

SWINE HEALTH

Title: Effect of temperature and relative humidity on UV₂₅₄ inactivation of airborne viral pathogens – NPB #09-112

Investigator: Jeff Zimmerman (jjzimm@iastate.edu)

Co-investigator: Steven J. Hoff, Ph.D. PE

Institution: Iowa State University

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SCIENTIFIC ABSTRACT

The proposed study was Part Two of a 2-year project to test whether ultraviolet light could serve as a practical and cost-effective method to inactivate aerosolized pathogens in commercial swine facilities. Work performed in Year One showed that the swine pathogens we tested were highly susceptible to inactivation by UV₂₅₄. The issue that drove the research in Year Two was the fact that the UV inactivation of pathogens is known to be affected by relative humidity and temperature. In general, higher relative humidity decreases the k-value (requires more UV for the same effect) and higher temperature increases the k-value (Tseng and Li, 2005; Walter and Ko, 2007). Understanding the interaction of relative humidity and temperature on the rate of inactivation of swine pathogens under a range of temperature and relative humidity is a critical step moving this technology to the field. Therefore, our objective was to determine the effects of temperature x relative humidity on the rate of inactivation (k-value) of SIV, BVDV, and PRRSV.

These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

For more information contact:

National Pork Board • PO Box 9114 • Des Moines, IA 50306 USA • 800-456-7675 • Fax: 515-223-2646 • pork.org
