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CHRONIC RESPIRATORY HEALTH EFFECTS IN PIG FARMERS RELATE TO OCCUPATIONAL EXPOSURE TO DISINFECTANTS, ENDOTOXINS AND AMMONIA

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The aim was to study relationships between occupational exposure of pig farmers and chronic respiratory health effects. We conducted a cross-sectional study among 198 Dutch pig farmers, of whom 100 without and 98 with one or more chronic respiratory symptoms of cough, phlegm, wheezing, shortness of breath and asthma. Long term average exposure to dust, endotoxin and ammonia were based on personal exposure measurements taken on two days. Use of disinfectants and disinfection procedures were assessed by walk through survey and interview. Adjusted for smoking habits and age, duration of farming and radiological analysis of lung fields. The estimated effects for FEV1, were 270 ml (se 130) and 440 ml (se 180), respectively. A statistically significant inverse association between base-line lung function and endotoxin exposure was observed only among asymptomatic farmers. An increase in exposure with a factor 2.72 was associated with a decrease in FEV1 and FEV1, of 720 (se 280) and 640 ml (se 240), respectively. Our results suggest that use of disinfectants is an important etiologic factor in chronic respiratory health effects of pig farmers. Results also suggest an etiologic role for exposure to endotoxins and ammonia in development of these effects in pig farmers.

OCCUPATION AND PREVALENCE OF RESPIRATORY SYMPTOMS IN THE GENERAL POPULATION.

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The aim of this preliminary study was to investigate relationships between respiratory symptoms and occupational exposures in a general population. The data were collected as part of the Monitoring Project on Risk Factors for Chronic Diseases. The unique composition of the population, both male and female and its relatively young age distribution, could provide information on respiratory health risks in various industries due to exposures from the present and recent past. The study subjects were all inhabitants of Doetinchem, a small industrial town in the eastern part of the Netherlands and come from a survey among 1104 persons conducted in 1993 and were 20-59 years old. A total of 274 cases with respiratory symptoms and 274 controls were matched for age and gender at group level. In a multivariate logistic regression analysis, adjusted for smoking and SES, working in the "construction", "glass, clay and stone", "metal", "rubber, plastics and synthetics" and "printing" industry were statistically associated with a higher prevalence of respiratory symptoms, with significant CR's ranging from 2.6 to 6.5. Because of the relatively small amount of companies involved in the "rubber, plastic and synthetics" industry the observed health effects could be supported by actual exposure data. When appropriate time periods for the industrial activities were taken into account a positive relationship was found between duration of the activities and occurrence of respiratory symptoms. Additional analysis with exposures generated by a general Job Exposure Matrix for the entire occupational history gave unsatisfactory and non interpretable results due to the limitations of the applied matrix. Therefore it is concluded that traditional methods based on surrogate and qualitative measures of exposure are no longer valid for identifying and quantifying new risks.

ISSUES ON ASSESSMENT OF EXPOSURE TO FIBROGENIC DUST

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The principal hazard at the building plants is fibrogenic dust. The aim of the study was to detect the early markers of the occupational hazards effect. We determined the local immunity function parameters. The estimated effects for FEV1 were 270 ml (se 130) and 440 ml (se 180), respectively. A statistically significant inverse association between base-line lung function and endotoxin exposure was observed only among asymptomatic farmers. An increase in exposure with a factor 2.72 was associated with a decrease in FEV1, of 720 (se 280) and 640 ml (se 240), respectively.

Our results suggest that use of disinfectants is an important etiologic factor in chronic respiratory health effects of pig farmers. Results also suggest an etiologic role for exposure to endotoxins and ammonia in development of these effects in pig farmers.