

## **Performance of short-time water misting to wash out dust from air in construction sites**

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Despite of effective dust controls, high dust levels are common at construction sites. The aim of this study was to reduce fine dust concentrations and limit the dust spreading at construction sites with short-time water misting after dusty work phases. The study included laboratory and field experiments. In the laboratory, the method was applied for typical concentration of dust in controlled environment. Field test were conducted at four renovation sites. Concentrations of PM<sub>10</sub> particles were measured in real-time and filter samples of inhalable dust were collected. Concentration decays were compared between the control and wet tests. In the wet tests (misting of 2–4 minutes), the amount of used water by a portable misting device was an average 0.5 L. During the misting, relative humidity increased 38–47% in the laboratory and 15–40% in the field. Surfaces did not wet. Clean air delivery rate by water misting was 21 m<sup>3</sup>/L of water in the laboratory and 16–188 m<sup>3</sup> and in the field experiments, respectively. Misting decreased PM<sub>10</sub> concentrations 70–81% in the laboratory and 77–99% in the field tests. Inhalable dust concentrations reduced as an average 35% in the laboratory and 47% in the field. Application of mist in renovation sites reduced inhalable dust concentrations outside the working area as an average 60% in renovation sites. The study indicated that water misting is suitable to improving the clearance of particles from the air. Short-time misting after dusty work tasks is useful to supplement other dust controls.