

The environmental impact of livestock production has received significant attention in recent years with an emphasis on the generation of greenhouse gases and ammonia (NH₃) emissions, which contribute to air, water and soil pollution. Ammonia emitted from animal operations is of particular concern because it contributes to the formation of fine particulate matter that is linked to human respiratory issues. Ammonia emissions can lead to degradation of land and water ecosystems through acid deposition and eutrophication. Ammonia volatilization occurs when excess crude protein is fed and excreted as urinary nitrogen. Information regarding NH₃ emission from equine facilities is limited, and the effects of dietary CP intake on NH₃ emission have not been investigated. PhD Candidate, Jessie Weir and Dr. Carissa Wickens have been studying the effect that dietary CP intake and bedding type have on NH₃ emissions and have found that high crude protein intake by horses and wheat straw bedding increases NH₃ emission rate from urine. The results of this work will be used to develop and promote management strategies that reduce ammonia emissions in equine facilities.

Jessie has also conducted research to investigate aversion of horses to different ammonia concentrations. It is common practice in the industry to house performance horses in stables for extended periods of time in order to more closely manage their diet and exercise. Previous research has demonstrated that both horses and their owners could be exposed to high levels of NH₃ in the stable environment and this exposure may lead to health problems, discomfort, and ultimately poor welfare. Chronic and acute respiratory disease have been recognized as a leading cause of wastage in performance horses and also are observed in pleasure horses. Preferences between fresh and NH₃ filled air have not been studied in horses. If horses demonstrate aversion to NH₃, then in addition to being a health concern, high NH₃ levels in the stable may constitute a source of discomfort and stress for horses. Jessie and Dr. Wickens in collaboration with University of Delaware researcher Dr. Hong Li, have developed a novel tool and methodology to investigate the effects of ammonia on horse behavior and physiology.

Ellen Rankins is a first year Master's student and her research will aim to build a more complete understanding of current practices within the therapeutic riding/equine assisted therapy industry and to identify areas of need. She is developing a survey instrument that will be used to quantify current practices regarding horse selection, management, and training. Determining areas of need for equine assisted activities and therapies (EAAT) centers across Florida will facilitate the development of meaningful and useful educational programming and resources for these centers. Additionally, it will support the development of relevant research regarding horses used in EAAT.