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INFLUENCE OF WATER SPRINKLING ON THE AMOUNT OF DUST PARTICLES IN A HOUSE FOR FATTENING PIGS

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ABSTRACT Dust and particles in the air environment in pig houses most likely contribute to respiratory symptoms in workers and pigs. Measurements were made in order to study the effect of water sprinkling on the occurrence of respirable particles. A barn with 48 fattening pigs in pens with partly slatted floor was used in the study. Nozzles placed over the slatted floor sprinkled water 20-40 seconds during an hour. Particles were counted six times every hour by the help of a Rion KC01B particle counter. Average numbers of particles in millions per m³ during periods without sprinkling were 63 for size fraction 0.3-0.5 μm , 2.2 for 0.5-1 μm , 1.5 for 1-2 μm , 1.5 for 2-5 μm and 0.39 for particles larger than 5 μm . Average numbers in millions per m³ during three periods with water sprinkling were 48 for size fraction 0.3-0.5 μm , 1.8 for 0.5-1 μm , 1.3 for 1-2 μm , 1.2 for 2-5 μm and 0.33 for particles larger than 5 μm . A diurnal variation of the amount of larger particles was likely influenced by the activity in the barn. Variation between concentrations during different days indicates a difficulty to make firm conclusions. However, the result suggests a significant reduction of respirable particles by sprinkling with water.

Keywords: Respirable dust, particulates, water sprinkling, fattening pigs.