Comparison of dust sampling methods in Estonia and Sweden--a field study.

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Abstract: The purpose of this field study was to compare an Estonian dust sampling method, a method also used in other former East Block countries, with a Swedish method and to estimate inter-method agreement with statistical analyses. The Estonian standard method (ESM), used to assess exposure in Estonia since the early 1950s, is based on a strategy where air samples are collected for 10 minutes every hour over a full shift. This method was compared to a Swedish standard method (SSM), a modified NIOSH method, comparable to international standards, where one air sample is collected during a full shift. The study was carried out at a cement plant that in the beginning of the 1990s was subjected to an epidemiological study, including collection of exposure data. The results of the analysis from 31 clusters of parallel samples of the two methods, when dust consisting of Portland cement was collected, showed a relatively weak correlation between the SSM and the ESM, ri = 0.81 (Pearson's intra-class correlation coefficient). A conversion factor between the two methods was estimated, where SSM is 0.69 times ESM and the limits of agreement are 0.25 and 1.84, respectively. These results indicate a substantial inter-method difference. We therefore recommend that measurements obtained from the two methods should not be used interchangeably. Because the present study is of limited extent, our findings are confined to the operations studied and further studies covering other exposure situations will be needed.

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