

Kp descriptor. Four of the investigated Kp QSARs show a R^2 close to 0.7 or higher when predicting Kp, suggesting a consistent performance of these models to serve as a tool of dermal hazard characterisation.

7 STATISTICAL MODELLING OF OCCUPATIONAL EXPOSURE TO POLYCYCLIC AROMATIC HYDROCARBONS USING OSHA DATA

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Objectives Polycyclic aromatic hydrocarbons (PAHs) are a group of chemicals consisting primarily of fused aromatic rings. As environmental pollutants, PAHs are of concern because some variants are carcinogenic. Our objective is to predict probabilities of PAH exposure based on industry to allow assessment of individual PAH exposure through occupational history.

Methods The Occupational Safety and Health Administration (OSHA) provided access to two PAH exposure databanks of U. S. workplace compliance testing compiled between 1979 and 2010. Multivariable logistic mixed-effects models were used to predict, for each industry, the probability of a PAH measurement exceeding OSHA's permissible exposure level (exceedance fraction, PEL = 0.200 mg/m³). Time, databank, and industry were included as fixed-effects while inspection number, i.e. an identifier for the compliancy inspector, was included as a random-effect. Industry codes, represented by Standard Industrial Classification or North American Industry Classification System, were maintained or collapsed based on the number of measurements per cell to ensure sufficient sample size.

Results Databank records were amalgamated to yield 2,509 day-specific personal measurements representing 756 companies across 45 states. Regardless of industry code used, analysis revealed that for 1980 less than 5% of industry codes had an exceedance fraction (EF) greater than 0.8. The remaining industry codes were equally distributed between an EF range of 0.2–0.8 and an EF less than 0.2. Overall, more than 80% of industry codes had an EF less than 0.5, databank indicator was marginally significant ($p < 0.10$), and there was an inverse temporal trend of exceeding the PEL, with lower risk in most recent years (albeit not statistically significant).

Conclusions These statistical models allow identification of industries with different risks of elevated PAH exposure. However, because exposure may not be homogeneous within industry codes, future work will involve incorporating information on jobs/occupations with industries to more accurately identify PAH exposure.

8 EMPLOYMENT CIRCUMSTANCES AND CHEMICAL CONTROL MEASURES PROVIDED TO WORKERS WITH DERMAL EXPOSURE TO CHEMICALS - RESULTS FROM A POPULATION-BASED SURVEY

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Objective Chemical exposures in workplaces are an important occupational health and safety problem; however, there is little

published information available about the provision of basic exposure controls to workers with dermal chemical exposures across industrial sectors. This analysis investigated relationships between occupational, workplace and demographic factors and the provision of personal protective measures and/or provision of administrative controls among survey respondents exposed to chemicals at work.

Methods The inaugural Australian National Hazard Exposure Worker Surveillance (NHEWS) survey was a large, population-based telephone survey of workers from all industries. Respondents who reported dermal chemical exposure at work were asked about protective measures provided to them in the workplace, which we classified as administrative measures or personal protective measures. An ordered logistic model was used to investigate the odds of having chemical exposure protections provided by workplace and demographic variables.

Results Workplace size was the strongest predictor for the provision of exposure protection systems incorporating both administrative measures and personal protective measures. Compared to workplaces with fewer than five employees, workers in workplaces with 200 or more employees were more likely to have more comprehensive exposure protection systems, incorporating both administrative and personal protective measures (OR 4.96, 95% CI 2.97–8.28). Permanent and fixed-term employment was also associated with more comprehensive exposure protection systems compared with temporary/casual employment (OR 1.56, 95% CI 1.09–2.22) and self-employment (OR 1.69, 95% CI 1.18–2.42).

Conclusion In the NHEWS survey, employment in small workplaces, non-permanent and self-employment arrangements were associated with less comprehensive exposure protection systems. This suggests that small workplaces and non-permanent or self-employed workers may be important intervention targets for improving workers' exposure protection. Further research investigating exposure control provision in small workplaces and among insecurely employed workers as well as evaluation research of interventions to reach these workers is recommended.

Session: B. Other

9 BLOOD LEAD DETERMINANTS AND PREVALENCE OF NEUROPSYCHIATRIC SYMPTOMS IN FIREARM USERS

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Background Blood lead continues to be a health risk for Mexican workers.

Objective To identify blood lead predictors and the prevalence of neuropsychiatric symptoms in firearm users.

Material and Methods A cross-sectional study was performed on 65 males. We obtained socio-occupational and determined venous blood lead (BPb), as well as neuropsychiatric symptoms using the Q-16 questionnaire.

Results The mean (SD) [min-max] age was 34.8 (6.9) [21–60] years; mean number of years working at the company was 14 (8.5) [1–48] years. Twenty percent (13) used leaded glazed clay pottery (PbGC) in the kitchen. During practice they fired a mean 72 shots (60) [20–250], and during their employed life 5483 (8322.5) [200 to 50 000]. Mean BPb was 6.4 (2.8) [2.7–14.4] mcg/dL. Two caretakers at the firing range had 29.6 and