

Title *

Characteristics of intermittent exposures to fine particulate matters: implications on exposure assessment

Abstract *

In air pollution exposure assessment studies, long-term exposures or extreme pollution events have been discussed in great details, but the characteristics of air pollutant exposures at recurring levels and their potential health impacts have not been well examined. In this study, ambient monitoring records of fine particulate matters (PM_{2.5}) between 2006 and 2015 at a local monitoring station in southern Taiwan were obtained from Taiwan Environmental Protection Agency. Hourly air quality monitoring data were converted into running 24-hour average concentrations. The criterial limit (35 µg/m³) was used to screen for air pollution status. Consecutive hours with 24-hour average concentrations above the limit were treated as the same pollution event. For each identified event, the time of first occurrence, total hours of event, average and maximum concentrations were recorded.

In all, 48,331 hours (57.2%) of records exceeded the 24-hour average PM_{2.5} concentration limit. The exceedance hours clustered in 501 events, with an average length of 96.5 hours. Substantial variations were observed in event length and average concentration, which were lower between April and September. In addition, a slight decreasing trend was observed between 2006 and 2015 for occurrence probability and event average concentration. Additionally, the duration, frequency and severity of the PM_{2.5} events showed a strong seasonal variation. The maximum concentration and duration of pollution events in fall-winter were slightly higher than in spring-summer, when rainfall occurs more often and at higher rates. The analytical method may be used for other criteria air pollutants and to predict for air pollution events.

Permission to publish *



Check this box to give us permission to publish your abstract on a flash drive/USB Stick for distribution to all delegates if it is accepted for presentation

Affiliations and Authors *

Author Information

Yen-Yu Liu (Presenting)

Affiliations

NKFUST, Kaohsiung, Taiwan

Author Information

Yuli Huang

Affiliations

NKFUST, Kaohsiung, Taiwan