



SAQIB MUKHTAR

Biological and Agricultural Engineering Department

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EDUCATION

Ph.D. in Agricultural Engineering with Minor in Water Resources. Iowa State University. May, 1989.

M.S. in Agricultural Engineering. Iowa State University. May, 1984.

B.S. in Agricultural Engineering. University of Agriculture, Faisalabad, Pakistan. August 1981.

PROFESSIONAL EXPERIENCE

? **Associate Professor and Extension Agricultural Engineer.** Texas A&M University, College Station, Texas (September 2004-present).

? **Assistant Professor and Extension Agricultural Engineer.** Texas A&M University, College Station, Texas (August 1998-August 2004).

Provide leadership, delivery and support for extension and research program in engineering systems related to animal waste management in Texas.

Develop and implement nationally recognized educational, technology transfer, and research programs that address water quality, air quality and waste management issues related to livestock and poultry feeding operations.

Guide graduate student research, and provide engineering leadership to interdisciplinary and interagency programs involving improved manure and wastewater practices, air and water quality protection, waste utilization and design of environmentally sustainable facilities

Faculty: Center for Agricultural Air Quality Engineering and Science (CAAQES). <http://caaqes.tamu.edu>.

? **Agricultural Engineering Field Specialist.** Iowa State University Extension, Osceola, Iowa. (June 1993-July 1998).

? **Civil Engineer.** USDA-Natural Resources Conservation Service, Engineering Project Office, Centerville, Iowa. (October 1991 to June 1993).

? **Civil Engineer.** USDA-Natural Resources Conservation Service, Fort Dodge Area Office, Iowa. (September 1990 to October 1991).

? **Postdoctoral Research Associate.** Department of Agricultural & Biosystems

? Engineering, Iowa State University, Ames, Iowa. (April 1989 to August 1990).

PROFESSIONAL REGISTRATION

Licensed Professional Engineer, State of Texas, Registration Number: 90744

REFEREED PUBLICATIONS

1. Lacey, R. E., S. Mukhtar, J. B. Carey and J. L. Ullman. 2004. Review of Literature Concerning Odors from Broiler Production Facilities: 1. Odor Concentration and Emissions. Journal of Applied Poultry Research (JAPR) (In press)
2. Carey, J. B., R. E. Lacey, and S. Mukhtar. 2004. Review of Literature Concerning Odors from Broiler Production Facilities: 2. Flock and House Management. Journal of Applied Poultry Research (JAPR) (In press)
3. Mukhtar, S., J. L. Ullman., J. B. Carey and R. E. Lacey. 2004. A Review of Literature Concerning Odors, Ammonia and Dust from Broiler Production Facilities: 3. Land Application, Processing and Storage of Broiler Litter. JAPR (In press)
4. Ullman, J. L., S. Mukhtar, R. E. Lacey and J. B. Carey. 2004. A Review of Literature Concerning Odors, Ammonia and Dust from Broiler Production Facilities: 4. Remedial Management Practices. JAPR (In press)
5. Mukhtar, S. 2004. Poultry production: Manure and Wastewater Management. Encyclopedia of Animal Science, Marcel Dekker, Inc., New York, NY 10016 (in press)
6. Priyadarsan, S., K. Annamalai, J. M. Sweeten, S. Mukhtar and M. T. Holtzapple. 2004. Fixed Bed Gasification of Feedlot Manure and Poultry Litter Biomass. Transactions of the ASAE (accepted)
7. Priyadarsan, S., K. Annamalai, J. M. Sweeten, M. T. Holtzapple and S. Mukhtar. 2004. Co-gasification of Blended Coal with Feedlot and Chicken Litter Biomass. 30th International Symposium on Combustion. July 25-30, Chicago, IL.
8. S. Mukhtar, J. L. Ullman, B. W. Auvermann, S. E. Feagley, and T. A. Carpenter. 2004. Impact of Anaerobic Lagoon Management on Sludge Accumulation and Nutrient Content for Dairies. Transactions of the ASAE 47 (1) 250-257.
9. S. Paul, P. K. Haan, M. D. Matlock. S. Mukhtar, S. D. Pillai. 2004. Analysis of the HSPF water quality Parameter Uncertainty in Predicting Peak In-Stream Fecal Coliform Concentrations. Transactions of the ASAE 47 (1) 69-78.
10. 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. Paper 29, 1-13.

11. Mukhtar, S., and P. Haan. 2003. Poultry Manure Management Water Requirements and Utilization. In: Encyclopedia of Water Science, B.A. Stewart and T. A. Howell, Editors, Pages 607-609. Mercel Dekker, New York, NY.
12. Mukhtar, S., A .L. Kenimer, S. S. Sadaka and J. G. Mathis. 2003. Evaluation of Bottom Ash and Composted Manure Blends as a Soil Amendment Material. Bioresource Technology 89 (2003) 217-228.
13. Redwine, J. S ., R. E. Lacey, S. Mukhtar, and J. B. Carey. 2002. Concentration and Emissions of Ammonia and Particulate Matter in Tunnel Ventilated Broiler Houses Under Summer Conditions in Texas. Transactions of the ASAE 45(4): 1101-1109.
14. Mukhtar, S., J. L. Baker, and R. S. Kanwar. 1996. Effect of Short-Term Flooding and Drainage on Soil Oxygenation. TRANSACTIONS of the ASAE. 39(3):915-920.
15. Erbach, D. C., J. G. Benjamin, R. M. Cruse, M. A. Elamin, S. Mukhtar, and C. H. Choi. 1992. Soil and Corn Response to Tillage with Paraplow. TRANSACTIONS of the ASAE. 35(5):1347-1354.
16. Choudhary, M. R., S. R. Cheema, and S. Mukhtar. 1991. Effect of Topographic Slopes on Water Distribution and Crop Yield. Journal of Eng. and App. Scs. 10 (1,2): 37-41.
17. Mukhtar, S., J. L. Baker, and R. S. Kanwar. 1990. Corn Growth as Affected by Excess Soil Water. TRANSACTIONS of the ASAE. 33 (2): 437-442.
18. Mukhtar, S., J. L. Baker, and R. S. Kanwar. 1990. Soil Atmosphere-Access Chamber and Analytical Assembly to Monitor Soil Aeration. Soil Sci. Soc. of Amer. J. 54:167-172.
19. Kanwar, R. S., S. Mukhtar, and P. Singh. 1989. Transient State Oxygen Diffusion Through Undisturbed Soil Columns. TRANSACTIONS of the ASAE. 32(5):1644-1650.
20. Kanwar, R. S., J. L. Baker, and S. Mukhtar. 1988. Growth and Yield of Corn as Affected by Excess Soil Water at Various Stages of Development. TRANSACTIONS of the ASAE. 31(1):133-141.

21. Mukhtar, S., J. L. Baker, R. Horton, and D. C. Erbach. 1985. Soil Water Infiltration as Affected by the Use of the Paraplow. TRANSACTIONS of the ASAE. 28(6): 1811-1816.

INVITED PEER REVIEWED PUBLICATIONS

1. Jones, D. D., R. K. Koelsch, S. Mukhtar, R. E. Sheffield, and J. W. Worley. 2002. Closure of Earthen Manure Structures (Including Basins, Holding Ponds, and Lagoons). National Center for Manure & Animal Waste Management White papers, Searchable CD, WP-CD-1. MidWest Plan Service, Ames, Iowa 50011.
2. Mukhtar, S., S. Feagley, and B. L. Harris. 2000. Animal Waste Management in the Rural South. Publication No. 15. In Millennium Series, The Rural South: Preparing for the Challenges of the 21st Century. Southern Rural Development Center, Mississippi State University, MS 39762.

UNIVERSITY EXTENSION PUBLICATIONS

1. Mukhtar, S and J. Walker (USDA-NRCS). 2002. Closure of Lagoons and Earthen Manure Storage Structures. B-6122.
2. Mukhtar, S. J. Carey, and R. Lacey. 2001. Managing Nuisance Odors and Dust from Poultry Growing Operations. TAEX, L-5401.
3. Mukhtar, S. 2000. Using Animal Manure and Wastewater for Crops and Pastures: Know and take credit for Your N, P, and K. TAEX, E-47.
4. Mukhtar, S. 1999. Dairy Outreach Program Area Training and Continuing Education. TAEX, E-14.
5. Mukhtar, S., J. M. Sweeten, and B. W. Auvermann. 1999. Solid-Liquid Separation of Animal Manure and Wastewater. TAEX, E-13.
6. Mukhtar, S. 1999. Proper Lagoon Management to Reduce Odor and Excess Sludge Accumulation. TAEX, E-9.
7. Mukhtar, S. 1998. Water Quality Guide for Livestock and Poultry. TAEX, E-8.
8. Mukhtar, S. and R. Zhang. 1995. Guidelines for Minimizing Odors in Swine Operations. Iowa State University Extension Publication, Pm-1605.
9. Zhang, R. and S. Mukhtar. 1995. Selecting Manure Management Systems for Swine Operations. Iowa State University Extension Publication, Pm-1602.

PROCEEDINGS AND PROFESSIONAL PAPERS

1. Priyadarsan, S., K. Annamalai, M. T. Holtzapple and S. Mukhtar. 2004. Co-Firing Coal and Litter Biomass in Fixed Bed Gasifier under batch Mode Operations. Seventeenth National Heat and Mass Transfer Confernece and

Sixth ISHMT / ASME Heat and Mass Transfer Conference, Kalpakkam, India, January 5-7, 2004.

2. Mukhtar, S., J. G. Mathis, and A. L. Kenimer. 2001. Efficacy of Utilizing Bottom Ash and Composted Manure as a Beneficial Soil Amendment Material. Proc. of the 18th Annual International Pittsburgh Coal Conference. Newcastle, Australia, December 3-7, 2001.
3. Mathis, J., S. Mukhtar, and A. Kenimer. 2001. Leaching and Standing Water Characteristics of Bottom Ash and Composted Manure Blends. Proc. of the 14th International Symposium on Management and Use of Coal Combustion Products. San Antonio, Texas, 22-25 January 2001. Volume 1, pp. 3-1-12. EPRI, Palo Alto, CA 94523.
4. Mukhtar, S., J. L. Baker, and R. S. Kanwar. 1990. Soil Aeration as Affected by Excess Water. Proc. of the International Agricultural Engineering Conf. and Exhibition, Bangkok, Thailand, 3-6 December 1990. pp. 859-868.
5. Mukhtar, S. M. L. McFarland, C. Gerngross, and F. Mazac. 2004. Efficacy of using dairy manure compost as erosion control and revegetation material. ASAE Paper No. 04-4079.
6. Ullman, J. L and S. Mukhtar. 2004. implications on ammonia emissions from dairy facilities using dry-lot versus hybrid (freestall) housing practices. ASAE Paper No. 04-4064.
7. Capareda, S.C., C. N. Boriack, A. Mutlu, N. Mameshev, S. Mukhtar, B.W. Shaw, R.E.Lacey, and C.B. Parnell. 2004. Recovery of Gaseous Emissions from Low –Level Area Sources of Ammonia and Hydrogen Sulfide Using Dynamic Isolation flux Chambers.
8. Mukhtar, S., Mutlu, A., S.C. Capareda, C. N. Boriack, C. B. Parnell, R.E. Lacey, B. W. Shaw. 2004. A Process-Based Approach for Ammonia Emission Measurements at a Freestall Dairy. ASAE Paper No. 04-4110.
9. Boriack, C. N., S. C. Capareda, R. E. Lacey, A. Mutlu, S. Mukhtar, B. W. Shaw, C. B. Parnell. 2004. Uncertainty in Ammonia Local Measurement Systems Using Dynamic Isolation Flux Chambers. ASAE Paper No. 04-4111.
10. S. Mukhtar, B. W. Auvermann, K. Heflin, and C. N. Boriack. 2003. A low maintenance approach to large carcass composting. 2003. Paper to be presented at the 2003 International Meeting of the ASAE, Las Vegas, Nevada. ASAE Paper No. 03-34106.
11. Rose, A., S. Mukhtar, B. W. Shaw, C. B. Parnell Jr. and R. E. Lacey. 2003. Assessment of ammonia adsorption onto polymer tubing. To be presented at

the 2003 International Meeting of the ASAE, Las Vegas, Nevada. ASAE Paper No. 03- 2185.

12. B. Parnell, Jr., S. Mukhtar, R. E. Lacey and B. W. Shaw. 2003. PM emission factor for cattle feedyards. To be presented at the 2003 International Meeting of the ASAE, Las Vegas, Nevada. ASAE Paper No. 03- 4119.
13. L. B. Goodrich, C. B. Parnell Jr., S. Mukhtar, R. E. Lacey, and B. W. Shaw. 2003. A science based pm₁₀ emission factor for freestall dairies. To be presented at the 2003 International Meeting of the ASAE, Las Vegas, Nevada. ASAE Paper No. 03- 4115.
14. S. Paul, R. Srinivasan, P. Haan, S. Mukhtar, and K Neimann. 2003. Bacterial total maximum daily load (TMDL): modeling the effect of rainfall on the in-stream bacterial concentrations. To be presented at the 2003 International Meeting of the ASAE, Las Vegas, Nevada. ASAE Paper No. 03- 2185.
15. S. Priyadaran, K. Annamalai, J. Sweeten, M. Holtzapple, and S. Mukhtar. 2003. Waste to energy: fixed bed gasification of feedlot and chicken litter biomass. To be presented at the 2003 International Meeting of the ASAE, Las Vegas, Nevada. ASAE Paper No. 03-4135.
16. Mukhtar, S, R. E. Lacey, A. J. Rose, C. B. Parnell and B. W. Shaw. 2003. Ammonia emissions from mechanically ventilated broiler houses and a freestall dairy in central Texas. Proceedings of the California Animal Nutrition Conference, Fresno, California, May 13-14, 2003.
17. Priyadarsan, S, K. Annamalai, M. T. Holtzapple and S. Mukhtar. 2003. Fixed bed gasification studies on chicken litter biomass under batch mode operation. Proceedings of the 5th Annual Electric Power Conference, Houston, TX, March 4-6, 2003.
18. Boriack, C.; L. B. Goodrich; C. B. Parnell; S. Mukhtar; B. W. Shaw; and R. E. Lacey. 2003. Revised design of the total suspended particulate (TSP) sampler. Proceedings of the 2003 Beltwide Cotton Production Conferences. National Cotton Council. Memphis, Tennessee. January 6-10, 2003
19. Goodrich, L. B., C. B. Parnell, Jr., R. E. Lacey, S. Mukhtar, and B. W. Shaw. 2003. Evaluation of the uses of the box model to determine emission fluxes from area sources and the corresponding modeled concentrations using Industrial Source Complex. Proceedings of the 2003 Beltwide Cotton Production Conferences. National Cotton Council. Memphis, Tennessee. January 6-10, 2003
20. Mukhtar, S., K. Annamalai, B. Thien, and S. C. Porter. 2002. Co-Firing of Coal and Broiler Litter (BL) Fuels for Power Generation: BL Fuel Quality and

Characteristics. Paper presented at the 2002 International Meeting of the ASAE, Chicago, Illinois. ASAE Paper No. 02-4189.

21. Goodrich, B. L., C. B. Parnell, and S. Mukhtar. 2002. Dairy Emission Factors for PM10. Paper presented at the 2002 International Meeting of the ASAE, Chicago, Illinois. ASAE Paper No. 02-4214.
22. Paul, S., P. Haan, M. Matlock and S. Mukhtar. 2002. Analysis of the HSPF Model for Predicting In-Stream Fecal Coliform Concentrations. Paper presented at the 2002 International Meeting of the ASAE, Chicago, Illinois. ASAE Paper No. 02-2157.
23. Paul, S., R. Srinivasan, P. Haan, S. Mukhtar, and K. Neimann. 2002. Bacterial Total Maximum Daily Load (TMDL): A new classification scheme for impaired water bodies of Texas. 2002 National TMDL Science and Policy conference at Phoenix, Arizona, Paper No. 10E. Alexandria, Va.: WEF.
24. Mukhtar, S., J. L. Ullman, B. W. Auvermann, S. E. Feagley, and T. Carpenter. 2001. Nutrient and Sludge Assessment of Dairy Lagoons in Central Texas. Paper presented at the 2001 International Meeting of the ASAE, Sacramento, California. ASAE Paper No. 01-2278.
25. Mathis J. G., S. Mukhtar, and A. L. Kenimer. 2001. Leachate and Standing Water Characteristics of Dairy Manure and Bottom Ash Blends. Paper presented at the 2001 International Meeting of the ASAE, Sacramento, California. ASAE Paper No. 01-2284.
26. Mukhtar, S., S. Sadaka, A. Kenimer, and J. Mathis. 2000. Evaluation of Bottom Ash and Composted Dairy Manure as a Fill Material. Paper presented at the 2000 International Meeting of the ASAE, Milwaukee, Wisconsin. ASAE Paper No. 00-4125.
27. Mukhtar, S and R. C. Lacey. 1999. Texas Animal Manure Management Issues Web Site: <http://tammi.tamu.edu>. Proc. of the Texas Animal Manure Management Conference, Austin, Texas, 9-10 September 1999. pp. 121-125.
28. Mukhtar, S., J. L. Baker, and R. S. Kanwar. 1994. Effect of Short-Term Flooding on Soil Oxygenation. Paper presented at the 1994 International Winter Meeting of the ASAE, Atlanta, Georgia. ASAE Paper No. 94-2623.
29. Kanwar, R. S., S. Mukhtar and P. Singh. 1989. Non-Steady Diffusion of Oxygen Above the Water Table. Paper Presented at the 1989 International Summer Meeting of the ASAE/CSAE, Quebec City, Quebec, Canada. ASAE Paper No. 89-2097.

30. Mukhtar, S., J. L. Baker, and R. S. Kanwar. 1988. Soil Aeration and Crop Growth in Response to Excess Water. Paper Presented at the 1988 International Winter Meeting of the ASAE, Chicago, Illinois. ASAE Paper No. 88-2611.
31. Mukhtar, S., R. Horton, J. L. Baker, and D. C. Erbach. 1984 Effects of Time and Tillage on Soil Water Infiltration. Paper Presented at the 1984 Mid-Central Region Meeting of the ASAE, St. Joseph, Missouri. ASAE Paper No. MCR-84-160.

GRADUATE STUDENT COMMITTEES

Major Professor or Co-Chair of 4 M.S., 3 Ph. D. Students, and Committee Member of 8 M.S. Students since 1999.
Graduated 2 M.S. and 1 Ph. D. Students since 1999.
Supervised 1 Post Doc. Research Associate (1999-2000)
Supervising 1, Assistant Research Engineer March (2003-present)
Supervised 2 graduate and 7 Undergraduate Student Technicians (1999-present).

GRANTS AND CONTRACTS

PI on Demonstration and Transfer of Selected New Technologies for Animal Waste Pollution Control. Texas State Soil Water Conservation Board (TSSWCB). \$401,129 for 2003-2006.

PI on Demonstration of Real-Time Monitoring Systems to Increase the Intensity of Lagoon Management and to Reduce Water Pollution From Overflows and Illegal Discharges. Texas Water Resources Institute (TWRI). \$10,000 for 2003.

Co-PI on A Novel Approach of Feedlot Manure as Reburn Fuel for NO_x Reduction in Existing Coal Fired Plants. National Center for Manure and Animal Waste Management, North Carolina State University. \$34,000 for 2003-2004.

Co-PI on Examination of Estrogenic Chemical Behavior for Determining Potential Off-Field Migration from Dairy Manure to Texas Waters. TWRI. \$10,000 for 2003.

Co- PI on Marketing Composted Manure To Public Entities. Texas Commission on Environmental Quality (TCEQ) Contract No. 582-2-44407. \$824,094 for 2002-2004.

Co-PI on Air Quality: Odor, dust, and gaseous emissions from concentrated animal feeding operations in the southern Great Plains. USDA-CSREES Project 06-502525-8904. \$598,631 for 2002-2003.

Co-PI on a Project to Conduct Research on 'Co firing Coal: Feedlot and Litter Biomass Fuels Pulverized in a Fuel and Fixed Bed Burners.' Funded by U.S. Department of Energy. \$149,965. 2000-2002.

Co-PI on a Project to Conduct Research on 'Odor Abatement and Emissions Inventories from Agricultural Operations.' Funded by Agricultural Air Quality Legislative Initiative. \$700,000 for 1999-2003.

Co-PI on Odors and Arsenic Emissions From Poultry Growing Operations. Texas Natural Resource Conservation Commission. \$100,000 for 1999-2000.

Co-PI on Developing a Risk-Based Approach to Watershed Level, Non Point Source Modeling of Fecal Coliform Pollution for Total Maximum Daily Load Estimates. TWRI. \$25,000 for 1999-2000

PROJECT REPORTS

1. Annamalai, K., J. Sweeten, S. Mukhtar, B. Thien, G. Wei, S. Priyadarasm 2003. Co-Firing Coal, Feedlot, and Litter Biomass (CFB and LFB) Fuels in Pulverized Fuel and Fixed Bed Burners. Report Submitted to the Department of Energy. DOE Grant No. DE-FG-26-00NT40810.
2. Paul, S., M. Matlock, P. Haan, S. Mukhtar and S. Pillai. 2002. Uncertainty Analysis as a First Step of Developing a Risk-Based Approach to Non-point Source Modeling of Fecal Coliform Pollution for Total Maximum Daily Load Estimates. Technical Report No. 192. Submitted to the Texas Water Resources Institute (TWRI), The Texas A&M University. TWRI Grant No. HQ-96-GR-02700-AGEN-99-1.
3. Carey, J., R. Lacey, and S. Mukhtar. 2000. Study of Odors and Arsenic Emissions from Poultry Operations. Final Report Submitted to TCEQ. TCEQ Contract No. 582-0-81252.

PROPOSAL REVIEWS

Reviewed USDA-CSREES proposals and served on the selection panel ashington DC. May 2003 and 2002.

Reviewed USDA-NRI proposals and served on the selection panel, Washington DC. April, 2001 and 2004.

PRESENTATIONS AS INVITED SPEAKER

Ammonia Emissions from Mechanically Ventilated Broiler Houses and a Freestall Dairy in Central Texas. California Animal Nutrition Conference, Fresno, California, May 13-14, 2003.

Ammonia emissions: The Freestall Dairy Experience. USDA-NRCS South Central Region Air Quality Workshop, Ft. Worth., Texas, May 6-7, 2003.

Engineering Issues in the Newly Proposed Rules for CAFOs by the EPA. Texas Cattle Feeders Association (TCFA) Meeting, Dallas, March 27, 2001.

Present and Future Regulatory Issues in Texas. American Dairy Science Association Discover Conference On 'Nitrogen Losses to the Atmosphere from Livestock and Poultry Operations, April 28-May 1, 2002. Nashville, Indiana.

Sludge and Nutrient Assessment in Central Texas Dairy Lagoons. 36th Annual Meeting, Texas Section of The American Society of Agricultural Engineers meeting, Waco, Texas, October 27, 2000.

Livestock Environmental Issues in Texas: State Report. USDA-CSREES National Animal Waste Initiative Workshop, Kansas City, Missouri. October 17-19, 1999.

Proper Lagoon Management to Reduce Odors and Sludge Accumulation. National Association of Institutional Agribusiness (NAIA) Conference, Houston, Texas, September 28, 1999.

Animal Manure Management Issues In Texas. Texas Watershed Work Group, TWRI. May, 20, 1999.

Hosted Iowa carbon Monoxide Conference. Facilitated a Technical Panel on Response to Indoor Air Quality Needs. Iowa State University Extension, Ankeny, Iowa. October 1, 1998.

STUDENT ADVISING AND TCE SERVICE

Senior Advisor, Undergraduate Student Club, American Society of Agricultural Engineering (ASAE), Texas A&M University. 2000-2001

Chapter Director for Texas Cooperative Extension (TCE) Specialists' Association (2000-2001)

Junior Advisor, Undergraduate Student Club, American Society of Agricultural Engineering (ASAE), Texas A&M University. 1999-2000.

PROFESSIONAL AND HONORARY SOCIETIES

American Society of Agricultural Engineers (1994-95 Awards committee, Iowa section)
Gamma Sigma Delta (Honor Society of Agriculture)