**Indoor PM2.5 in East Asian countries: A review of sources, health effects, and mitigation techniques**

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# Abstract

PM2.5, or fine particulate matter, is an airborne particle with an aerodynamic size of 2.5 microns or less which poses a greater threat to humans. People spend the majority of their time at home, thus it is crucial to understand indoor air quality. Health issues are raised from exposure to PM2.5. It depends on the infrastructure, air circulation, and insulation which are ultimately related to the country profile. This review selected East Asia countries that highlight the sources of PM2.5 and its associated health risk. As per our knowledge, data from North Korea is absent. The main sources of indoor PM2.5 include outdoor air pollution, indoor combustion, and building materials. Exposure to indoor PM2.5 has been associated with various health effects, including respiratory and cardiovascular diseases, cancer, and cognitive impairment. The article continues by addressing mitigating techniques to lower indoor PM2.5 concentrations in east Asian countries, such as better ventilation, the use of cleaner fuels and stoves, and regulatory reforms. However, the effectiveness of these techniques depends on various factors, such as building design, occupancy patterns, and cultural practices. The documented literature provides a valuable resource for policymakers, researchers, and stakeholders who are working to improve indoor air quality in developing countries facing similar challenges.

**Outline**

# Introduction

# In many nations, notably in East Asia, indoor air pollution has become a major environmental and public health concern. The impact of indoor environment quality on our health and well-being is becoming more well recognized. Particularly, indoor air quality (IAQ) has an effect on a variety of health consequences. People are spending 90% of their time in their indoor environment, therefore it is crucial to understand indoor air quality (Lai H. K., 2004). Fine particulate matter (PM2.5) has been identified as among the most damaging and prevalent air contaminants in indoor environments. The rapid industrialization, urbanization, and rise in energy use in recent years have led to serious air pollution issues, particularly in East Asian countries. As a result, indoor PM2.5 pollution has grown to be a significant health risk for the people in the region. Several studies have found a range of indoor PM2.5 sources, including indoor sources like combustion products from heating and cooking, smoking, and building materials and furnishings. Depending on the location, climate, and level of urbanization of the area, there might be a wide variety of outdoor sources of PM2.5 including traffic emissions, industrial emissions, agricultural activities, and climate and weather conditions.

# Sources of indoor PM2.5

# Status of indoor PM2.5 in East Asia

# China

# Hong Kong

# Japan

# Mongolia

# Macao

# South Korea

# Taiwan

# Health Impacts

# Mitigation Techniques

# Policy and regulatory frameworks

# Conclusion and recommendations

# References