

COHORT STUDY OF THE RELATIONSHIP BETWEEN AIR POLLUTION AND SHORT TERM HEALTH EFFECTS AS DETERMINED BY PEAK EXPIRATORY FLOW MEASUREMENTS

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SUMMARY

The aim of the study was to establish if air pollution has short term effects on health and well-being for individuals living in an industrialized area of Norway.

A cohort study was designed so that two groups (one randomly selected from the general population and one with preexisting lung disease) were followed hour by hour during two months in the winter and in the summer of 1988. In order to minimize the problems of confounding factors, each individual served as her/his own control. Each participant described through the use of a diary the presence of symptoms from the upper and lower respiratory tract as well as general symptoms of ill health. Measurements of lung function by the use of peak expiratory flow meters were done four times a day. In addition, every second week the participants were subjected to a full spirometric test. Samples of urine and blood were examined, and bacteriological test from the throat was performed at the beginning and at the end of the study. A comprehensive measurement program of outdoor air contaminants (including nitrogen oxides, sulphur dioxide) is presented.

Estimation of each participant's exposure was performed hour by hour based on detailed modelling of the measured levels, known emissions of pollutants and meteorological conditions, as well as diary information on the participant's movements through the various micro-environments. The estimated exposures were generally low. In this presentation, a linear regression model and their corresponding parameter estimates were applied on an individual basis to evaluate any effect of air contamination on lung function. No significant relationships between peak expiratory flow and air contaminant exposures could be demonstrated in either of the two groups studied.

Key words: air pollution, cohort study, exposure, PEF (Peak Expiratory Flow), lung function

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