industry to explore the use of sensors. A total of 145 full / half-shift measurements were collected for 37 workers and 15 static positions. Measurement data was obtained using four types of sensor and conventional respirable gravimetric and high-resolution reference devices. High-resolution contextual information was collected using additional sensors, including an ultrasound-based indoor positioning system, to investigate how these can further characterize exposure situations. Sensor accuracy compared to reference measurements ranged up to R2-values of 0.92, but large variations were observed within and between industries. Overall, stationary measurements showed less variation in performance compared to personal measurements. Different types of sensor seemed more accurate for specific industries. Contextual measurements provided additional information on when and where exposure occurred, for example by dynamic hazard maps based on indoor location and personal sensor measurements. Although performance of sensors remains lower than conventional methods, they may provide accurate measurements in specific situations. Additionally, sensors can provide new types of information that cannot be captured by time-integrated measurements.

Abstract citation ID: wxac087.040

121 Applying Low-Cost Particulate Matter Sensors for Characterizing Occupational Exposure; Findings from Field Studies in Different Industries

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Low-cost particulate matter sensors are a up-and-coming technology for monitoring occupational exposure to hazardous substances in high spatial and temporal resolutions. Low costs, small sizes and high measurement frequencies offer the potential to continuously, automatically and remotely measure dust exposure and emission in the workplace. However, much remains unknown about how these devices can be successfully applied in occupational settings. TNO (the Netherlands) has, in collaboration with HSE (UK) and NIOSH (US), performed field studies at seven companies in the bakery, woodworking and welding