# ABSTRACT

**Rough Floor Trap: Impact of Concrete Surfaces on PM2.5 Resuspension in Material Stores**

Faisal, Deddy Alif Utama, Marhamah Yudin, Atyaf Umi Faizah, Fahrul Islam, Fajar Akbar

**Correspondence E-mail :** faisal@poltekkesgorontalo.ac.id

Background : Floor surface characteristics are frequently overlooked in indoor air quality audits, despite playing a critical role in particle retention and resuspension. In building material stores, rough concrete floors can exacerbate the resuspension of settled dust during dry cleaning activities.

Objective : This study aims to evaluate the statistical impact of floor material types (rough concrete vs. ceramic) on fine particulate (PM2.5) exposure levels and pollutant resuspension driven by dry sweeping practices.

Research Methods/ Implementation Methods : A cross-sectional analytical design was conducted involving 19 workers across building material stores in Gorontalo City. Data on floor types, cleaning methods, and daily PM2.5 concentrations were analyzed using the Mann-Whitney U non-parametric test.

Results : Findings revealed that 73.7% of work areas feature rough concrete floors, and 100% rely on dry sweeping. Statistical analysis confirmed a significant difference in dust retention based on floor type ($p = 0.013$). Workers operating on rough concrete floors experienced hazardous PM2.5 exposure levels (averaging 125.63 µg/m3), which is nearly double compared to those on ceramic surfaces (71.91 µg/m3). Rough floors act as a mechanical trap that binds silica dust, turning dry brooms into aggressive resuspension agitators.

Conclusion/Lesson Learned : Rough concrete surfaces severely amplify indoor particulate toxicity hazards. Engineering interventions, such as smooth floor coatings and transitioning to wet mopping, are imperative for pollution mitigation.

Keyword : Indoor Air Quality; Floor Material; PM2.5; Dust Resuspension; Building Sanitation.

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