

EXECUTIVE SUMMARY

# Indoor Air Quality in Childcare Study 2024

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The pilot project investigates the efficacy of Medifyair Air Filters in reducing PM<sub>2.5</sub> concentrations in eight childcare centers in four Environmental Justice areas in Philadelphia. Analyzing data collected over a two-week period, the study reveals a decrease in PM<sub>2.5</sub> levels, averaging from 6.04  $\mu\text{g}/\text{m}^3$  to 1.02  $\mu\text{g}/\text{m}^3$ , demonstrating the effectiveness of the air filters. Concurrently, Indoor Air Quality (IAQ) improved, with an average IAQ drop from 23.79 to 4.13  $\mu\text{g}/\text{m}^3$ . Variability among participants highlights the need for tailored interventions regarding family and center-based facilities.



By childcare staff understanding the flow and quality of air inside their centers from indoor air monitoring data, they can potentially adjust their behavior and schedules to reduce poor air quality impacts. The findings not only provide insights into improving indoor air quality for childcare centers but also have broader implications to mitigate health disparities in diverse populations.

The potential health implications, coupled with practical recommendations, provide a solid foundation for future research and informed decision-making in childcare facility management and public health initiatives. Future research projects can expand on the impacts of CO2 levels as an indicator of HVAC efficiency and effectiveness, measure humidity levels, and ensure adequate ventilation to avoid mold growth over time. Additionally, examining health outcomes such as reduced incidences of respiratory asthma, COVID-19, RSV, and the flu from better indoor air quality would contribute valuable insights into the optimal use of air filters.

## RECOMMENDATIONS FOR HIGHER AIR QUALITY IN CHILDCARE

1. Run the Medifyair filters in childcare centers year-round during business hours at level 4 speed to ensure optimal air quality where children and staff spend the most time.
2. Adhere to regular filter replacement as per the unit's guidelines and instructions.
3. Consider relocating the air filter near the kitchen during cooking to reduce particulates resulting from this activity.
4. Invest in air quality sensors for consistent monitoring, promoting awareness, and maintaining indoor air quality.
5. Perform daily checks of outdoor Air Quality Index (AQI).
6. Implement measures to reduce source pollution, such as using walk-off mats and removing shoes to minimize off-gassing and indoor sources.
7. Ensure proper and adequate ventilation.
8. WHE recommends distribution and use of air filters in both commercial and family-based early learning centers, particularly those located in environmental justice communities with higher-than-average asthma rates in children.