Oct 10, 2025

LBM Ventilation Protocol

DOI
https://dx.doi.org/10.17504/protocols.io.ewov11x2ovr2/v1

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Protocol Citation: Christopher LeBoa, Nadia Rimi, Shohanur Rahman, Khaled Saifullah, Layla Kwong, Ajay Pillaisetti 2025. LBM Ventilation Protocol . **protocols.io** https://dx.doi.org/10.17504/protocols.io.ewov11x2ovr2/v1

Protocol status: Working
We used this protocol. It works but the question on how to utilize it in different types of spaces (without walls) is an open question of if it provides any accuracy

Created: October 10, 2025

Last Modified: October 10, 2025

Protocol Integer ID: 229469

Keywords: lbm ventilation protocol, avian influenza in live poultry market, ventilation, relationship between ventilation, ventilation components of work, ventilation component, avian influenza, live poultry market, influenza

Funders Acknowledgements:
National Institutes of Health
Grant ID: D43TW010540

Abstract

This is the protocol used for the ventilation components of work looking at the relationship between ventilation and airbore avian influenza in live poultry markets in Bangladesh

Materials

- Fire extinguisher
- 5 x Aranet4 CO2 monitors
- Tablet with Aranet4 application (Pair sensors with the device using this protocol)
- Wire or other mechanism for attaching Aranet4 to wall
- Cardboard for mixing air

Procedure

1 Position the Aranet4 monitors in the shop

1.1 Slaughtering area

1.2 Defeathering area

1.3 Shopkeeper sitting zone

1.4 Worker standing zone

1.5 Customer zone

2 Check tablet to ensure that all monitors are on and recording data

2.1 Ensure that all Aranet4's are recording data at 1 minute intervals

3 Release a bolus of CO2

3.1 Explain to market workers that you will be releasing a small amount of carbon dioxide that is not harmful at the level you will release it - you would have to release five times more for it to be risky

3.2 Bring fire extinguisher to area in front of chicken holding area

3.3 Release CO2 from fire extinguisher for 1 puff

3.4 We ideally would clear out the shop for this component but that may not be possible.

3.5 Use cardboard or other material to fan room to ensure mixing for 1 minute

3.6 Turn on ventilation fan

3.7 Check on the tablet that the CO2 levels have reached 3000 ppm

3.8 Record time bolus was released in data collection form

4 If the test specifies that the intervention should be “on” for this experiment, turn on the intervention

5 Allow Aranet4 monitors to continue running while rest of samples are being collected

6 Draw out where the Aranet4 monitors are placed in the sketch of the shop

7 At end of sampling period (1 hour)

7.1 Confirm on the application that the CO2 levels have returned to steady state (that they are similar to what they were before bolus was added)

7.2 If it has not allow the monitors to continue running

8 Remove the Aranet 4’s and place them in Ziplock bag within the supplies backpack

9 Record the time on tablet that the Aranets were removed

10 Download data from sampling run

10.1 Follow these steps to export data from sensor and save CSV on project box as

10.2 CO2_[Market#]_[LOCATION]_[DATE].CSV

11 Calibrate Aranet 4 monitors once a month by flipping the switch on their back on and off.