

PM₁₀ Concentration Emitted from Blasting and Crushing Processes of Limestone Mines in Saraburi Province, Thailand

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Abstract : This study aimed to investigate PM₁₀ emitted from different limestone mines in Saraburi province, Thailand. The blasting and crushing were the main processes selected for PM₁₀ sampling. PM₁₀ was collected in two mines including, a limestone mine for cement manufacturing (mine A) and a limestone mine for construction (mine B). The IMPACT samplers were used to collect PM₁₀. At blasting, the points aligning with the upwind and downwind direction were assigned for the sampling. The ranges of PM₁₀ concentrations at mine A and B were 0.267-5.592 and 0.130-0.325 mg/m³, respectively, and the concentration at blasting from mine A was significantly higher than mine B (p < 0.05). During crushing at mine A, the PM₁₀ concentration with the range of 1.153-3.716 and 0.085-1.724 mg/m³; at crusher and piles in respectively were observed whereas the PM₁₀ concentration measured at four sampling points in mine B, including secondary crusher, tertiary crusher, screening point, and piles, were ranged 1.032-16.529, 10.957-74.057, 0.655-4.956, and 0.169-1.699 mg/m³, respectively. The emission of PM₁₀ concentration at the crushing units was different in the ranges depending on types of machine, its operation, dust collection and control system, and environmental conditions.

Keywords : PM₁₀ concentration, limestone mines, blasting, crushing

Conference Title : ICEPCP 2021 : International Conference on Environmental Pollution Control and Prevention

Conference Location : Bangkok, Thailand

Conference Dates : February 04-05, 2021