

## عنوان مقاله:

Exposure to Respirable Dust and Crystalline Silica in a Cement Plant

## محل انتشار:

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## خلاصه مقاله:

Background: People working in industrial environments may be exposed to respirable dust. Crystalline silica dust is known as a respiratory risk. The cement industry is among the most important manufacturing industries whose workers are exposed to dust. Therefore, this study was conducted to investigate workers' exposure to respirable dust and crystalline silica in a cement plant. Methods: According to a sample size calculation formula, 50 dust samples were collected from workers' respiratory zones in different parts of the plant. Respirable dust concentrations exposed were calculated using NIOSH-0600 method. Concentrations of crystalline silica in dust samples were determined according to NIOSH-7601 method and using visible absorption spectrophotometry. Results: The highest time weighted average of respirable dust concentration (6.12 mg/m<sup>3</sup>) was obtained in crusher unit. The minimum and maximum concentrations of respirable dust were 1.6 mg/m<sup>3</sup> and 12.1 mg/m<sup>3</sup>, respectively. The highest concentration of crystalline silica (0.044 mg/m<sup>3</sup>) was obtained in raw material grinding unit. The minimum and maximum concentrations of crystalline silica were obtained in cement grinding unit and packaging and loading unit (0.001 mg/m<sup>3</sup> and 0.16 mg/m<sup>3</sup>), respectively. Conclusion: The concentrations of respirable crystalline silica and dust in most units are higher than the threshold limit value which has the potential to harm workers in these units.

## کلمات کلیدی:

,Respirable dust, Crystalline silica, Occupational exposure, Cement Industry

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