



THE SELECTED ABSTRACTS

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155 Cost-benefit analysis of interventions using a probabilistic approach: a case focusing on quartz exposure in the Dutch construction industry

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Abstract

Objectives:

Ill-health due to exposure in the workplace results in high costs for employers, employees and society. Interventions can be costly and economic evaluations receive more and more attention in the decision making processes regarding investments, including for occupational health. To perform an economic evaluation information regarding the impact of interventions on exposure and subsequently, health and work performance is needed. Additionally, information regarding costs is needed. Meijster et al. (2011) presented an approach to evaluate the costs and benefits for different stakeholders. We further developed this approach into a probabilistic model to include variability for input parameters and obtain uncertainty estimates for output parameters. This approach is applied to a hypothetical case study focusing on reducing quartz exposure in the Dutch construction industry.

Methods:

The original cost-benefit approach was further developed into a probabilistic approach including Monte Carlo simulations using Excel spreadsheets. This enables the user to calculate total costs, total benefits, net costs and cost-effectiveness which can be easily applied for different intervention(s).

Results:

The implementation of the intervention resulted in a benefit of € 3,906,000 (standard deviation €3,987,000) and 7,200 saved disability-adjusted life years (standard deviation 3,000). Including uncertainty and variation for cost elements and performing Monte Carlo simulations (1000 runs) gave insight in the variability in the output. For two stakeholders (employees, society) the output was surrounded with uncertainty but cost-effective. For the third stakeholder (employers), due to the uncertainty, it was not possible to indicate whether the intervention would be cost-effective. The analysis indicated that the most important source for variance was productivity.

Conclusions:

The described approach gives insight in costs and benefits for different stakeholders in a structured manner. Including a probabilistic approach gives valuable insight in uncertainty and sensitivity of the different cost elements resulting in a more certain outcome of the analysis.