P8: Occupational exposure to nanoparticles: a case study in a ceramic industry

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Introduction: Occupational exposure to nanoparticles is considered as an emerging risk, with tendency to increase. Nanoparticles can reach the human body through several ways, causing damage on workers' health.

Objectives: This study aims to assess the occupational exposure to nanoparticles in a ceramic industry, through the *Control Banding NanoTool-2.0* method.

Materials and Methods: This study was developed in a ceramic industry located in the north region of Portugal. A walkthrough inspection was completed to gather information related to building characteristics and characteristics of the workstations. Two sections were selected and analyzed, namely "pastes" and "presses" sections. It was applied a qualitative method, the *Control Banding NanoTool-2.0*, in both sectors. Additionally, quantitative assessment of total and respirable dust was performed according NIOSH-0500 and NIOSH-0600 methods, respectively.

Results and Discussion: The results of the application of qualitative method were RL1 for the sectors under analysis, which corresponds to the lowest risk level. For this level of risk, the method suggests improvements on general ventilation for both sectors. Regarding the quantitative assessment, in the "pastes" section, a concentration of 24.7mg/m^3 for total dust and 1.2mg/m^3 for respirable fraction, were found. In the "presses" section, 1.3mg/m^3 and 0.2mg/m^3 for total and respirable dust were found. The threshold limit value (10mg/m^3) was exceeded for total dust, in the "pastes" section. The results may indicate that workstations are more affected by particles of larger diameter.

Conclusion: This study enhances the need to improve general ventilation mainly in "pastes" section and other preventive measures should be considered. More research is needed, since information about the risk of nanoparticles exposure for health is still very limited.

References

1. Paik, S., Zalk, D. & Swuste, P. (2008). Application of a Pilot Control Banding Tool for Risk Level Assessment and Control of Nanoparticle Exposures. *Annals of Occupational Hygiene*, 52(6),419-428.