

# Effectiveness of a multidisciplinary intervention among Dutch construction workers on respirable quartz exposure: results from the 'Relieved Working' Study

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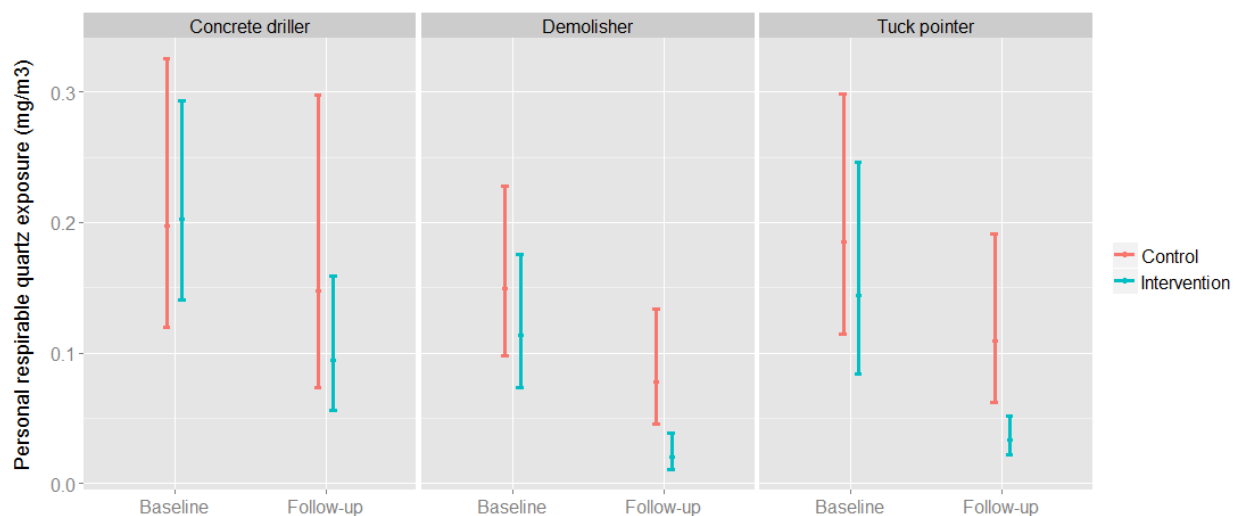


## Introduction

A multidimensional intervention study was performed in order to reduce personal quartz exposure in the Dutch construction industry. The intervention study focused on increasing the use of technical control measures (properly) by targeting organizational and behavioral factors. We aimed to evaluate the effectiveness of the intervention.

## MATERIALS AND METHODS

Within this cluster-RCT, eight participating construction companies, selected based on high exposure job categories, were randomly allocated to an intervention (n=4) or control group (n=4) (Figure 1). The intervention was systematically developed according to the Intervention Mapping protocol, combining data from a baseline survey<sup>1</sup>, round-table discussions with relevant stakeholders, and the literature. Pre and post-intervention personal respirable dust and quartz exposure measurements (n=282) were taken. Detailed observations gave insight in the use of technical control measures. Questionnaires were used to assess behavioral and organizational factors. Bayesian hierarchical models were used to estimate the intervention effect on respirable quartz exposure concentrations.



**Figure 2:** Pre (baseline) and post (follow-up) intervention geometric mean (95% confidence intervals) personal respirable quartz exposure levels (mg/m<sup>3</sup>) for measurements taken at companies in which the intervention was performed (blue) and control companies (red).

## RESULTS

Pre-intervention respirable quartz levels exceeded the Dutch occupational exposure limit (OEL: 0.075 mg/m<sup>3</sup>) in 80% of the measurements for concrete drillers, tuck pointers and demolishers<sup>1</sup>. Post-intervention levels overall were decreased and exceeded the OEL for 40% of the intervention group vs 60% of the control group. The reduction in exposure was larger for the intervention group than for the control group for all job titles. This was significant only for demolishers and tuck pointers (p<0.01). Ongoing analyses will evaluate the role of technical control measures in the decrease of exposure as well as the potential contribution of organizational and behavioral factors, e.g., beliefs, knowledge, and social influence.

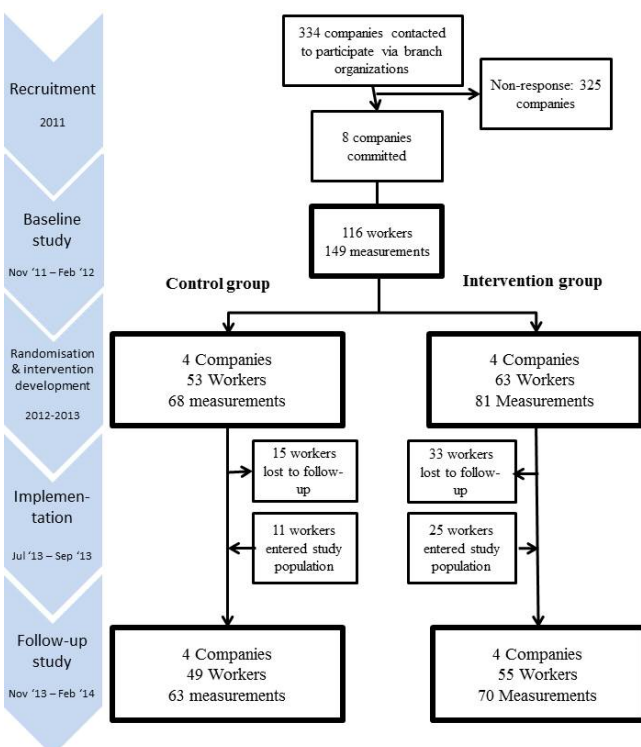
## CONCLUSIONS

The intervention resulted in a substantial and significant decline in exposure levels in the intervention group.

The effect of this silica exposure intervention on COPD will be assessed using a dynamic population-based model, also presented at this conference (poster #0189)

## CONTACT

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**Figure 1:** Study overview including number of exposure samples taken.

<sup>1</sup> van Deurssen et al. (2014) Quartz and Respirable Dust in the Dutch Construction Industry: A Baseline Exposure Assessment as Part of a Multidimensional Intervention Approach. Ann Occup Hyg doi: 10.1093/annhyg/meu021