

Title: Developing a method to estimate aerosol generation during poultry slaughtering and defeathering
—Dataset description

Dataset Number:

Introduction

Influenza viruses can be aerosolized during the slaughter of infected chickens, which can increase the risk of zoonotic transmission. We conducted experiments to monitor aerosol generation during slaughtering and defeathering to help identifying methods that produce the least aerosols. During slaughtering experiments, aerosol monitors recorded higher particle concentrations at human breathing height than the barrel height. The median particle concentrations at human breathing height were 67 $\mu\text{g}/\text{m}^3$ (IQR 44-121) for the PATS+ monitors and 34 $\mu\text{g}/\text{m}^3$ (IQR 34-64) for the SidePak™ monitor. For the defeathering experiments, the median particle concentrations recorded by the PATS+ monitors were not significantly different between human breathing height (41 $\mu\text{g}/\text{m}^3$, IQR 29-49) and defeathering machine height (37 $\mu\text{g}/\text{m}^3$, IQR 29-44). The experimental design allowed us to measure increases in aerosol concentrations during slaughtering and defeathering. This protocol can be used to test airborne particle generation during different slaughtering and defeathering techniques in order to identify procedures that can minimize workers' exposure to potentially hazardous aerosol particles.

Data Collection Methods

- 1) Six PATS+ and one SidePak™ aerosol monitors were used to measure concentrations of airborne particles $<2.5 \mu\text{m}$ at baseline and during slaughtering and defeathering of chickens.
- 2) Baseline measurements were subtracted from experimental measurements to calculate average particle concentrations.
- 3) The instruments were placed 148 cm above the floor during slaughtering and defeathering, corresponding to a worker's breathing level; 56 cm during slaughter, corresponding to the height of the mouth of the barrel; and 107 cm, during defeathering corresponding to the mouth of the machine.
- 4) Ten chickens were slaughtered by severing the cervical blood vessels and placing them in an open barrel to exsanguinate.
- 5) Ten chickens were defeathered using a defeathering machine.

Citation

NA Rimi, MH Fahad, A Clark, R Sultana, K Hossain, MK Saifullah, IS Shanta, DE Swayne, MZ Hassan, SMG Mortaza, ST Swarna, M Giasuddin, C LeBoa, MS Rahman, D Biswas, M Rahman, JC Kile, ED Kennedy and WG Lindsley (2025). Developing a method to estimate aerosol generation during poultry slaughtering and defeathering in Bangladesh: An experimental study. *Building and Environment* 271: 112621. <https://doi.org/10.1016/j.buildenv.2025.112621>

Acknowledgements

This work was supported by the Centers for Disease Control and Prevention. The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the National Institute for Occupational Safety and Health (NIOSH), US Centers for Disease Control and

Prevention (CDC). Mention of any company or product does not constitute endorsement by NIOSH or CDC.

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