

Confronto fra due selettori granulometrici: Dorr-Oliver e GS3 nel campionamento di polveri respirabili per la determinazione di quarzo

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KEY WORDS

Respirable particles; quartz; respirable dust selectors

SUMMARY

*«Comparison between two granulometric selectors - Dorr-Oliver and GS3 - in respirable particles sampling for analytical measurement of quartz content». Background: A Local Health Unit in the Umbria Region of Italy carried out environmental investigations to estimate exposure to respirable particles among workers in a number of companies belonging to the ceramics and brick industries manufacturing categories. Objectives: The purpose of this paper was to estimate the degree of agreement of two sampling methods, Dorr-Oliver and GS3 selectors. Both selectors are deemed to comply with the respirable particles sampling reported in European Standard EN 481/1993. Methods: For each worker, respirable particles and the quartz contained therein were collected using Dorr-Oliver and GS3 selectors simultaneously, so that quartz exposure was also measured. Conclusions: The comparison between the two series of airborne concentrations of respirable particles (collected with the two selectors), showed statistically significant differences ($p < 0.05$ with Student's *t* test). Moreover, Pearson's coefficient showed a low correlation between the two series of data. A similar conclusion was obtained analysing quartz airborne concentrations. The results seem to confirm that the two sampling methods possess a different capture power of particles as a function of their size.*