

PRESENTING AUTHOR'S NAME & RESEARCH TITLE

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An air quality-focused personnel intervention to improve health among nursing home residents

PURPOSE/BACKGROUND

Wildfire activity is increasing in parts of the world where extreme drought and warming temperatures contribute to fireprone conditions, including the western United States. The elderly are among the most vulnerable, and those in long-term care with preexisting conditions have added risk for adverse health outcomes from wildfire smoke exposure.

MATERIALS & METHODS

In this study, we report continuous co-located indoor and outdoor fine particulate matter (PM_{2.5}) measurements at four skilled nursing facilities in the western United States. Throughout the year 2020, over 8000 h of data were collected, which amounted to approximately 300 days of indoor and outdoor sampling at each facility.

RESULTS

The highest indoor 24 h average PM_{2.5} recorded at each facility was 43.6 µg/m³, 103.2 µg/m³, 35.4 µg/m³, and 202.5 µg/m³, and these peaks occurred during the wildfire season. The indoor-to-outdoor PM_{2.5} ratio and calculated infiltration efficiencies indicated high variation in the impact of wildfire events on Indoor Air Quality between the four facilities. Notably, infiltration efficiency ranged from 0.22 to 0.76 across the four facilities.

DISCUSSION/CONCLUSION

We propose that this variability is evidence that PM_{2.5} infiltration may be impacted by modifiable building characteristics and human behavioral factors, and this should be addressed in future studies.