

1.167 Urban areas of central and southern Chile exceed particulate matter air quality thresholds.

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Abstract:

An analysis of air quality is presented concerning concentrations of sub-10 μm and sub-2.5 μm particulate matter (PM_{10} and $\text{PM}_{2.5}$, respectively) recorded at 23 automated public monitoring stations located in 15 cities in central and southern regions of Chile. In each city, the spatial and temporal distributions of PM_{10} and $\text{PM}_{2.5}$ concentrations were recorded. Air quality was evaluated via comparison of the annual average concentrations of PM_{10} and $\text{PM}_{2.5}$ with the guidelines of the World Health Organization (WHO) and national standards. The results showed that the limits established in the WHO guidelines and the national standards were systematically exceeded at all of the study sites. The greatest concentrations, for both PM_{10} and $\text{PM}_{2.5}$, were observed during the fall and winter months (April to September). During the winter months, the burning of firewood for heating produces emissions that are an important source of particulate matter, primarily at night when the lowest temperatures occur and atmospheric conditions are generally unfavorable for dispersion, resulting in the accumulation of pollution above cities. This evaluation of air quality showed that in cities in southern Chile, the population is exposed to concentrations of particulate matter that can have negative impacts on health.

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