Committee on Energy and Commerce
U.S. House of Representatives

Witness Disclosure Requirement - "Truth in Testimony"
Required by House Rule XI, Clause 2(g)

1. Your Name: BRYAN W. SHAW		
2. Are you testifying on behalf of the Federal, or a State or local government entity?	**Yes**	**No**
3. Are you testifying on behalf of an entity that is not a government entity?	**Yes**	**No**
4. Other than yourself, please list which entity or entities you are representing: TEXAS COMMISSION ON ENVIRONMENTAL QUALITY		
5. Please list any Federal grants or contracts (including subgrants or subcontracts) that <u>you or the entity you represent have received</u> on or after October 1, 2009:		
6. If your answer to the question in item 3 in this form is "yes," please describe your position or representational capacity with the entity or entities you are representing:		
7. If your answer to the question in item 3 is "yes," do any of the entities disclosed in item 4 have parent organizations, subsidiaries, or partnerships that you are not representing in your testimony?	**Yes**	**No**
8. If the answer to the question in item 3 is "yes," please list any Federal grants or contracts (including subgrants or subcontracts) that were received by the entities listed under the question in item 4 on or after October 1, 2009, that exceed 10 percent of the revenue of the entities in the year received, including the source and amount of each grant or contract to be listed:		
9. Please attach your curriculum vitae to your completed disclosure form.		

Signatur [redacted] **Date:** 5/30/12

Curriculum Vitae

PERSONAL INFORMATION:

Bryan Webb Shaw, Ph.D.
Chairman
Texas Commission on Environmental Quality
Austin, Texas
Date of Appointment: November 1, 2007

and

Associate Professor
Texas A&M University
College Station, Texas
Date of Appointment: September 1, 2002 (leave-of-absence began November 1, 2007)

TEACHING/RESEARCH INTEREST:

Air Pollution/Air Pollution Abatement, Dispersion Model development, Emission Factor Development

EDUCATION:

Texas A&M University, College Station, Texas
Bachelor of Science in Agricultural Engineering, December 1988
Master of Science in Agricultural Engineering, December 1990

University of Illinois at Urbana-Champaign
Ph.D. in Agricultural Engineering, May 1994

EXPERIENCE:

Current Position
Chairman
Texas Commission on Environmental Quality
Austin, Texas
Date of Appointment: November 1, 2007

Responsibilities
Appointed by the governor to establish overall agency direction and policy, and to make final determinations on contested permitting and enforcement matters

Texas Commission on Environmental Quality

November 2007-present	Chairman (Appointed by Governor Rick Perry) Texas Advisory Panel on Federal Regulations – Chair Texas Environmental Flows Advisory Group – Member Taking Care of Texas – Principal Advisor Texas Water Smart - Steering Committee Member State Fire Policy Task Force - Member

Texas A&M University
Biological and Agricultural Engineering Department

April 1994-September 2000	Assistant Professor/Extension Specialist 100% Extension Appointment
September 2000-September 2002	Associate Professor/Extension Specialist 100% Extension Appointment
June 2002-August 2002	Acting Lead Scientist for Air Quality United States Department of Agriculture Natural Resources Conservation Service Washington, D.C.
September 2002-October 2007	Associate Professor (tenure-track) 60% Teaching/40% Research
September 2002-August 2003	Special Assistant to the Chief – Air Quality United States Department of Agriculture Natural Resources Conservation Service Washington, D.C.
September 2003-present	Assumed teaching/research responsibilities within the Biological and Agricultural Engineering Department (leave-of-absence began November 1, 2007)
May 2005-November 2007	Associate Director – Center for Agricultural Air Quality Engineering and Science (CAAQES)

Other Experience

1986-1989	Cotton/Peanut Farmer, Gaines County, Texas
1989-1990	Graduate Teaching Assistant/Graduate Research Assistant Agricultural Engineering Department Texas A&M University
1990-1994	USDA Doctoral Fellow Agricultural Engineering Department University of Illinois, Urbana-Champaign

TEACHING:

Courses Taught

Summary

AGEN/BSEN/BAEN 365 *Unit Operations for Biological and Agricultural Engineering*

Catalog Description:

Theoretical and practical understanding of basic unit operations required to design processes and equipment in the agricultural, biological, environmental, and food industries, with unique constraints presented by biological and agricultural systems considered in design of all units.

AGSM 403 Processing and Storage of Agricultural Products

Catalog Description:

Factors influencing the nature of biological materials and the preservation of quality throughout the harvesting, handling and processing system; a systems approach to cereal grains includes principles of drying, quality deterioration, storage, conveying and handling; processing of fiber crops.

AGSM 125 Introduction to Agricultural Systems Management

Catalog Description:

Introduction to technical management of agricultural systems using management projects presented by agricultural managers from industry; problem definition, information search, idea generation and development of management solutions.

BAEN 689 Air Pollution Engineering

Course Description:

Current topics in air pollution engineering including the air pollution regulatory process, design and operation of air pollution abatement systems, emission factors, dispersion modeling, permitting, odor sensing and control, EPA/State Air Pollution Regulatory Agency (SAPRA), TSP, PM_{10}, PM_c, and $PM_{2.5}$.

Graduate Student Supervision

Served as chair of graduate advisory committee for 14 graduate students

Serviced on graduate advisory committee for 26 graduate students

RESEARCH:

Publications Summary

Type	Since Last Promotion	Career
Peer Reviewed Journal	32	34
Editor Reviewed Proceedings	2	4
Editor Reviewed Chapters	1	3
Proceedings Papers	39	67
Conference Papers	27	58
Extension Publications	0	64
Total	101	230

Grants and Contracts Summary

Type and Role	Since Last Promotion		Career	
	Total $ to All PIs	$ Responsible for	Total $ to All PIs	$ Responsible for
External Competitive				
PI	$424,238	$424,238	$844,238	$844,238
Co-PI	$609,995	$227,474	$648,995	$246,974
Total (PI + Co-PI)	$1,034,233	$651,712	$1,493,233	$1,091,212
External Non-Competitive				
PI	$38,000	$38,000	$38,000	$38,000
Co-PI	$2,280,000	$453,000	$3,060,800	$676,733
Total (PI + Co-PI)	$2,318,000	$491,000	$3,098,800	$714,733
Internal				
PI	0	0	$5,000	$5,000
Co-PI	0	0	0	0
Total (PI + Co-PI)	0	0	$5,000	$5,000
Total	$3,352,233	$1,142,712	$4,597,033	$1,810,945

Special Experience

U.S. EPA Science Advisory Board – Environmental Engineering Committee (December 2003-September 2009)

Appointed by the Administrator of the Environmental Protection Agency to this committee. Committee reviews of EPA programs, policies, and technical issues and provides guidance to EPA on how to improve regulatory programs.

USDA Agricultural Air Quality Task Force (2004-Present)

Appointed by the Secretary of Agriculture to the USDA Agricultural Air Quality Task Force. This task force advises the Secretary of Agriculture on air quality research and policy issues affecting agriculture. Led effort call attention to the inappropriate use of Total Suspended Particulate (TSP) as an indicator of

Particulate Matter regulated under Title V of the Clean Air Act and New Source Performance Standard (NSPS) when applied to uncontrolled sources such as confined animal feeding operations.

Appointed by the Chief of USDA NRCS to serve on specialty panel to address VOC emissions from agricultural operations and their impact on ozone formation.

Appointed by the Chief of USDA NRCS to serve on specialty panel to evaluate and develop white paper on EPA's proposed National Ambient Air Quality Standard for ozone.

U.S. EPA Science Advisory Board – Committee on Integrated Nitrogen (October 2006-September 2008)

Appointed by the Administrator of the Environmental Protection Agency to this committee. Committee charged to identify and analyze, from a scientific perspective, the problems reactive nitrogen presents in the environment and the links between them, as well as, evaluate the benefits of an integrated nitrogen management strategy for EPA. The committee will develop recommendations for EPA to improve its nitrogen regulation programs.

U.S. EPA Science Advisory Board – Ad Hoc Panel for review of EPA's Risk and Technology Review Assessment Plan (November 2006-October 2007)

Appointed by the Administrator of the Environmental Protection Agency to provide advice on the proposed methods and approaches to characterize human health risks associated with exposures to hazardous air pollutants (HAP) for approximately 30 different industrial source categories.

Special Assistant to the Chief – Air Quality, USDA-NRCS, Washington, D.C. (September 2002-August 2003)

Asked by Mack Gray, Deputy Under Secretary for Natural Resources and the Environment, to assist USDA with development of policies to include air quality in USDA's conservation efforts and to evaluate implications of US Environmental Protection Agency proposed policies on American agriculture. Worked closely with the Under Secretary, Mack Gray; General Council, Nancy Bryson; NRCS Chief, Bruce Knight; and Counselor to the Administrator (EPA), Jean-Marie Peltier to develop environmental policies and initiatives that were beneficial to air quality and agriculture.

Acting Lead Scientist for Air Quality, USDA-NRCS, Washington, D.C. (June-August, 2002)

Invited to evaluate existing National Conservation Practice Standards and recommend changes to existing standards and identify needs for new standards to guide NRCS personnel as the agency began including air quality in its conservation efforts.

Invited Presentations on Research and Policy Issues

Invited to provide presentation on challenges and research needs associated with regulation of Agricultural operations to Central States Air Resource Agencies Association (CenSARA) Business Meeting, March 7-9, 2006, Bandera, Texas. This was the annual meeting of the directors of State Air Pollution Regulatory Agencies in the central states – Texas, Oklahoma, Kansas, Nebraska, Louisiana, Arkansas, Missouri, Iowa, and Minnesota.

Invited to provide presentation on "Methods of Controlling Particulate Matter" at the National Air Quality Workshop sponsored by the USDA Natural Resources Conservation Service (NRCS), November 5-7, 2002, St. Louis Missouri.

Invited to provide presentation "NRCS National Perspective on Agricultural Air Quality Regulation" to USDA NRCS air quality workshop, May, 6-7, 2003, Ft. Worth, Texas.

Invited to provide an update on agricultural air quality issues to the annual USDA NRCS Environmental Engineering Meeting, November 5-6, 2003, Nashville, Tennessee.

Peer Reviewed Journal Articles

* Denotes graduate student for which I served as Major Professor
‡ Denotes graduate student for which I served on graduate advisory committee

1. Shaw, B. W., P. P. Buharivala‡, C. B. Parnell, Jr., and M. A. Demny*. 1998. Emission factors for grain receiving and feed loading operations at feed mills. Transactions of the ASAE. 41(3): 757-765.

2. Sweeten, J.M., C. B. Parnell, Jr., B. W. Shaw, and B. W. Auvermann. 1998. Particle size distribution of cattle feedlot dust emission. Transactions of the ASAE. 41(5): 1477-1481.

3. Wang, L.‡, C. B. Parnell, and B. W. Shaw. 2002. Performance characteristics of cyclones in cotton gin dust removal. Agricultural Engineering International: the CIGR Journal of Scientific Research and Development. Manuscript BC 02 001. Vol. IV. August 2002.

4. Wang, L. ‡, C. B. Parnell, and B. W. Shaw. 2002. Study of the cyclone fractional efficiency curves. Agricultural Engineering International: the CIGR Journal of Scientific Research and Development. Manuscript BC 02 002. Vol. IV. June 2002.

5. Mukhtar S.,A. Rose*, S. Capareda, C. Boriack‡, R. Lacey, B. Shaw, and C. Parnell Jr. 2003. Assessment of ammonia absorption onto Teflon and LDPE tubing used in pollutant stream conveyance. Agricultural Engineering -International: the CIGR Journal of Scientific Research and Development. Manuscript BC 03 012. Vol. V. December 2003.

6. Wang, L.‡, M.D. Buser‡, C.B. Parnell, B.W. Shaw. 2003. Effect of air density on cyclone performance and system design. Transactions of the ASAE 46(4): 1193-1201.

7. Capareda, S.C., C.N. Boriack‡, S. Mukhtar, A. Mutlu, B.W. Shaw, R.E. Lacey, and C.B. Parnell, Jr. 2005. Recovery of gaseous emission from ground level area sources of ammonia and hydrogen sulfide using dynamic isolation flux chambers. Journal of Air and Waste Management. 55(7): 999-1006.

8. Fritz. B.K.*, B.W. Shaw, and C.B. Parnell, Jr. 2005. Influence of meteorological time frame and variation on horizontal dispersion coefficients in Gaussian dispersion modeling. Transactions of the ASAE. 48(3): 1185-1196.

9. Wang, L.‡, C. B. Parnell, B.W. Shaw, R.E. Lacey, M.D. Buser‡, L.B. Goodrich and S. C Capareda, 2005. Correcting PM10 over-sampling problem for agricultural particulate matter emissions: preliminary study. Transactions of the ASAE. 48(2): 749-755.

10. Wang, L.‡, J. D. Wanjura‡, C. B Parnell, R.E. Lacy and B. W. Shaw, 2005. Performance characteristics of low-volume PM10 sampler. Transactions of the ASAE. 48(2): 739-748.

11. Wanjura, J.D.‡, M.D. Buser‡, C. B. Parnell, Jr., B.W. Shaw, R.E. Lacey. 2005. A simulated approach to estimating PM10 and PM2.5 concentrations downwind from cotton gins. Transactions of ASAE. 48(5): 1919-1925.

12. Wanjura, J.D.‡, C. B. Parnell, Jr., B.W. Shaw, and R.E. Lacey. 2005. The design and evaluation of a low volume total suspended particulate sampler. Transactions of ASAE. 48(4): 1547-1552.

13. Faulkner, W.B.* and B.W. Shaw. 2006. Efficiency and pressure drop of cyclones across range of inlet velocities. Applied Engineering in Agriculture. 22(1): 155-161.

14. Wang, L.‡, C. B. Parnell, B. W. Shaw, and R. E. Lacey. 2006. A theoretical approach for predicting number of turns and cyclone pressure drop. Transactions of ASABE 49(4): 491-503.

15. Wang, L.‡, D.B. Parker, C.B. Parnell Jr., R.E. Lacey and B.W. Shaw. 2006. Comparison of CALPUFF and ISCST3 models for predicting downwind odor and source emission rates. Atmospheric Environment 40: 4663-4669.

16. Faulkner, W.B.*, B.W. Shaw, and R.E. Lacey. 2007. Coarse fraction aerosol particles: theoretical analysis of rural versus urban environments. Applied Engineering in Agriculture. 23(2):239-244.

17. Buser, M.D.‡, C.B. Parnell, Jr., B.W. Shaw, and R.E. Lacey. 2007. Particulate matter sampler errors due to the interaction of particle size and sampler performance characteristics: background and theory. Transactions of ASABE 50(1): 221-228.

18. Buser, M.D.‡, C.B. Parnell, Jr., B.W. Shaw, and R.E. Lacey. 2007. Particulate matter sampler errors due to the interaction of particle size and sampler performance characteristics: ambient PM_{10} samplers. Transactions of ASABE 50(1): 229-240.

19. Buser, M.D.‡, C.B. Parnell, Jr., B.W. Shaw, and R.E. Lacey. 2007. Particulate matter sampler errors due to the interaction of particle size and sampler performance characteristics: ambient $PM_{2.5}$ samplers. Transactions of ASABE 50(1): 241-254.

20. Faulkner, W.B.*, M.D. Buser‡, D.P. Whitelock, and B.W. Shaw. 2007. Effects of cyclone diameter on performance of 1D3D cyclones: collection efficiency. Transactions of ASABE. 50(3): 1053-1059.

21. Faulkner, W.B.*, M.D. Buser‡, D.P. Whitelock, and B.W. Shaw. 2007. Effects of cyclone diameter on performance of 1D3D cyclones: cut point and slope. Transactions of ASABE. In Press.

22. Faulkner, W.B*., J.M. Lange‡, J.J. Powell‡, B.W. Shaw, and C.B. Parnell, Jr. 2007. Sampler

placement to determine emission factors from ground level area sources. Atmospheric Environment (2007), http://dx.doi.org/10.1016/j.atmosenv.2007.08.029.

23. Faulkner, W.B.*, J.J. Powell‡, J.M. Lange‡, B.W. Shaw, R.E. Lacey, and C.B. Parnell, Jr. 2007. Comparison of dispersion models for ammonia emissions from a ground level area source. Transactions of the ASABE. Transactions of the ASABE. 50(6): 2189-2197.

24. Buser, M. D., J. D. Wanjura, D. P. Whitelock, S. C. Capareda, B. W. Shaw, R. E. Lacey. 2008. Estimating FRM PM10 sampler performance characteristics using particle size analysis and collocated TSP and PM10 samplers: cotton gins. Transactions of the ASABE. 51(2): 695-702.

25. Faulkner, W. B., M. D. Buser, D. P. Whitelock, B. W. Shaw. 2008. Effects of cyclone diameter on performance of 1D3D cyclones: cutpoint and slope. Transactions of the ASABE. 51(1): 287-292.

26. Faulkner, W.B.*, B.W. Shaw. 2008. Review of ammonia emission factors for United States animal agriculture. Atmospheric Environment 42 (2008) 6567-6574.

27. Faulkner, W.B.*, B.W. Shaw, T. Grosch. 2008. Sensitivity of two dispersion models (AERMOD and ISCST3) to input parameters for rural ground-level area source. Journal of Air & Waste Management 58(10): 1288-1296.

28. Wanjura, J.D.‡, B.W. Shaw, C.B. Parnell, Jr., R. E. Lacey, S.C. Capareda. 2008. Comparison of continuous monitor (TEOM) and gravimetric sampler particulate matter concentrations. Transaction of the ASABE. 51(1); 251-257.

29. Wanjura, J. D., W. B. Faulkner, C. B. Parnell, Jr., B. W. Shaw, S. C. Capareda, R. E. Lacey. 2009. Source sampling of particulate matter emissions from cotton harvesting: system field testing and emission factor development. Transactions of the ASABE. 52(2): 591-597.

30. Wanjura, J. D., C. B. Parnell, Jr., B. W. Shaw, S. C. Capareda, R. E. Lacey. 2009. Source sampling of particulate matter emissions from cotton harvesting: system design and evaluation. Applied Engineering in Agriculture. 25(1): 85-96.

31. Faulkner, W.B.*, J.D. Wanjura, R.K. Boman, B.W. Shaw, C.B. Parnell, Jr. 2011. Evaluation of modern cotton harvest systems on irrigated cotton: harvestor performance. Applied Engineering in Agriculture. 27(4): 497-506.

32. Faulkner, W.B.*, J.D. Wanjura, R.K. Boman, B.W. Shaw, C.B. Parnell, Jr. 2011. Evaluation of modern cotton harvest systems on irrigated cotton: economic returns. Applied Engineering in Agriculture. 27(4): 515-522.

33. Faulkner, W.B.*, J.D. Wanjura, E.F. Hequet, R.K. Boman, B.W. Shaw, C.B. Parnell, Jr. 2011. Evaluation of modern cotton harvest systems on irrigated cotton: fiber quality. Applied Engineering in Agriculture. 27(4): 507-513.

34. Faulkner, W.B.*, J.D. Wanjura, E.F. Hequet, R.K. Boman, B.W. Shaw, C.B. Parnell, Jr. 2011.

Evaluation of modern cotton harvest systems on irrigated cotton: yarn quality. Applied Engineering in Agriculture. 27(4): 523-532.

Editor Reviewed Proceedings

* Denotes graduate student for which I served as Major Professor
‡ Denotes graduate student for which I served on graduate advisory committee

1. Zhang, R.H., L. L. Christianson, J. S. Zhang, B. W. Shaw, and D.L. Day. 1993. Applications of Mass Transfer Principles on Modeling Gaseous Emissions from Indoor Materials. Indoor Air '93, Finland.

2. Parnell, C. B., Jr., B. W. Shaw, P. P. Buharivala, and M. A. Demny*. 1997. Emission factors for grain receiving and feed loading operations at feed mills. Proceedings of the Fifth International Livestock Environment Symposium. Minneapolis, Minnesota.

3. Buser, M.D., C.B. Parnell, Jr., B.W. Shaw, and R.E. Lacey. 2003. Particulate matter sampler errors due to the interaction of particle size and sampler performance characteristics: background and theory. Proceedings of the Air Pollution from Agricultural Operations Conference, Raleigh, North Carolina.

4. Buser, M.D., C.B. Parnell, Jr., B.W. Shaw, and R.E. Lacey. 2003. Particulate matter sampler errors due to the interaction of particle size and sampler performance characteristics: PM10 and PM2.5 ambient air samplers. Proceedings of the Air Pollution from Agricultural Operations Conference, Raleigh, North Carolina.

Editor Reviewed Chapters

* Denotes graduate student for which I served as Major Professor
‡ Denotes graduate student for which I served on graduate advisory committee

1. Shaw, B. W., C. B. Parnell, and B. K. Fritz*. 1999. Systems engineering, operations research, and management science. CIGR Handbook of Agricultural Engineering, Vol. III Plant Production Engineering. Chapter 2, Section 2.1. Pages 521-536.

2. Sweeten, J. M., C. B. Parnell, B. W. Auvermann, and B. W. Shaw. 2000. Livestock feedlots. Air Pollution Engineering Manual, 2nd Edition - Food and Agricultural Industry. Chapter 13. Pages 488-496.

3. Auvermann, B. R. Bottcher, A. Heber, D. Meyer, C.B. Parnell, Jr., B. Shaw, and J. Worley. 2006. Particulate matter emissions from animal feeding operations. Animal Agriculture and the Environment: National Center for Manure and Animal Waste Management White Papers. Pages 435-468.

Proceedings Papers

1. Childers, R.E., Jr., L. Wilde, B. W. Shaw. 1990. Timing PIX Applications with

GOSSYM/COMAX. Proceedings of the Beltwide Cotton Conference. Las Vegas, Nevada.

2. Shaw, B. W., C. B. Parnell Jr., and R. E. Childers Jr. 1990. Effect of plant growth regulators and GOSSYM recommendations on cotton fiber quality. Proceedings of the Beltwide Cotton Conference. Las Vegas, Nevada.
3. Shaw, B. W., B.J. Lesikar, and C. B. Parnell, Jr. 1996. Feed mill emission factors associated with air pollution regulations of cattle feed yards. Proceedings of the International Conference on Air Pollution from Agricultural Operations. Kansas City, Missouri, February 7-9, 1996.
4. Lesikar, B.J., B. W. Shaw, and C. B. Parnell, Jr. 1996. Federal Clean Air Act of 1990 - implications for agricultural industries. Proceedings of the International Conference on Air Pollution from Agricultural Operations. Kansas City, Missouri, February 7-9, 1996.
5. Parnell, C. B., Jr., B. W. Shaw, and P. P. Buharivala. 1996. A Procedure for estimating emission factors from concentration measurements of unloading and loading operations at feed mills. Proceedings of the International Conference on Air Pollution from Agricultural Operations. Kansas City, Missouri, February 7-9, 1996.
6. Williams, L. M., M.A. Demny, C. B. Parnell, Jr., and B. W. Shaw. 1997. A new method for predicting ambient particle concentrations downwind from cotton gins. Proceedings of the Beltwide Cotton Conference, New Orleans, LA. 1513-1520.
7. Tullis, A., B. W. Shaw, C. B. Parnell, Jr., P. P. Buharivala, M.A. Demny, and S. S. Flannigan.. 1997. Design and Analysis of the Barrel Cyclone. Proceedings of the Beltwide Cotton Conference, New Orleans, LA. 1520-1525.
8. Ramaiyer, A., C. B. Parnell, Jr., B. W. Shaw, S. Flannigan, and B. Fritz. 1997. Engineering analysis and economic impacts of air pollution abatement strategies for cotton gins. Proceedings of the Beltwide Cotton Conference, New Orleans, LA. 1525-1538.
9. Flannigan, S. S., C. B. Parnell, Jr., B. W. Shaw, and A. Ramaiyer. 1997. Minimum cost compliance strategies for cotton gins across the U.S. Proceedings of the Beltwide Cotton Conference, New Orleans, LA. 1539-1544.
10. Fritz, B. K., G. W. Zwicke, B. W. Shaw, and C. B. Parnell. 1998. Dispersion modeling of ground-level area sources of particulate. Proceedings of the Beltwide Cotton Conference. San Diego, California.
11. Zwicke, G. W., B. K. Fritz, C. B. Parnell, and B. W. Shaw. 1998. A re-examination of particulate dispersion modeling for cotton gins. Proceedings of the Beltwide Cotton Conference. San Diego, California.
12. Flannigan, S., C. B. Parnell, and B. W. Shaw. 1998. Minimum cost air pollution control for cotton gins. Proceedings of the Beltwide Cotton Conference. San Diego, California.
13. Buch, U., C. B. Parnell, and B. W. Shaw. 1998. Particle size distribution results from the coulter counter multisizer and the Graseby Andersen Cascade Impactor. Proceedings of the Beltwide Cotton Conference. San Diego, California.
14. Zwicke, G. W., B. W. Shaw, C. B. Parnell, Jr., S. E. Hughs, P.A. Funk, and B. K. Fritz. 1999. Dispersion modeling of particulate from point and multiple point sources. Proceedings of the Beltwide Cotton Conference. Orlando, Florida.
15. Parnell, C. B., B. W. Shaw, P. J. Wakelyn, and B. W. Auvermann. 1999. Physical characteristics of particulate matter and health effects standards. Proceedings of the Beltwide Cotton Conference. Orlando, Florida.
16. Buch, U., C. B. Parnell, Jr., B. W. Shaw, B. W. Auvermann. 1999. Performance test results from the Cascade Impactor, the Federal Reference Method PM2.5 sampler, and the IMPROVE sampler. Proceedings of the Beltwide Cotton Conference. Orlando, Florida.

17. Meister, M.T., B. K. Fritz, B. W. Shaw, and C. B. Parnell. 1999. Dispersion modeling of particulate matter from ground-level sources. Proceedings of the Beltwide Cotton Conference. Orlando, Florida.
18. Parnell, Calvin B., Bryan W. Shaw, Brent Auvermann and Joshua McClure. 2000. Engineering of PM10 and PM2.5 Samplers. Proceedings of the Beltwide Cotton Conference. Volume 1:207-212 (2000). National Cotton Council, Memphis TN
19. Stark, C. C., B. W. Shaw, C. B. Parnell and J. W. Swaim. 2000. Small-Scale Burn Testing. Proceedings of the Beltwide Cotton Conference. Volume 1:453-455 (2000). National Cotton Council, Memphis TN
20. McClure, J. W., B. W. Shaw and C. B. Parnell, Jr. 2000. Design of a High Volume PM 2.5 Sampler. Proceedings of the Beltwide Cotton Conference. Volume 1:1624-1626 (2000). National Cotton Council, Memphis TN
21. Fritz, B. K., A. R. Pargmann, B. W. Shaw and C. B. Parnell. 2000. Concentration Measurement and Dispersion Modeling of PM-10 from a Cotton Gin. Proceedings of the Beltwide Cotton Conference. Volume 1:1631-1640 (2000). National Cotton Council, Memphis TN
22. Wang, Lingjuan, Calvin B. Parnell, Jr. and Bryan W. Shaw. 2000. 1D2D, 1D3D, 2D2D Cyclone Fractional Efficiency Curves for Fine Dust. Proceedings of the Beltwide Cotton Conference. Volume 1:1641-1647 (2000). National Cotton Council, Memphis TN
23. Meister, M. T., B. K. Fritz, B. W. Shaw and C. B. Parnell. 2000. Air Dispersion Modeling of Particulate Matter from Ground-Level Area Sources. Proceedings of the Beltwide Cotton Conference. Volume 1:1652-1659 (2000). National Cotton Council, Memphis TN
24. Pargmann, A. R., B. K. Fritz, C. B. Parnell and B. W. Shaw. 2000. Calculating Emission Inventories of Field Operations in Texas. Proceedings of the Beltwide Cotton Conference. Volume 1:1659-1661 (2000). National Cotton Council, Memphis TN
25. Wang, L., C. B. Parnell, Jr., B. W. Shaw. 2001. Analysis of Cyclone Pressure Drop,. Proceedings of the 2001 Beltwide Cotton Production Conferences. National Cotton Council. Memphis, Tenn.
26. Buser, M., C. B. Parnell, Jr., B. W. Shaw, and B. Norman. 2001. Update on the ASAE Proposed Standard X-578: Cotton Gins – Method of Utilizing Emission Factors in Determining Emission Parameters. Proceedings of the 2001 Beltwide Cotton Production Conferences. National Cotton Council. Memphis, Tenn.
27. Pargmann, A. R., C. B. Parnell, Jr., B. W. Shaw. 2001 Performance characteristics of PM2.5 samplers in the presence of agricultural dust. Proceedings of the 2001 Beltwide Cotton Production Conferences. National Cotton Council. Memphis, Tenn.
28. Fritz, B., B. W. Shaw, and C. B. Parnell, Jr. 2001. Regulation of Air Pollution from Cotton Gins. Proceedings of the 2001 Beltwide Cotton Production Conferences. National Cotton Council. Memphis, Tenn.
29. Wang, L. J., C. B. Parnell, and B. W. Shaw. 2002. Theoretical study of the particle collection mechanism in the outer vortex of a cyclone. Proceedings of the 2002 Beltwide Cotton Production Conferences. National Cotton Council. Memphis, Tenn.
30. McClure, J., B. W. Shaw, C. B. Parnell. 2002. Comparison of the Coulter Counter and Aerodynamic Particle Sizer for determining particle size distributions. Proceedings of the 2002 Beltwide Cotton Production Conferences. National Cotton Council. Memphis, Tenn.
31. Buser, M., C. B. Parnell, B. W. Shaw, and R. Lacey. 2002. Characterization of dusts emitted fby cotton gins in terms of PM10. Proceedings of the 2002 Beltwide Cotton Production Conferences. National Cotton Council. Memphis, Tenn.
32. Buser, M., C. B. Parnell, B. W. Shaw, and R. Lacey. 2002. PM10 sampler errors due to the

interaction of particle size and sampler performance characteristics. Proceedings of the 2002 Beltwide Cotton Production Conferences. National Cotton Council. Memphis, Tenn.

33. Fritz, B. K., B. W. Shaw, and C. B. Parnell. 2002. Dispersion modeling of particulate matter from low-level point sources. Proceedings of the 2002 Beltwide Cotton Production Conferences. National Cotton Council. Memphis, Tenn.
34. Boriack, C., L. B. Goodrich, C. B. Parnell, Jr., S. Mukhtar, B. W. Shaw, and R. Lacey. 2003. Revised design of the total suspended particulate (TSP) sampler. Proceedings of the 2003 Beltwide Cotton Conferences, National Cotton Council, Nashville, TN.
35. Goodrich, L. B., C. B. Parnell, R. E. Lacey, S. Mukhtar and B. W. Shaw. 2003. Evaluation of the use of the box model to determine emission fluxes from area sources and the corresponding modeled concentrations using the industrial source complex. Proceedings of the 2003 Beltwide Cotton Conferences, National Cotton Council, Nashville, TN.
36. Simpson, S. L., C. B. Parnell, Jr., and B. W. Shaw. 2003. Comparison of particle sizing methods for measurement of air emissions from agricultural operations. Proceedings of the 2003 Beltwide Cotton Conferences, National Cotton Council, Nashville, TN.
37. Stiggins, T. E., C. B. Parnell, R. E. Lacey and B. W. Shaw. 2003. Errors associated with time average concentrations in gaussian modeling. Proceedings of the 2003 Beltwide Cotton Conferences, National Cotton Council, Nashville, TN.
38. Wang, L., J. D. Wanjura, T. E. Stiggins, C. B. Parnell, Jr., R. E. Lacy, B. W. Shaw. 2003. Evaluation of PM10 pre-separator for low-volume sampling. Proceedings of the 2003 Beltwide Cotton Conferences, National Cotton Council, Nashville, TN.
39. Wanjura, J. D., C. B. Parnell, B. W. Shaw and R. E. Lacey. 2003. Design and evaluation of a low volume total suspended particulate sampler. Proceedings of the 2003 Beltwide Cotton Conferences, National Cotton Council, Nashville, TN.
40. Capareda, S., L. Wang, B. W. Shaw, C. B. Parnell. 2004. Particle size distributions of PM emitted by agricultural operations—impacts on FRM PM10 and PM2.5 concentration measurements. Proceedings of the 2004 Beltwide Cotton Conferences, National Cotton Council, Nashville, TN.
41. Shaw, B.W.; R.E. Lacey; S.C. Capareda; C.B. Parnell; and J. Wanjura; L. Wang. 2004. Application of the national ambient air quality standards (NAAQS) in urban versus rural environments. Proceedings of the 2004 Beltwide Cotton Conferences, National Cotton Council, Nashville, TN.
42. Price, J. E., R. E. Lacey; B. W. Shaw; and C. B. Parnell. 2004. Uncertainty associated with particulate matter emissions from agricultural operations. Proceedings of the 2004 Beltwide Cotton Conferences, National Cotton Council, Nashville, TN.
43. Wang, L.; C.B. Parnell; B.W. Shaw; R.E. Lacey; B.L. Goodrich; S.C. Capareda; and M.D. Buser. 2004. A theoretical approach to correcting PM10 oversampling problem for agricultural dust. Proceeedings of the 2004 Beltwide Cotton Conferences, National Cotton Council, Nashville, TN.
44. Wanjura, J., M. Buser, C. B. Parnell, B. W. Shaw, and R.E. Lacey. 2004. A simulated Approach to Estimating PM10 and PM2.5 concentrations downwind from cotton gins. Proceedings of the 2004 Beltwide Cotton Conferences, National Cotton Council, Nashville, TN.
45. Capareda, S.C., M. D. Buser, D. Whitelock, J. K. Green, C. B. Parnell, Jr., B. W. Shaw and J. D. Wanjura, 2005. Particle Size Distribution Analysis of Cotton Gin Dust and Its Impact on PM10 Concentration Measurements. Proceedings of the 2005 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.
46. Hamm, L.B., M.D. Buser, S.C. Capareda, J.D. Wanjura, C.B. Parnell, Jr., and B.W. Shaw. 2005. Cotton Gin Yard and Road Dust Emissions and the Resulting Effects on Downwind Samplers. Proceedings of the 2005 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.

47. Parnell, C.B., Jr., S. L. Simpson, S.C. Capareda and B.W. Shaw. 2005. Engineering Systems for Seed Cotton Handling, Storage and Ginning. Proceedings of the 2005 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.
48. Wang, L., C.B. Parnell, Jr., B.W. Shaw, R.E. Lacey and S.C. Capareda. 2005. Dry Deposition of Particulate Matter Emitted from Cotton Gins - Particle Size Distribution of the Particulate Matter in the Downwind Plume. Proceedings of the 2005 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.
49. Wanjura, J.D., C.B. Parnell, B.W. Shaw, R. E. Lacey, D. P. Whitelock, S. E. Hughs, C. B. Armijo, J. Kelley Green, B. M. Norman, Sergio C. Capareda, and Lee Hamm. 2005. An Engineering Analysis of a Method Used to Determine Property Line Setback Distances for Cotton Gins. Proceedings of the 2005 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.
50. Michalewicz, D.A., J.D. Wanjura, B.W. Shaw, C.B. Parnell. 2005. Evaluation of Sources and Controls of Fugitive Dust from Agricultural Operations. Proceedings of the 2005 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.
51. Faulkner, W.B. and B.W. Shaw. 2005. Analysis of the Texas A&M Cyclone Design Method. Proceedings of the 2005 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.
52. Faulkner, B.; J. Powell; J. Lange; B. Shaw; R. Lacey; and C. Parnell, Jr. 2006. Comparison of dispersion models for ammonia emissions from a ground level area source. In: *Proceedings of Workshop on Agricultural Air Quality: State of the Science,* June 5-8, 2006. ISBN 0-9669770-4-1. North Carolina State University; Raleigh, N.C.
53. Mukhtar, S.; A. Mutlu; S. Capareda; R. Lacey; B. Shaw; and C. Parnell. 2006. Seasonal and spatial variations of ammonia from an open-lot dairy. In: *Proceedings of Workshop on Agricultural Air Quality: State of the Science,* June 5-8, 2006. ISBN 0-9669770-4-1. North Carolina State University; Raleigh, N.C.
54. Lange, J.; J. Powell; B. Shaw; and C. Parnell, Jr. 2006. Unjustified enforcement of regulations based upon PM emissions for laying hen operations. In: *Proceedings of Workshop on Agricultural Air Quality: State of the Science,* June 5-8, 2006. ISBN 0-9669770-4-1. North Carolina State University; Raleigh, N.C.
55. Emsoff, S.A., J.D. Wanjura, S.C. Capareda, C.B. Parnell, Jr., and B.W. Shaw. 2006. Feasibility of Using Cotton Gin Trash for Cogeneration. Proceedings of the 2006 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.
56. Faulkner, W.B., B.W. Shaw, and M.D. Buser. 2006. Effects of Cyclone Diameter on Performance of 1D3D and 2D2D Cyclones. Proceedings of the 2006 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.
57. Parnell, Jr., C.B., J.D. Wanjura, S.L. Simpson, B.W. Shaw, and S.C. Capareda. 2006. Systems Engineering of Seed Cotton Handling and Ginning in Texas. Proceedings of the 2006 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.
58. Simpson, S.L., C.B. Parnell, Jr., J.D. Wanjura, S.C. Capareda, and B.W. Shaw. 2006. Seed Cotton Transport Analyses Using GIS. Proceedings of the 2006 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN
59. Lange, J.M., C.B. Parnell, Jr., J.D. Wanjura, and B.W. Shaw. 2006. Impacts of PMc NAAQS on FRM PMc Measurements of Cotton Ginning Emissions. In: Proceedings of the 2006 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.
60. Wanjura, J.D., C.B. Parnell, Jr., B.W. Shaw, and S.C. Capareda. 2006. Source Testing of Particulate Matter Emissions from Cotton Harvesters – System Design. Proceedings of the 2006 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.
61. Powell, J., C.B. Parnell, Jr., J. Lange, B.W. Shaw, and B. Faulkner. 2006. A Comparison of Predicted

Property Line Particulate Concentrations using ISCST3, AERMOD, WindTrax, and AUSTAL View. Proceedings of the 2006 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.

62. Chen, J., B.W. Shaw, and C.B. Parnell, Jr. 2007. Wind Tunnel Testing Protocol for Evaluating Aerosol Samplers Using Poly-dispersed Particles. Proceedings of the 2007 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.
63. Wanjura, J.D., B. W. Shaw, C.B. Parnell, Jr., S.C. Capareda, and W. B. Faulkner. 2007. A Preliminary Particulate Matter Emission Factor from Cotton Harvesting. Proceedings of the 2007 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.
64. Faulkner, W.B., M.D. Buser, D.P. Whitelock, and B.W. Shaw. 2007. Effects of Cyclone Diameter on Performance of 1D3D Cyclones: Cyclone Cut Point. Proceedings of the 2007 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.
65. Skloss, S.J., J.M. Lange, C. B. Parnell, Jr., and B.W. Shaw. 2007. Evaluation of the FRM PM10 Sampler for Property Line Measurement of PM_{10}. Proceedings of the 2007 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.
66. Simpson, S.L., M. Hamann, C.B. Parnell, Jr., S. Emsoff, S. Capareda, and B.W. Shaw. 2007. Engineering of Seed Cotton Transport Alternatives. Proceedings of the 2007 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.
67. Emsoff, S., C.B. Parnell, Jr., S.L. Simpson, M. Hamann, B.W. Shaw, and S. Capareda. 2007. Systems Engineering of Seed Cotton Handling and Ginning in Texas. Proceedings of the 2007 Beltwide Cotton Conferences, National Cotton Council, Memphis, TN.

Selected Presentations and Papers

1. Shaw, B. W. 1988. Development of Image Processing Software for the Display of Passive Microwave Data. University Undergraduate Fellows Thesis. Texas A&M University, College Station, Texas.
2. Shaw, B. W., C. B. Parnell Jr., and R.E. Childers Jr. 1990. Evaluation of Growth Regulators' and GOSSYM Recommendations' Effects on Cotton Fiber Quality. ASAE Paper No. 90-1025, American Society of Agricultural Engineers, St. Joseph, Missouri.
3. Shaw, B. W. 1990. Evaluation of the Effect of Plant Growth Regulators and GOSSYM Recommendations on Cotton Fiber Quality. Master of Science Thesis. Texas A&M University, College Station, Texas.
4. Kulp, R., L. Sparks, J. B. Priest, J. McLaughlin, L. L. Christianson, A. Zhivov, M. McCulley, G. Chamberlin, M. Tumbleson, R. Maghirang, B. W. Shaw, Z. Li, J. Arogo, and R. Zhang. 1993. Ventilation and IAQ - state-of-the-art, policy and research needs assessment. Prepared for the U.S. Environmental Protection Agency Air and Energy Engineering Research Laboratory.
5. Shaw, B. W., R.H. Zhang, and L. L. Christianson. 1993. A Model for Predicting Dust Emission Rates from Flat Surfaces. ASAE Paper No. 93-4550, American Society of Agricultural Engineers, St. Joseph, Missouri.
6. Shaw, B. W. 1994. Use of a Convective Emission Chamber to Study Particle Resuspension. Ph.D. Dissertation. University of Illinois at Urbana-Champaign.
7. Parnell, C. B., Jr., B.J. Lesikar, and B. W. Shaw. 1994. A systems approach to regulating air pollution from grain handling facilities. International Summer Meeting of the American Society of Agricultural Engineers, Kansas City, Missouri, June 19-22. ASAE Paper No. 94-4043.
8. Parnell, C. B., Jr., R. Lacey, J. M. Sweeten, B. W. Shaw, B.J. Lesikar, R.E. Childers, Jr. 1994. Agribusiness to pay the price for incorrect air pollution regulations. Resource - Engineering & Technology for a Sustainable World. December 1994.
9. Lesikar, B.J., B. W. Shaw, C. B. Parnell, Jr., R.E. Childers, and J. M. Sweeten. 1995. Implications

of the Federal Clean Air Act of 1990 on agricultural industries. International Meeting of the American Society of Agricultural Engineers, Chicago, Illinois, June 18-23.

10. Parnell, C. B., Jr., B. W. Shaw, P. P. Buharivala, M. A. Demny, S. S. Flannigan, B. K. Fritz, A. W. Tullis, and A. M. Tacker. 1996. Emission factors for grain receiving & feed loading at feed mills. Grant Report - National Cattleman's Beef Association.
11. Shaw, B. W., C. B. Parnell, Jr., and B. Fritz. 1996. ASTREC Odor Modeling. Internal study report.
12. Shaw, B. W., C. B. Parnell, Jr. 1997. PM-2.5 Emissions from agricultural operations. Presented at the1997 International Meeting of the American Society of Agricultural Engineers. Paper No. 974097. ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659 USA.
13. Demny, M. A., B. W. Shaw, C. B. Parnell, Jr. 1997. Evaluating emissions from feed mills associated with cattle feed yards. Presented at the1997 International Meeting of the American Society of Agricultural Engineers. Paper No. 974096. ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659 USA.
14. Zwicke, G. W., B. W. Shaw, C. B. Parnell, Jr., M. A. Demny, S. S. Flannigan, P. P. Buharivala, and A. W. Tullis. 1997. Performance characteristics of the Barrel Cyclone. Presented at the1997 International Meeting of the American Society of Agricultural Engineers. Paper No. 971010. ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659 USA.
15. Flannigan, S., C. B. Parnell, Jr., and B. W. Shaw. 1997. Minimum cost air pollution control for cotton gins. Presented at the1997 International Meeting of the American Society of Agricultural Engineers. Paper No. 971011. ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659 USA.
16. Fritz, B. K, G. W. Zwicke, B. W. Shaw, and C. B. Parnell, Jr. 1997. A re-examination of the assumptions and parameters of the Gaussian dispersion model. Presented at the1997 International Meeting of the American Society of Agricultural Engineers. Paper No. 974098. ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659 USA.
17. Tullis, A. W., B. W. Shaw, C. B. Parnell, P. P. Buharivala, M.A. Demny, and S. S. Flannigan. 1997. Design and analysis of the Barrel Cyclone. The Cotton Gin and Oil Mill Press. June 21, 1997. 6-12.
18. Shaw, B. W. 1997. Contributed to article "How To Pick A Custom Harvester", Progressive Farmer Cotton Report, July 1997. 16-17.
19. Shaw, B. W. 1997. Citation in article "Dust from feedyards less than expected", Lubbock Avalanche-Journal, March 2, 1997.
20. Romanillos, A., B. W. Auvermann, C. B. Parnell, and B. W. Shaw. 1998. Property line concentrations for cattle feedyards. Internal Paper.
21. Buch, U., C. B. Parnell, B. W. Shaw, and B. W. Auvermann. 1998. Particle size results from the cascade impactor and the Federal Reference Method (FRM) PM2.5 Sampler, using the Coulter Counter Multisizer. Presented at the 1998 International Meeting of the American Society of Agricultural Engineers. Paper No. 984065. ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659 USA.
22. Zwicke, G. W., B. K. Fritz, C. B. Parnell, and B. W. Shaw. 1998. Dispersion modeling of particulate from point and multiple point sources. Presented at the 1998 International Meeting of the American Society of Agricultural Engineers. Paper No. 984066. ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659 USA.
23. Fritz, B., G. Zwicke, B. W. Shaw, and C. B. Parnell, Jr. 1998. Dispersion modeling of Particulate from Ground-Level Area Sources. Paper No. 984067. Presented at the 1998 ASAE Annual International Meeting in Orlando, FL. ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659 USA.
24. Buch, U, B. W. Shaw, C. B. Parnell, Jr., B. W. Auvermann. 1999. Performance analysis of the FRM PM2.5 sampler. Presented at the 1999 International Meeting of the American Society of Agricultural Engineers. Paper No. 994193. ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659 USA.
25. Meister, M.T., B. K. Fritz, B. W. Shaw, and C. B. Parnell, Jr. 1999. Dispersion modeling of

particulate matter from ground-level area sources. Presented at the 1999 International Meeting of the American Society of Agricultural Engineers. Paper No. 994194. ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659 USA.

26. Romanillos, A., B. Auvermann, C. B. Parnell, and B. W. Shaw. 1999. Effect of stocking density on fugitive PM10 emissions from a cattle feedyard. Paper No. 994192. Presented at the 1999 ASAE Annual International Meeting in Toronto, Canada. ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659 USA.
27. Wang, L., C. B. Parnell, Jr., and B. W. Shaw. 1999. Performance characteristics for the 1D2D, 2D2D, 1D3D, and Barrel Cyclone. Presented at the 1999 International Meeting of the American Society of Agricultural Engineers. Paper No. 994195. ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659 USA.
28. Weinheimer, B.T., J.F. Coleman, J.K. Green, C. B. Parnell, Jr., and B. W. Shaw. 1999. Evaluations of a flaked grain cyclone air lift system at a feedyard. Paper No. 994196. Presented at the 1999 ASAE Annual International Meeting in Toronto, Canada. ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659 USA.
29. Pargmann, A., C. Parnell, Jr., B. W. Shaw. 2001. Performance characteristics of PM2.5 samplers in the presence of agricultural dusts. Presented at the 2001 International Meeting of the American Society of Agricultural Engineers. Paper No. 014008. ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659 USA.
30. Wang, L., C. Parnell, Jr., B. Shaw. 2001. Cyclone pressure drop measurement. Presented at the 2001 International Meeting of the American Society of Agricultural Engineers. Paper No. 014009. ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659 USA.
31. Buser, M., C. Parnell, Jr., B. Shaw. 2001. A systematic strategy of analyzing alternative cotton gin abatement systems when compliance issues arise. Presented at the 2001 International Meeting of the American Society of Agricultural Engineers. Paper No. 011167. ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659 USA.
32. Buser, M.D., C.B. Parnell, Jr., B.W. Shaw, and R.E. Lacey. 2003. Characteristic particle size distribution for cotton gins: based on 1996 AP-42 emission factors. ASAE Paper No. 034113, Presented at the 2003 Annual International Meeting of the ASAE, Las Vegas, Nevada.
33. Goodrich, L.B., C.B. Parnell, Jr., S. Mukhtar, R.E. Lacey, and B.W. Shaw. 2003. A science-based PM10 emission factor for freestall dairies. ASAE Paper No. 034115, Presented at the 2003 Annual International Meeting of the ASAE, Las Vegas, Nevada.
34. Mukhtar, S., Rose, A.J., B.W. Shaw, C.B. Parnell, Jr., and R.E. Lacey. 2003. Assessment of ammonia adsorption onto polymer tubing. Wang, L., C.B. Parnell, Jr., B.W. Shaw, and R.E. Lacey. 2003. ASAE Paper No. 034106, Presented at the 2003 Annual International Meeting of the ASAE, Las Vegas, Nevada.
35. Parnell, C.B., Jr., B.W. Shaw, S. Mukhtar, and R.E. Lacey. 2003. PM emission factor for cattle feedyards. ASAE Paper No. 034119, Presented at the 2003 Annual International Meeting of the ASAE, Las Vegas, Nevada.
36. Rose, A. J., S. Mukhtar, B.W. Shaw, C. B. Parnell Jr. and R. E. Lacey. 2003. Assessment of ammonia adsorption onto polymer tubing. ASAE Paper No. 03-2185. Presented at the 2003 Annual International Meeting of the ASAE, Las Vegas, Nevada.
37. Wang, L., C.B. Parnell, Jr., B.W. Shaw, and R.E. Lacey. 2003. Analysis of cyclone collection efficiency. ASAE Paper No. 034114, Presented at the 2003 Annual International Meeting of the ASAE, Las Vegas, Nevada.
38. Wang, L., J.D. Wanjura, C. Boriack, C.B. Parnell, Jr., B.W. Shaw, and R.E. Lacey. 2003.

Performance characteristics of low-volume PM10 inlet and TEOM continuous PM sampler. ASAE Paper No. 034118, Presented at the 2003 Annual International Meeting of the ASAE, Las Vegas, Nevada.

39. Wanjura, J.D., C.B. Parnell, Jr., B.W. Shaw, R.E. Lacey and M.D. Buser. 2003. Dispersion modeling of agricultural low level point sources. ASAE Paper No. 034117, Presented at the 2003 Annual International Meeting of the ASAE, Las Vegas, Nevada.
40. Capareda. S.C., C.N. Boriack, S. Mukhtar, A. Mutlu, B.W. Shaw, R.E. Lacey, and C.B. Parnell, Jr. 2004. Recovery of Gaseous Gaseous Emission from Ground Level Area Sources of Ammonia and Hydrogen Sulfide Using Dynamic Isolation Flux Chambers. Paper presented at the 2004 ASAE/CSAE Annual International Meeting held from August 1-4, 2004 at Ottawa, Ontario, Canada. Paper No. 044013.
41. Price, J.E., R. E. Lacey, N.A. Cole, B.W. Shaw, S.C. Capareda, and C.B. Parnell, Jr. 2004. Preliminary Ammonia Emission Rates from cattle Feedlots Using Dispersion Modeling. . Paper presented at the 2004 ASAE/CSAE Annual International Meeting held from August 1-4, 2004 at Ottawa, Ontario, Canada. Paper No. 044199. ASAE, St. Joseph, Michigan.
42. Shaw, B.W., R.E. Lacey, S.C. Capareda, M.D. Buser, C.B. Parnell, Jr., J. Wanjura, L. Wang, and W.B. Faulkner. 2004. Application of the National Ambient Air Quality Standards (NAAQS) in Urban Versus Rural Environments. Paper presented at the 2004 ASAE/CSAE Annual International Meeting held from August 1-4, 2004 at Ottawa, Ontario, Canada. Paper No. 044016. ASAE, St. Joseph, Michigan.
43. Wang, L., M. Buser, S. C. Capareda, J. D. Wanjura, C.B. Parnell, Jr., B.W. Shaw, and R.E. Lacey. 2004. Study of "Baffle Type Pre-separator Plus Cyclone" Abatement System for Cotton Gins. Paper presented at the 2004 ASAE/CSAE Annual International Meeting held from August 1-4, 2004 at Ottawa, Ontario, Canada. Paper No. 044017. ASAE, St. Joseph, Michigan.
44. Mutlu, A., S. Mukhtar, S.C. Capareda, C.N. Boriack., C.B. Parnell, Jr., R.E. Lacey and B.W. Shaw. A Process-Based Approach for Ammonia Emission Measurements at a Freestall Dairy. Paper presented at the 2004 ASAE/CSAE Annual International Meeting held from August 1-4, 2004 at Ottawa, Ontario, Canada. Paper No. 044110. ASAE, St. Joseph, Michigan.
45. Boriack, C.N., R.E. Lacey, S.C. Capareda, A. Mutlu, S. Mukhtar, B.W. Shaw, and C.B. Parnell, Jr. 2004. Uncertainty in Ammonia Local Measurements Systems Using Dynamic Isolation Flux Chamber. Paper presented at the 2004 ASAE/CSAE Annual International Meeting held from August 1-4, 2004 at Ottawa, Ontario, Canada. Paper No. 044111. ASAE, St. Joseph, Michigan.
46. Boriack, C.N., R.E. Lacey, S. Mukhtar, A. Mutlu, B.W. Shaw, and C.B. Parnell, Jr. 2004. Multiplexer System for Measurement of Gaseous Emissions. Paper presented at the 2004 ASAE/CSAE Annual International Meeting held from August 1-4, 2004 at Ottawa, Ontario, Canada. Paper No. 044183. ASAE, St. Joseph, Michigan.
47. Faulkner, W.B., B. Shaw, and R. Lacey. 2005. Analysis of Sampling Protocols for the EPA Animal Feeding Operations Consent Agreement. Paper presented at the 2005 ASAE/CSAE Annual International Meeting held from July 17-20, 2005 at Tampa, Florida. Paper No. 054007. ASAE, St. Joseph, Michigan.
48. Mutlu, A., S. Mukhtar, S. Capareda, C. Boriack, R. Lacey, B. Shaw, C. Parnell. 2005. Summer Ammonia Emission Rates From Free-Stall and Open-Lot Dairies in Central Texas. Paper presented at the 2005 ASAE/CSAE Annual International Meeting held from July 17-20, 2005 at Tampa, Florida. Paper No. 054037. ASAE, St. Joseph, Michigan.
49. Boriack, C., R. Lacey, S. Mukhtar, A. Mutlu, S. Capareda, B. Shaw, C. Parnell. 2005. Adsorption Kinetics of Ammonia on a Dynamic Isolation Flux Chamber. Paper presented at the 2005

ASAE/CSAE Annual International Meeting held from July 17-20, 2005 at Tampa, Florida. Paper No. 054039. ASAE, St. Joseph, Michigan.

50. Boriack, C., R. Lacey, S. Mukhtar, A. Mutlu, S. Capareda, B. Shaw, C. Parnell. 2005. System Responses of Ammonia and Hydrogen Sulfide Measurement Equipment. Paper presented at the 2005 ASAE/CSAE Annual International Meeting held from July 17-20, 2005 at Tampa, Florida. Paper No. 054038. ASAE, St. Joseph, Michigan.
51. Wanjura, J., C.B. Parnell, B.W. Shaw, R.E. Lacey, S.C. Capareda, L.B. Hamm. 2005. Comparison of Continuous Monitor (TEOM) vs. Gravimetric Sampler Particulate Matter Concentrations. Paper presented at the 2005 ASAE/CSAE Annual International Meeting held from July 17-20, 2005 at Tampa, Florida. Paper No. 054048. ASAE, St. Joseph, Michigan.
52. Chen, J., B.W., Shaw, C.A., Ortiz. 2005. Preliminary Study for a New Dust Wind Tunnel: Small Scale Testing. Paper presented at the 2005 ASAE/CSAE Annual International Meeting held from July 17-20, 2005 at Tampa, Florida. Paper No. 054045. ASAE, St. Joseph, Michigan.
53. Faulkner, W.B., D.P. Whitelock, G.R. Gamble, and B.W. Shaw. 2006. Formation of Neps in Pima Cotton during Mechanical Harvesting. Paper Presented at the ASABE Annual International Meeting held from July 9-12 at Portland, Oregon. Paper No. 061080.
54. Goodrich, L.B.; B. Shaw; C. Parnell, Jr.; S. Capareda; and S. Mukhtar. 2006. Evaluation of the box model for emission factor development. Paper no. 064100. ASABE, St. Joseph, Michigan.
55. Mutlu, A.; B. Shaw; S. Capareda; R. Lacey; and C. Parnell. 2007. Estimating seasonal ammonia downwind concentrations from open-lot dairies in central Texas. Paper no. 064103. ASABE, St. Joseph, Michigan.
56. Wanjura, J.; C. Parnell, Jr.; B.W. Shaw; and S. Capareda. 2006. Particle size distributions of PM emitted by cotton harvesting. Paper no. 064168. ASABE, St. Joseph, Michigan.
57. Simpson, S.; C. Parnell; and B.W. Shaw 2006. Comparison of particle sizing instruments for measuring air emissions from agricultural operations. Paper no. 064163. ASABE, St. Joseph, Michigan.
58. Parnell, C., Jr.; S. Simpson; J. Wanjura; B.W. Shaw; and S. Capareda. 2006. Systems engineering of seed cotton handling and ginning in Texas. Paper no. 061020. ASABE, St. Joseph, Michigan.
59. Aquino, F., S.C. Capareda, C.B. Parnell, Jr., B.W. Shaw, R.E. Lacey, S. Mukhtar. 2007. Comparison of partial reactive organic gases (ROG) emission factors from a dairy and beef feedlot. Paper No. 074006. ASABE, St. Joseph, Michigan.
60. Faulkner, W.B., J.D. Wanjura, B.W. Shaw, E.F. Hequet. 2007. Effects of harvesting methods on foreign matter content, fiber quality, and yarn quality from irrigated cotton on the high plains. Paper No. 071113. ASABE, St. Joseph, Michigan.
61. Chen, J., B.W. Shaw, Y. Ge. 2007. Method to evaluate TSP sampler's effectiveness as field reference. Paper No. 074001. ASABE, St. Joseph, Michigan.
62. Faulkner, W.B., J.M. Lange, J.J. Powell, B.W Shaw, C.B. Parnell, Jr. 2007. Sampler placement to determine emission factors from ground level area sources. Paper No. 074103. ASABE, St. Joseph, Michigan.

Grants and Projects

Prior to 2002

Total funding during this period was approximately $1,244,800 and I was directly responsible for approximately $668,233.

Competitive

- Dispersion Modeling of Ground Level Sources of Particulate and Odors. REP project. FY 96-97. Co-Principal Investigator. $39,000 (responsible for $19,500). External competitive funding.

- Texas AgrAbility - Texas Farmers and Ranchers with Disabilities Identification and Accommodation Network. FY 98-02. Project Director. $420,000 (responsible for $420,000). External competitive funding.
- Training 2000 Grant, Texas Agricultural Extension Service, 1999-2000. Project Director. $3,000 (responsible for $3,000). Internal competitive funding.

Non-competitive

- Development and Production of Cotton Ginners' Safety Manual. Texas Cotton Ginners' Association. 1996. Co-Project leader. $800 (Responsible for $400). External funding.
- Effect of Various Cotton Production Management Practices on Particulate Emissions. TAEX Project. FY 96-97. Principal Investigator. $2,000 (responsible for $2,000). Internal funding.
- Feed Mill Emission Factors Associated with Air Pollution Regulation of Cattle Feed Yards. Texas Cattle Feeders Association/National Cattlemen's Association. FY 96. Co-Principal Investigator. $80,000 (Responsible for $40,000). External funding.
- Agricultural Air Quality Fine Particle Project: TNRCC. 1999. Work Order No. 2 Under Umbrella Contract No. 9880077500. Co-Principal Investigator. $100,000 (responsible for $33,333). External funding.
- Air Quality Legislative Initiative. State of Texas. 1999-2001. Co-Principal Investigator. Approximately $600,000 (responsible for approximately $150,000). External funding.

2002 to Present

Total funding during this period was approximately $3,352,233 and I was directly responsible for approximately $1,142,712.

Competitive

- Evaluation of PM Samplers. The Cotton Foundation. 2003-2005. Co-Principal Investigator. (Lead Investigator: Calvin B. Parnell, Jr.). $40,000 (responsible for $20,000). External competitive funding.
- Dispersion Modeling for Agricultural Sources. The Cotton Foundation. 2003-2004. Co-Principal Investigator. (Lead Investigator: Calvin B. Parnell, Jr.). $30,000 (responsible for $15,000). External competitive funding.
- Cyclone Testing. The Cotton Foundation. 2003-2005. Co-Principal Investigator. (Lead Investigator: Calvin B. Parnell, Jr.). $40,000 (responsible for $20,000). External competitive funding.
- Coarse (PM10) Emissions from Cotton Gins and Field Operations. The Cotton Foundation. 2005-2006. Principal Investigator. $24,000 (responsible for $24,000). External competitive funding.
- Evaluations of EPA Approved FRM PM2.5 and PM10 Samplers. The Cotton Foundation. 2005-2006. Principal Investigator. $24,000 (responsible for $24,000). External competitive funding.
- Size Distribution and Its Effect on Sampling Performance of Particulate Matter in Concentrated Animal Feeding Operations. USDA – NRI. 2006-2009. Co-Principal investigator with Yuanhui Zhang (University of Illinois). $499,995 (responsible for $172,474). External competitive funding.
- Investigation into the Use of Picker Harvesters on the High Plains of Texas. Cotton Incorporated – State Support. 2006. Principal Investigator. $7,200 (responsible for $7,200). External

competitive funding.

- Harvest Efficiency of Modern Cotton Harvesting Machinery. 2007. Cotton Incorporated – Core Funding. Principal Investigator. $10,000 (responsible for $10,000). External competitive funding.
- Evaluation of Ambient Particulate Matter Sampler Performance. 2007-2010. USDA-NRI. 2007-2010. Principal Investigator. $359,038 (responsible for $359,038). External competitive funding.

Non-competitive

- Air Quality Legislative Initiative. State of Texas. 2002-2006. Co-Principle Investigator. (Lead Investigator: Calvin B. Parnell, Jr.). Approximately $400,000 (responsible for approximately $100,000). External funding.
- Emissions from CAFOs in the Southern Great Plains. USDA-CSREES. 2002-2006. Co-Investigator. (Principal Investigator: John M. Sweeten). Approximately $1,100,000 (responsible for $205,000). External funding.
- Agricultural Sources of PM_{10} and Ozone Precursors. USDA-CSREES. 2002-2005. Co-Investigator. (Principal Investigator: Calvin B. Parnell, Jr.). $200,000 (responsible for $40,000). External funding.
- Literature Review and White Paper Development on Sources and Control of Emissions from Cropping and Animal Feeding Operations, USDA-NRCS Gulf Coast Cooperative Ecosystem Studies Unit. 2003. Principal Investigator. $25,000 (responsible for $25,000). External funding.
- Development and Maintenance of Agricultural Air Quality Task Force (AAQTF) Website, USDA-NRCS Gulf Coast Cooperative Ecosystem Studies Unit. 2003. Principal Investigator. $13,000 (responsible for $13,000). External funding.
- Almond Harvest Emission Factor Development. California Almond Board. 2003-2006. Co-Investigator. (Principal Investigator: Calvin B. Parnell, Jr.). Approximately $375,000 (responsible for approximately $20,000). External funding.
- Development of 3 chapters of the USDA *National Engineering Handbook* – Fugitive Dust, Chemical Drift, and Visibility. USDA-NRCS Gulf Coast Cooperative Ecosystem Studies Unit. 2004. Co-Principal Investigator with Brent Auvermann. $120,000 (responsible for $60,000). External funding.
- A Science-Based Emission Factor for John Deere 6-row Cotton Pickers. John Deere ($50,000), Cotton Incorporated ($17,500) and The Cotton Foundation ($17,500). 2006. Co-Principal Investigator. (Lead Investigator: Calvin B. Parnell, Jr.). $85,000 (responsible for approximately $28,000). External funding.

EXTENSION:

Major Accomplishments

Agricultural Safety – Led the effort to consolidate Agricultural safety programming efforts across Texas. Through the development of the Texas Council on Agricultural Safety & Health, groups and individuals were brought together to coordinate and cooperate on program development and delivery. A statewide effort to increase youth farm safety education resulted in Texas having approximately 15 farm safety camps for youth each year.

Successfully obtained funds and implemented the Texas AgrAbility program. This program assists farmers and ranchers with disabilities to identify adaptive technologies, resource providers, and support groups.

Agricultural Chemicals – Developed educational resources to improve safety and effectiveness of agricultural chemical application. These resources include sprayer calibration software and video, and a spray drift minimization slide set, video, and web based education resource. Over 12,000 individuals were impacted through these programming efforts.

Extension Publications/Videos/Fact Sheets

1. Shaw, B. W. and C. Kamp. 1995. Recharging Your Tractor's Air Conditioner
2. Shaw, B. W. 1995. Pesticide Application Ground Equipment Calibration Guide.
3. Childers, R.E., Jr., B. W. Shaw. 1995. Texas Cotton Ginners' Association - Cotton Ginners' Safety Manual. Texas Cotton Ginners' Association, Austin, Texas.
4. Shaw, B. W. and G. Fipps. 1996. Calibration of pesticide application ground equipment. Report funded by the US-EPA Non-point Source Prevention in the Arroyo Colorado project.
5. Shaw, B. W. 1996. Developed and presented sprayer calibration program as part of satellite pesticide applicator training program. Presented calibration for video tape to be used for additional training across the state (approximately 5,000 live viewers and 15,000 video tape viewers).
6. Shaw, B. W. 1996. Tractor Safety Program Kit.
7. Shaw, B. W. 1996. Drift Minimization Safety Tips.
8. Shaw, B. W. 1996. Spray Equipment Calibration Software.
9. Shaw, B. W. and C. Kamp. 1996. Recharging your tractor's air conditioner. Texas Agricultural Extension Service. Fact Sheet.
10. Shaw, B. W. 1997. Carbon Monoxide Safety Tips
11. Shaw, B. W. 1997. Home Safety Tips
12. Shaw, B. W. 1997. Calibration of Pesticide Application Ground Equipment
13. Shaw, B. W. 1997. Radon Safety Tips
14. Shaw, B. W. 1997. Cotton Harvester Safety Tips
15. Shaw, B. W. 1997. Drift minimization slide set
16. Shaw, B. W. 1997. Drift minimization training video
17. Shaw, B. W. 1997. Sprayer Calibration training video
18. Shaw, B. W. 1998. Preparing Sprayers for Storage/Residue Removal
19. Shaw, B. W. 1999. Aerial Application of Pesticides. TAEX #B-5055. Fact Sheet. Texas Agricultural Extension Service.
20. Shaw, B. W. 1999. Calibrating Pesticide Application Ground Equipment. TAEX #L-5304. Fact

Sheet. Texas Agricultural Extension Service.

21. Shaw, B. W. and M.L. Garcia. 1999. Texas AgrAbility Project - for farms and ranchers with disabilities. TAEX #L-5301 (English), TAEX #L-5301S (Spanish). Fact Sheet. Texas Agricultural Extension Service.
22. Shaw, B. W. and M.L. Garcia. 1999. Carbon monoxide safety tips. TAEX #L-5316. Fact Sheet. Texas Agricultural Extension Service.
23. Shaw, B. W. and M.L. Garcia. 1999. Facts about radon. TAEX #L-5337. Fact Sheet. Texas Agricultural Extension Service.
24. Shaw, B. W. and C. Pargmann. 2001. Handling Pesticides Safely
25. Shaw, B. W. and C. Pargmann. 2001. Personal Protective Equipment
26. Shaw, B. W. and C. Pargmann. 2001. Pesticides and Their Toxicity
27. Shaw, B. W. and C. Pargmann. 2001. Selecting and Using Respirators
28. Shaw, B. W. and C. Pargmann. 2001. Care of Respirators
29. Shaw, B. W. and C. Pargmann. 2001. Before, During and After a Flood...
30. Shaw, B. W. and C. Pargmann. 2001. Can You Stand the Heat?
31. Shaw, B. W. and C. Pargmann. 2001. Foot and Mouth Disease Prevention
32. Shaw, B. W. and C. Pargmann. 2001. Ag Machinery Safety
33. Shaw, B. W. and C. Pargmann. 2001. Barn Storage Safety
34. Shaw, B. W. and C. Pargmann. 2001. Driving Farm Machinery Safely
35. Shaw, B. W. and C. Pargmann. 2001. Front End Loader Safety
36. Shaw, B. W. and C. Pargmann. 2001. Grain Storage Safety
37. Shaw, B. W. and C. Pargmann. 2001. Harvest Safety
38. Shaw, B. W. and C. Pargmann. 2001. Manure Storage Safety
39. Shaw, B. W. and C. Pargmann. 2001. Farm Machinery Safety
40. Shaw, B. W. and C. Pargmann. 2001. Farm Equipment Riding Accidents
41. Shaw, B. W. and C. Pargmann. 2001. ROPS and PTO Shields
42. Shaw, B. W. and C. Pargmann. 2001. Storage Building Safety
43. Shaw, B. W. and C. Pargmann. 2001. Tractor Safety
44. Shaw, B. W. and C. Pargmann. 2001. Upright Silo Safety
45. Shaw, B. W. and C. Pargmann. 2001. Working Around Vehicles Safely
46. Shaw, B. W. and C. Pargmann. 2001. Trailer Safety
47. Shaw, B. W. and C. Pargmann. 2001. Basic First Aid
48. Shaw, B. W. and C. Pargmann. 2001. First Aid for Bee and Insect Stings
49. Shaw, B. W. and C. Pargmann. 2001. First Aid for Electrical Accidents
50. Shaw, B. W. and C. Pargmann. 2001. First Aid for Eyes
51. Shaw, B. W. and C. Pargmann. 2001. Agricultural Hand Signals
52. Shaw, B. W. and C. Pargmann. 2001. First Aid for Head Injuries
53. Shaw, B. W. and C. Pargmann. 2001. Hearing Protection on the Farm
54. Shaw, B. W. and C. Pargmann. 2001. Preparedness for Farm Emergencies
55. Shaw, B. W. and C. Pargmann. 2001. Hay Harvesting Safety
56. Shaw, B. W. and C. Pargmann. 2001. Choosing Safe Clothing for Farm Work
57. Shaw, B. W. and C. Pargmann. 2001. Chain Saw Safety
58. Shaw, B. W. and C. Pargmann. 2001. Farm Fuel Safety
59. Shaw, B. W. and C. Pargmann. 2001. Eye Protection for Farmers
60. Shaw, B. W. and C. Pargmann. 2001. Electrical Safety
61. Shaw, B. W. and C. Pargmann. 2001. Electrical Fires: Prevention and Extinguishing

62. Shaw, B. W. and C. Pargmann. 2001. Battling the Elements Safely
63. Shaw, B. W. and C. Pargmann. 2001. Lightning Safety
64. Shaw, B. W. 2001. Developing a Safety Program for the Workplace. Slide set.

SERVICE:

National

USDA Agricultural Air Quality Task Force (2004-Present) – Appointed by the Secretary of Agriculture to the USDA Agricultural Air Quality Task Force. This task force advises the Secretary of Agriculture on air quality research and policy issues affecting agriculture. Led efforts to call attention to the inappropriate use of annual emissions of Total Suspended Particulate (TSP) for requiring Title V and PSD permits when applied to uncontrolled sources such as confined animal feeding operations. USEPA policy has been changed because of these efforts. Provided technical presentations to the air pollution regulatory agency in California relating to the appropriate regulation of reactive volatile organic compounds (RVOC) as precursors for the formation of ozone.

U.S. EPA Science Advisory Board – Environmental Engineering Committee (December 2003-September 2009) – The charge to the committee is to review USEPA programs, policies, and technical issues and provide guidance to the Administrator on regulatory program improvements.

U.S. EPA Science Advisory Board – Committee on Integrated Nitrogen (October 2006-September 2008) – This committee was charged with identifying and analyzing, from a scientific perspective, the problems reactive nitrogen presents in the environment and the links between nitrogen concentrations in the ambient air and air pollution. The committee is also charged with quantifying benefits of an integrated nitrogen management strategy for USEPA. The committee's recommendations for USEPA will lead to improved regulatory programs related to nitrogen management.

U.S. EPA Science Advisory Board – Ad Hoc Panel for review of EPA's Risk and Technology Review Assessment Plan (November 2006-October 2007) – The committee was charged with providing advice on the proposed methods and approaches to characterize human health risks associated with exposures to hazardous air pollutants (HAP) for approximately 30 different industrial source categories.

Special Assistant to the Chief – Air Quality, USDA-NRCS, Washington, D.C. (September 2002-August 2003) – Appointed by Mack Gray, Deputy Under Secretary for Natural Resources and the Environment, to assist USDA with development of policies to include air quality in USDA's conservation efforts and to evaluate implications of US Environmental Protection Agency proposed policies on American agriculture. Worked closely with the Under Secretary, Mack Gray; General Council, Nancy Bryson; NRCS Chief, Bruce Knight; and Counselor to the Administrator (EPA), Jean-Marie Peltier to develop environmental policies and initiatives that were beneficial to air quality and agriculture.

Acting Lead Scientist for Air Quality, USDA-NRCS, Washington, D.C. (June-August, 2002) – Appointed to evaluate existing National Conservation Practice Standards and recommend changes to existing standards and identify needs for new standards to guide NRCS personnel as the agency began including air quality in its conservation efforts. Helped to organize and participated in a 3-day training workshop for approximately 20 NRCS personnel on air quality and air pollution regulations.

American Society of Agricultural Engineers *(1985 - present)*

- Environmental Air Quality Committee, SE305
  Secretary (1993)
  Vice-Chair (1994)
  Chair *(1994-1996)*
- Cotton Engineering Committee, PM50
  Secretary (1995-1996)
  Vice-Chair (1996-1997)
  Chair *(1997-1998)*
- Ergonomics Safety and Health, T-15
  Secretary (1997-1998)
  Vice-Chair (1998-2000)
  Chair *(2000-2002)*
- Ergonomics Safety and Health - Technology Transfer Committee, T-15/2 - Chair *(1996-1998)*
- Mayfield Cotton Engineering Award Committee, M-158 - Chair *(1997-1998)*
- SE-01 Executive Committee, Chair (2004)
- SE-02 Steering Committee, Secretary (2003), Chair (2004)
- Chair of SE-30 Environmental Quality and Control Group (2001-2002)
- Henry Giese Awards Committee, M-151 Vice-Chair (2006-2007)
- T-09 Environmental Coordinating Committee

Served on International Conference on Air Pollution from Agricultural Operations (ICAPAO96) planning committee (1995-1996)

Served as advisor to the National Agricultural Aviation Association (NAAA) Program Content Planning Committee (1997-2001)

Second International Conference on Air Pollution from Agricultural Operations Planning Committee and Conference Chair (1998-2000)

Invited to serve as National Institute for Occupational Safety and Health - Agricultural Safety and Health Center review panel member (2001, 2004, 2007)

Invited to Serve as USDA AgrAbility Grant review panel coordinator (2001)

Regional

CSREES North Central Region, NCR-189, "Air Pollution from Animal Production Facilities"

CSREES North Central Region, NCR-197, "Agricultural Safety and Health Research and Extension"

State

Texas Section of American Society of Agricultural Engineers

- Vice-Chair for Continuing Education (1995-1996)
- Secretary-Treasurer (1999-2000)
- Vice-Chair Program and Plans (2000-2001)
- Chair-Elect (2001-2002)
- Chair (2002-2004)

Texas Safety Association Board of Directors *(1997-2002)*

- Vice-Chairman for Agriculture *(1997-2002)*

Texas Council on Agricultural Safety & Health - President *(1997-2000)*

Texas Agricultural Extension Service Specialists Association

- Chapter director and member of Board of Directors (1995-1997)

Member TAEX Safety and Health initiative team (1995-1999)

Member TAEX Water Quality initiative team (1995-1999)
Co-Team Leader (1996-1999)

Texas Agricultural Extension Service Superior Service Award Selection Committee (1998-2001)

College

Served as Graduate Council Representative for various Doctoral Students (1995-Present)

Served on the Agricultural and Natural Resource Policy Internship Program Faculty/Staff Screening Committee (2004)

Department

Served on the Agricultural Engineering Department - Computer Committee (1995-2004)

Served on the Agricultural Engineering Department - Recruitment and Placement Committee (1995-1999)

Served on the Agricultural Engineering Department – Instructional Fees Committee (2004-2006)

Served on the Agricultural Engineering Department – Social Committee – Chair (2004- 2007)

Served on the Biological and Agricultural Engineering Department – BAEN Undergraduate Program & Recruiting Committee (2006-2007)

Served on the Biological and Agricultural Engineering Department – AGSM Undergraduate Program & Recruiting Committee (2006-2007)

Served on the Biological and Agricultural Engineering Department – Infrastructure & Development Committee (2006-2007)

Served on the Biological and Agricultural Engineering Department – Recognition & Events Committee (2006-2007)

Associate Faculty Advisor for the ASAE Student Engineering Branch (1995-1996, 2001-2002)

Associate Faculty Advisor for the Agricultural Engineering Department - Aggie REPS (1995-1996)

Faculty Advisor for the ASAE Student Engineering Branch (1996-1997, 2002-2003)

Faculty Advisor for the Agricultural Engineering Department - Aggie REPS (1996-1999)

Faculty Advisor for Aggie Pullers tractor pull team (2004-2005)

Associate Faculty Advisor for the AGSM Student Club (2006-2007)

Community

Bonham Elementary School – Parent Teacher Organization (PTO) – President (2006-2007)

Zion Church of Kurten – Church Council President (2007-2008)

HONORS AND AWARDS:

- USDA National Needs Fellowship
- University Undergraduate Fellows Program
- Alpha Epsilon *(Ag. Eng. Honor Society)* National President *(1994-1995)*
- Tau Beta Pi - *(Engineering Honor Society)*
- Gamma Sigma Delta - *(Ag. Honor Society)*
- Phi Eta Sigma - *(Freshman Honor Society)*
- ASAE Blue Ribbon Award – Educational Aids Competition Publications: Fact Sheets for: Wolf, R.E., D. R. Gardisser, J. Slocombe, and B. W. Shaw. Nozzle Types for Boom Sprayer Applications of Crop Protection Products *(2003)*
- 3rd Place in the Association of Overseas Chinese Agricultural, Biological and Food Engineers (AOCABFE) Student Paper Competition for "Wang, L., J. Wanjura, C. B. Parnell, R. Lacey, and B. W. Shaw. Performance Characteristics of Low-Volume PM10 Inlet and the TEOM Continuous PM Sampler" *(2003)*
- ASABE Professor of the Year Award. Presented by the ASABE Student Branch, Texas A&M University *(2006-2007)*