**Title**: **Title**: Efficacy of Do-It-Yourself air filtration units in reducing exposure to simulated respiratory aerosols_Dataset

**Dataset Number**: RD-1057-2023-0

**Introduction:**

Our investigation examined the efficacy of Do-It-Yourself (DIY) air filtration units in reducing recipient exposure to simulated respiratory aerosols within a mock classroom. Seven commercially available box style fans were evaluated using five performance parameters. Two fans with the highest and lowest airflow rates were subsequently evaluated in two DIY unit configurations using either 2.5 or 5 cm deep minimum efficiency reporting value (MERV) 13 filters. DIY air filtration units were tested with the central HVAC system set at 2 air changes/hour (ACH) to represent a classroom with low ventilation. Results of the investigation provide a better understanding of DIY units and their potential to reduce exposure to infectious aerosols that can transmit SARS-CoV-2 and other diseases.

**Non-Endorsement Disclaimer:**

Mention of any company or product does not constitute endorsement by the National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC).

**Citations:**

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**Data Collection Methods**

1. Aerosol Particle Generation
    a. 14% w/v KCl aerosolized via single jet Collison atomizer (BGI Sciences)
    b. Exhaled using a simulator with headform with elastomeric bellows (15 L/min minute ventilation)
2. Aerosol Particle Measurement
    a. Exposure metric for each of the three receiver simulators measured by three Grimm 1.108 optical particle counters (0.3–3.0 µm particle range)
    b. Area samples measured by eight TSI 3330 optical particle counters (OPC) (0.3–10.0 µm particle range)
3. Ventilation Rates
    a. HVAC Supply Rate measured using Alnor Balometer (TSI, Inc.) with a 0.6 m x 1.2 m Capture Hood
    b. Tracer Gas using sulfur hexafluoride and Four Innova Photoacoustic Infrared Spectroscopy Analyzer models 1412, 1412i(2x) and 1512 (California Analytical Instruments, Inc.)
    c. Particle Decay measured using eight TSI 3330 optical particle counters
4. Mask Fit Factors
    a. Three-ply cotton masks (Defender, HanesBrand Inc.) were affixed to all simulators
    b. Measured using PortaCount Pro+ (TSI, Inc.) in N99 mode (all sizes)
5. Ambient Conditions
    a. Relative humidity and temperature probe and data logger (Vaisala, Oyj)

b. Noise levels were measured using Real Time Octave Band Analyzer (Extech Instruments, Inc.)

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