
**Abstract**

Cage-cleaning is necessary for a hygienic environment, but since rats communicate using scent, they might suffer if their cages are cleaned too frequently. Male rats (Sprague–Dawley and Wistar) were kept for five months across four animal units. Their cages were cleaned twice-weekly, weekly, or every two weeks, and contained either aspen woodchips or absorbent paper bedding. Aggression, injuries and general health, weight gain, chromodacryorrhoea (a stress-related Harderian gland secretion), handleability, and lung pathology were monitored, as was in-cage ammonia. Cleaning frequency had no clear impact on rat welfare, although frequent cleaning decreased ammonia concentrations and handleability, and non-aggressive skirmishing was highest in weekly cleaned rats. Surprisingly, bedding type did not affect ammonia, but all ammonia readings were unexpectedly low. However, rats kept on aspen had greater sneezing rates and lung pathology than those on paper bedding, but also had higher body weights. The results raise concerns about aspen bedding, which is relatively inert compared with other wood beddings, but nevertheless more harmful than paper. Animal unit significantly affected eight of the 11 variables tested, having interactive effects on five of them. The study also demonstrates the interactive effects of different animal units, casting doubt on the feasibility of standardization. We explored multiple variables of interest, so all findings require confirmation through further work. Nevertheless, cage-cleaning rates seem to affect socially housed male rats little, while bedding type has important effects on rat health.