

Publication

Improvements in PM10 exposure and reduced rates of respiratory symptoms in a cohort of Swiss adults (SAPALDIA)

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 1192714**Author(s)** Schindler, Christian; Keidel, Dirk; Gerbase, Margaret W.; Zemp, Elisabeth; Bettschart, Robert; Brändli, Otto; Brutsche, Martin H.; Burdet, Luc; Karrer, Werner; Knöpfli, Bruno; Pons, Marco; Rapp, Regula; Bayer-Oglesby, Lucy; Künzli, Nino; Schwartz, Joel; Liu, Lee-Jane S.; Ackermann-Liebrich, Ursula; Rochat, Thierry; Sapaldia Team,**Author(s) at UniBasel** [Probst Hensch, Nicole](#) ; [Brutsche, Martin](#) ; [Künzli, Nino](#) ; [Liu, Lee-Jane S.](#) ; [Zemp Stutz, Elisabeth](#) ; [Rapp, Regula](#) ; [Schindler, Christian](#) ; [Keidel, Dirk](#) ;**Year** 2009**Title** Improvements in PM10 exposure and reduced rates of respiratory symptoms in a cohort of Swiss adults (SAPALDIA)**Journal** American journal of respiratory and critical care medicine**Volume** 179**Number** 7**Pages / Article-Number** 579-87**Mesh terms** Adult; Cough, etiology; Dyspnea, etiology; Environmental Restoration and Remediation; Female; Follow-Up Studies; Humans; Incidence; Inhalation Exposure, analysis; Male; Middle Aged; Odds Ratio; Particulate Matter, analysis; Respiratory Sounds, etiology; Switzerland, epidemiology

Rationale: Reductions in mortality following improvements in air quality were documented by several studies, and our group found, in an earlier analysis, that decreasing particulate levels attenuate lung function decline in adults. OBJECTIVES: We investigated whether decreases in particulates with an aerodynamic diameter of less than 10 microm (PM10) were associated with lower rates of reporting respiratory symptoms (i.e., decreased morbidity) on follow-up. METHODS: The present analysis includes 7,019 subjects who underwent detailed baseline examinations in 1991 and a follow-up interview in 2002. Each subject was assigned model-based estimates of average PM10 during the 12 months preceding each health assessment and the difference was used as the exposure variable of interest (DeltaPM10). Analyses were stratified by symptom status at baseline and associations between DeltaPM10 and change in symptom status during follow-up were adjusted for important baseline characteristics, smoking status at follow-up, and season. We then estimated adjusted odds ratios for symptoms at follow-up and numbers of symptomatic cases prevented due to the observed reductions in PM10. MEASUREMENTS AND MAIN RESULTS: Residential exposure to PM10 was lower in 2002 than in 1991 (mean decline 6.2 microg/m³; SD = 3.9 microg/m³). Estimated benefits (per 10,000 persons) attributable to the observed changes in PM10-levels were: 259 (95% confidence interval [CI]: 102-416) fewer subjects with regular cough, 179 (95% CI, 30-328) fewer subjects with chronic cough or phlegm and 137 (95% CI, 9-266) fewer subjects with wheezing and breathlessness. CONCLUSIONS: Reductions in particle levels in Switzerland over the 11-year follow-up period had a beneficial effect on respiratory symptoms among adults.

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