



## Albert Heber

Ph.D. University of Nebraska-Lincoln - 1984

### Professor

Agricultural and Biological Engineering  
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### Professional Recognition and Awards (last 5 years)

Dean's Team Award team member, 2010

Millionaires Club Award, College of Agriculture, Purdue University, 2008

### Research Areas:

Air Quality & Building Environmental Control. Field & laboratory research of agricultural dust, gases & odors; measurement, emission rates & control. Odor evaluation. Biofiltration of air for advanced life support.

### Selected Publications (last 3 years):

- Page, L.H., J.Q. Ni., H. Zhang, A.J. Heber, N.S. Mosier, X.Liu, H.S. Joo, P.M. Ndegwa, and J.H. Harrison. 2015. Reduction of volatile fatty acids and odor offensiveness by anaerobic digestion and solid separation of dairy manure during manure storage. *Journal of Environmental Management* 152:91-98.
- Joo, H.S., P.M. Ndegwa, A.J. Heber, J.Q. Ni, B.W. Bogan, J.C. Ramirez-Dorrnsoro, and E.L. Cortus. 2014. Greenhouse gas emissions from naturally-ventilated freestall dairy barns. *Atmospheric Environment* 102:384-392.
- Schauberger, G., and M. Piringer, and A.J. Heber. 2014. Odour emission scenarios for fattening pigs as input for dispersion models: a step from an annual mean value to time series. *Agriculture, Ecosystems and Environment* [http://dx.doi.org/10.1016/j.agree.2014.04.030].
- Chen, L., T.T. Lim, Y. Jin, A.J. Heber, J.Q. Ni, E.L. Cortus, and I. Kilic. 2014. Ventilation rate measurements at a mechanically-ventilated swine finishing quad barn. *Biosystems Engineering*. [http://dx.doi.org/10.1016/j.biosystemseng.2014.02.015].
- Joo, H.S., Ndegwa, P.M., A.J. Heber, B.W. Bogan, J.Q. Ni, E.L. Cortus, and J.C. Ramirez-Dorrnsoro. 2014. Measurement of gaseous emissions from naturally ventilated dairy barns. *Atmospheric Environment* 86:176-186.
- Page, L.H., J.Q. Ni, A.J. Heber, N.S. Mosier, X. Liu, H.S. Joo, P.M. Ndegwa, and J.H. Harrison. 2014. Characteristics of volatile fatty acids in stored dairy manure before and after anaerobic digestion. *Biosystems Engineering* 118:16-28.
- Rotz, C.A., F. Montes, S.D. Hafner, A.J. Heber, and R.H. Grant. 2013. Ammonia emission model for whole farm evaluation of dairy production systems. *Journal of Environmental Quality* [doi:10.2134/jeq2013.04.0121]
- Grant, R.H., M.T. Boehm, A.J. Lawrence, and A.J. Heber. 2013. Hydrogen sulfide emissions from sow farm lagoon across climate zones. *Journal of Environmental Quality* 42(6):1674-1683.
- Grant, R.H., M.T. Boehm, A.J. Lawrence, and A.J. Heber. 2013. Ammonia emissions from anaerobic treatment lagoons at sow and finishing farms in Oklahoma. *Agricultural and Forest Meteorology* 180(15):203-210.
- Wang-Li, L., Q.F. Li, B.W. Bogan, J.Q. Ni, E.L. Cortus, and A.J. Heber. 2013. National air emission monitoring study - Southeast layer site: Part I-site specifics and monitoring methodology. *Transactions of ASABE* 56(3):1157-1171.
- Li, Q.F., L. Wang-Li, B.W. Bogan, K. Wang, I. Kilic, J.Q. Ni, and A.J. Heber. 2013. National air emissions monitoring study - Southeast layer site: Part II-particulate matter. *Transactions of ASABE* 56(3):1173-1184.
- Wang-Li, L., Q.F. Li, B.W. Bogan, K. Wang, J.Q. Ni, I. Kilic, A.J. Heber. 2013. National air emissions monitoring study - Southeast layer site: Part III-ammonia concentrations and emissions. *Transactions of ASABE* 56(3):1185-1197.
- Li, Q.F., L. Wang-Li, B.W. Bogan, K. Wang, J.Q. Ni, and A.J. Heber. 2013. National air emissions monitoring study - Southeast layer site: Part IV-impacts of the house management practices. *Transactions of ASABE* 56(3):1199-1209.
- Joo, H.S., P.M. Ndegwa, A.J. Heber, J.Q. Ni, B.W. Bogan, J.C. Ramirez-Dorrnsoro, and E.L. Cortus. 2013. Particulate matter emissions from naturally-ventilated freestall dairy barns. *Atmospheric Environment* 69:182-190.
- Schauberger, G., T.T. Lim, J.Q. Ni, D.S. Bundy, B.L. Haymore, C.A. Diehl, R.K. Duggirala, and A.J. Heber. 2013. Empirical model of odor emission from deep-pit swine finishing barns to derive a standardized odor emission factor. *Atmospheric Environment* 66:84-90.
- Bereznicki, S.D., A.J. Heber, N. Akdeniz, L.D. Jacobson, B.P. Hetchler, K.Y. Heathcote, S.J. Hoff, J.A. Koziel, L. Cai, S. Zhang, D.B. Parker, E.A. Caraway, T.T. Lim, E.L. Cortus, and R.B. Jacko. 2012. Odor and odorous chemical emissions from animal buildings: Part 1 - Project overview, collection methods, and quality control. *Transactions of ASABE* 55(6):2325-2334.
- Akdeniz, N., L.D. Jacobson, B.P. Hetchler, S.D. Bereznicki, A.J. Heber, J.A. Koziel, L. Cai, S. Zhang, and D.B. Parker. 2012. Odor and odorous chemical emissions from animal buildings: Part 2 - Odor emissions. *Transactions of ASABE* 55(6):2335-2345.
- Akdeniz, N., L.D. Jacobson, B.P. Hetchler, S.D. Bereznicki, A.J. Heber, J.A. Koziel, L. Cai, S. Zhang, and D.B. Parker. 2012. Odor and odorous chemical emissions from animal buildings: Part 4 - Correlations between sensory and chemical emissions. *Transactions of ASABE* 55(6):2347-2356.
- Parker, B.P., L. Cai, J.A. Koziel, L.D. Jacobson, N. Akdeniz, S.D. Bereznicki, T.T. Lim, E.A. Caraway, S. Zhang, S.J. Hoff, A.J. Heber, K.Y. Heathcote, and B.P. Hetchler. 2012. Odor and odorous chemical emissions from animal buildings: Part 6 - Odor activity value. *Transactions of ASABE* 55(6):2357-2368.
- Lee, S.H., C. Li, and A.J. Heber. 2012. The effect of nitrate on ethylene biofiltration. *Journal of Hazardous Materials* 241-242:331-339.

- Jin, Y., T.T. Lim, J.Q. Ni, J.H. Ha, and A.J. Heber. 2012. Emissions monitoring at a deep-pit swine finishing facility: Research methods and system performance. *Journal of Air and Waste Management Association* 62(11):1264-1276.
- Lim, T.T., Y. Jin, J.Q. Ni, and A.J. Heber. 2012. Field evaluation of biofilters in reducing aerial pollutant emissions from a commercial pig finishing barn. *Biosystems Engineering* 112(3): 192-201.
- Lin, X.J., E.L. Cortus, R. Zhang, S. Jiang, A.J. Heber and I. Kilic. 2012. Thermal environmental control of high-rise layer houses in California. *Transactions of ASABE* 55(5):1909-1920.
- Lin, X.J., E.L. Cortus, R. Zhang, S. Jiang, and A.J. Heber. 2012. Air emissions from broiler buildings in California. *Transactions of ASABE* 55(5):1895-1908.
- Ni, J.Q., A.J. Heber, E.L. Cortus, T.T. Lim, B.W. Bogan, R.H. Grant, and M.T. Boehm. 2012. Assessment of ammonia emissions from swine facilities in the US: Application of knowledge from experimental research. *Environmental Science and Policy* 22:25-35.
- Ni, J.Q., W.P. Robarge, C. Xiao, and A.J. Heber. 2012. Volatile organic compounds at swine facilities: A critical review. *Chemosphere* 89:769-788.
- Lee, S.H., C. Li, A.J. Heber, J.Q. Ni, and H. Huang. 2012. Biofiltration of a mixture of ethylene, ammonia, n-butanol and acetone gases. *Bioresource Technology* 127:366-377.
- Ni, J.Q., L. Chai, L. Chen, B.W. Bogan, K. Wang, E.L. Cortus, A.J. Heber, T.T. Lim and C.A. Diehl. 2012. Characteristics of ammonia, hydrogen sulfide, carbon dioxide, and particulate matter concentrations in high-rise and manure-belt layer hen houses. *Atmospheric Environment* 57:165-174.
- Chai, L., J.Q. Ni, C.A. Diehl, I. Kilic, A.J. Heber, Y. Chen, E.L. Cortus, B.W. Bogan, T.T. Lim, J.C. Ramirez-Dorrnsoro, and L. Chen. 2012. Ventilation rates at large commercial layer houses with two-year continuous monitoring. *British Poultry Science* 53(1):19-31.
- Li, Q., L. Wang-Li, Z. Liu and A.J. Heber. 2012. Field evaluation of particulate matter measurements using tapered element oscillating microbalance in a layer house. *Journal of AWMA* 62(3):322-335.
- Lin, X.J., E.L. Cortus, R. Zhang, S. Jiang, and A.J. Heber. 2012. Ammonia, hydrogen sulfide, carbon dioxide, and particulate matter emissions from California high-rise layer houses. *Atmospheric Environment* 46:81-91.
- Lin, X.-J., E.L. Cortus, R. Zhang, S. Jiang, and A.J. Heber. 2011. Ventilation monitoring of broiler houses in California. *Transactions of ASABE* 54(3):1059-1068.

### Selected Conference Presentations (last 3 years):

- K. and A.J. Heber, "Improving Data Quality for a Dairy Pollutant Emissions Study" (October 18, 2013). The Summer Undergraduate Research Fellowship (SURF) Symposium. Paper 138. [http://docs.lib.purdue.edu/surf/2013/presentations/138]
- Schauberger, G., M. Piringer, and A.J. Heber. 2013. Dynamic odor emission model for deep-pit swine finishing barns. 2013. IWA Odours/Biofiltration Conference, San Francisco, CA, March 4-7.
- Cortus, E.L., L.D. Jacobson, B.P. Hetchler, and A.J. Heber. 2012. Emission monitoring methodology at a NAEMS dairy site, with an assessment of the uncertainty of measured ventilation airflow rates. Ninth International Livestock Environment Symposium, Valencia, Spain, July 8-12 (ILES IX-Spain).
- Lim, T.T., Y. Jin, J.Q. Ni, A.J. Heber, and R. Liu. 2012. Greenhouse gas emissions from a large commercial U.S. dairy farm. (ILES IX-Spain).
- Casey, K.D., E.L. Cortus, A.J. Heber and A.P. Caramanica. 2012. Ammonia emissions from a pig breeder facility in the Oklahoma Panhandle. (ILES IX-Spain).
- Bogan, B.W. and A.J. Heber. 2012. Air emissions from dairy operations: a literature review. In: *Emissions of Gas and Dust from Livestock* (Eds. M. Hassouna, N. Guingand), Saint-Malo, France, June 10-13 (EGDL-France), 18-21.
- Ni, J.Q., C.A. Diehl, A.J. Heber, B.W. Bogan, K. Wang, L. Chen, T.T. Lim, E.L. Cortus, and S.M. Hanni. 2012. Aerial pollutant emissions from high-rise layer hen houses with two-year continuous monitoring. *EGDL*, 77-80.
- Liang, W.Z., A.J. Heber, J.Q. Ni, E.L. Cortus, B.W. Bogan, K. Wang, L. Wang-Li, Q.F. Li, R. Zhang, and X.J. Lin. 2012. High rise layer house ammonia emissions measured by the NAEMS. *EGDL*, 260-265.