth (EPA) UGA00085

118 10/26/98 Julia Gaskin's Curriculum Vitae

119 Draft memorandum from Robert Perciasepe to Steven Herman re: request for additional OECA resources for the biosolids program

120 10/25/99 Memorandum from Laura Liggett through Jeffrey Larson and David Bullard re: City of Augusta land application of sludge

121 11/24/98 E-mail from G. Harris to Julia Gaskin, etc. re: Mo in soil and tissue

122 3/03/04 E-mail from Bob Brobst to Julia Gaskin re: questions regarding Augusta data

123 04/25/01 Plaintiffs' Responses to Defendant's First Interrogatories filed in McElmurray v. Augusta, Richmond County Superior Court

124 10/12/01 Plaintiffs' Supplemental Responses to Defendant's Second Interrogatories filed in McElmurray v. Augusta, Richmond County Superior Court

125 09/11/08 Testimony of Robert A. (Andy) McElmurray, III for Briefing on Oversight on the State of Science and Potential Issues Associated with EPA's Sewage Sludge Program

126 01/29/09 Curriculum Vita for David L. Lewis, Ph.D.

127 11/17/06 E-mail from David Lewis to Tim Hollibaugh re: sending copy of false claims act complaint

128 09/20/01 Synagro Technologies, Inc. White Paper, Analysis of David Lewis' Theories Regarding Biosolids

129 09/11/08 Testimony of David L. Lewis for Briefing on Oversight on the State of Science and Potential Issues Associated with EPA's Sewage Sludge Program

130 10/07/03 Petition Seeking Emergency Moratorium on the Land Application of Sewage Sludge, filed by the Center for Food Safety

131 12/31/03 Affidavit of Hugh Kaufman (EPA) re. contamination of McElmurray and Boyce farms.

132 12/29/08 John Walker's Responses to David Lewis' First Continuing Interrogatories

133 12/05/03 Letter Lewis to Michael Hubbard, EPA Region 1 Criminal Investigation Division, Boston, MA. re Allegations by Honolulu Council Member that Synagro official offered bribes to Council members.

134[L] 08/23/02 E-mail Lewis to Gaskin re. "Meeting about editorial"

134[M] 04/29/05 Record of communication notes by David Lewis re: emails between J. T. Hollibaugh and David Lewis, future research plans at UGA

135[L] 08/26/02 E-mail Lewis to Gaskin re. "R&B – first draft"

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