

# Environmental Monitoring to Support Extended Bedding Change Frequency in Mouse Individually Ventilated Cages

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## BACKGROUND

- Excessive bedding changes can cause negative stereotypic behaviors and stress in animals and expose humans to allergens and zoonotic diseases.
- Individually Ventilated Cages (IVCs) are recommended to be kept between 68°F-79° F and 30%-70% humidity.
- There is currently no standard recommended ammonia level for rodents. **The human maximum of 50 ppm was used for this study.**
- To support extending cage cleaning frequency of IVCs within the WWU Behavioral Neuroscience BNS Program Vivarium, we collected ammonia, temperature and humidity data over a 14 day period.

## RESULTS

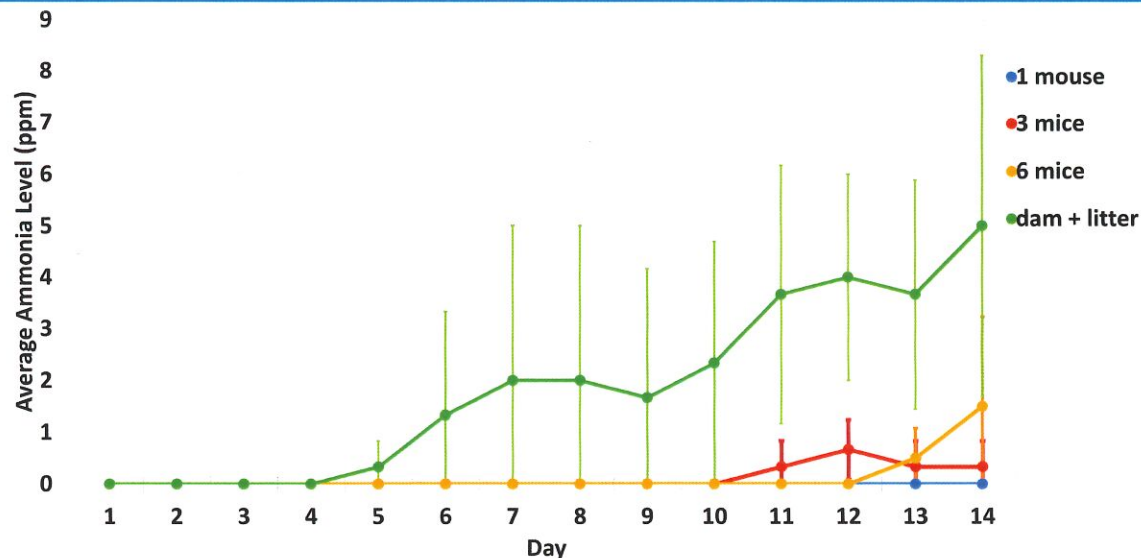
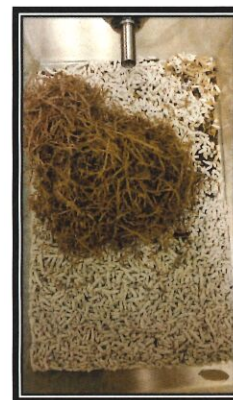
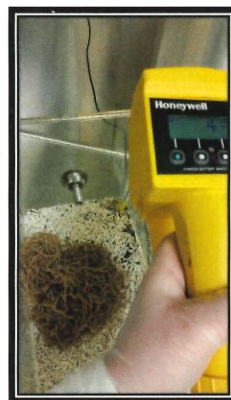


Figure 1. Average ammonia levels (ppm) were collected over a 14 day period from four separate data sets studying four different housing densities; 1 mouse, 3 mice, 6 mice and dam + litter. The highest average level of ammonia recorded was in the housing density, dam + litter at 5 ppm on day 14. There is a significant ( $P < 0.05$ ) effect of ammonia level variation by condition and all results were found to be well under the allowed maximum of 50 ppm. Error bars indicate standard deviation in each day based on condition.

## METHODS

- 16 oz of biofresh Performance Bedding 1/8" in Lab Products -One Cage
- Measured cage micro-environment: temperature, humidity, and ammonia levels over a 14 day period for mice housed in the following cage populations: 1, 3, 6 and dam with litter.
- Ammonia levels were measured using a Honeywell EC-P2 portable ammonia gas detector
- Temperature and humidity levels were measured using Traceable FisherSci Digital monitor.



## CONCLUSIONS

The data collected supports extending cage cleaning from 7 to every 14 days.

Based on the data collected, the next study would be to determine if cage cleaning could be extended out past 14 days to 21 or 28 days.

## ACKNOWLEDGEMENTS

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