

posttraumatic stress disorder (PTSD) but not alcohol use disorders. Physical health and wellbeing was poorer in those with a musculoskeletal disorder compared to those without (e.g., for veterans, difference in SF-12 PCS medians = -10.49; 95% CI -12.40, -8.57). Mental health and wellbeing was poorer in those with comorbid depression or PTSD compared to those with musculoskeletal disorders alone (e.g., for veterans, difference in SF-12 MCS medians = -20.74; 95% CI -24.3, -17.18). Similar patterns were found for the comparison group.

**Conclusions** Musculoskeletal disorders in the military were associated with depression and PTSD and poorer physical and mental health and wellbeing. Comorbidity of these conditions has implications for treatment and management and should be considered during assessment.

## Session: 6. Intervention studies I

### 256 IMPACT OF A CAMPAIGN ON THE CORRECT USE OF PROTECTIVE PERSONAL EQUIPMENT IN CAR BODY REPAIR SHOPS

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**Introduction** Significant exposure to hexamethylene diisocyanate (HDI) might occur during spray painting in car body repair shops. Since HDI induces asthma it should be used in properly designed spray booths wearing appropriate personal protective equipment (PPE), i.e. an air-fed breathing apparatus (BA). A<sub>2</sub>P<sub>2</sub> masks may fail to protect without warning. A federal campaign on safe use of chemicals in car body repair shops was set up in 2010. In this study, we assessed the impact of the campaign.

**Methods** Between September 2011–2012, 135 car body repair shops were screened by trained prevention advisors. Observation of the workplaces were done using a checklist assessing the condition of the spray booths (ventilation, negative pressure, visual leaks, warning systems, position of the operator) as well as the use of air-fed BA or A<sub>2</sub>P<sub>2</sub> masks (replacement filters, fit test, storage, audit).

**Results** Ventilation in the spray booths was sufficient in 75%. Negative pressure was present in 68%. There was no visual leak at the door in 98%. Position of the operator towards the spray booth was correct in 89%. In 52% there was a warning system in case of insufficient ventilation.

The recommended air-fed BA was used in 20% of the car shops. In the other 80% (n = 108), spray painters wore A<sub>2</sub>P<sub>2</sub> masks, however without following the guidelines for safe use: no scheduled filter replacement in 61%; no fit test in 81%; no proper storage in 56%, no audit in 77%. Only in 11 of these 108 cases all conditions above were met.

**Conclusion** Most of the spray booths were in good condition. However, despite the intensive federal campaign, 72% of the spray painters did not use the correct PPE (either air-fed BA or correctly used A<sub>2</sub>P<sub>2</sub> masks). We hypothesise that campaigns should be accompanied by a change of safety behaviour program.

### 257 POSTREFORM CHANGES IN USE OF SICK-DAYS

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**Objectives** To analyse the effect of the reduction of sickness absence compensation, implemented by law on 1<sup>st</sup> of July 2009, on use of sick-days in employee groups with different education level.

**Methods** Data from a nationwide survey “Health Behaviour among Estonian Adult Population” in 2004, 2006, 2008 and 2010 was used. Proportions of sickness absence usage and selected descriptive variables were analysed in two population groups: lower (≤12 years of education) and higher educated (≥13 years of education) employees. The difference in use of sick-days before and after the reform was assessed using the chi-squared test.

**Results** The dataset comprised 7918 employed persons between 18–64 years of age. The overall decline of average sick-days per employee was 21%, from 9.1 to 7.2 days. Decline of the sickness absence users’ proportion was significant in both education groups: from 47% to 40% (p = 0.002) in lower and from 44% to 38% (p<0.001) in the higher education group. For lower educated employees the drop was significant in the age group over 50 years (14% vs 11%, p = 0.049) and the users of 1–14 sick-days per year accounted for the decline. For higher educated employees the decline was observed in the age group under 50 years.

The only increase in the use of sick-days was observed (24% vs 30%, p < 0.001) in higher educated employees with higher income.

**Conclusions** There was a considerable decline in the use of sick-days after the reform, but some employee groups may need more attention to preserve their workability. The decline of sickness leave use among older persons and lower use of short sickness absences by lower educated employees may indicate their uncertainty in the labour market. In the group of higher educated persons with higher income the increased use of sick-days may reflect increasing psychological demands and related health deterioration.

### 258 HEALTH AND SAFETY IN SMALL AUTO COLLISION REPAIR SHOPS - OUTCOMES OF A 1-YEAR INTERVENTION

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**Objective** This study evaluated the effectiveness of a 1-year intervention to assist owners of small collision shops with workplace safety and health improvements.

**Methods** A comprehensive evaluation containing 92 safety-related questions was conducted by an industrial hygienist at baseline and after one year. Questions addressed safety programs and training, fire safety, personal protective equipment, and shop equipment and were assigned one of four priority ratings. After the baseline evaluation, shop owners received a written report and were asked to commit to correcting at least 30% of the problems identified, with emphasis on the highest priority issues. Participants received quarterly phone calls, written reminders, safety newsletters, and had access to online services and in-person assistance with creating safety programs and respirator fit testing.

**Results** Forty-nine shops received baseline assessments and 45 were visited for 1-year follow-up. At baseline, shops had 17–49% of items missing (mean = 34.4% items, SD = 7.5%). After one-year, shops had 7–36% of items missing (mean = 19.8% items, SD = 7.6%). Statistically significant improvements (p < 0.03) were identified in seven of the eight survey sections (safety

in the shop and right-to-know training, emergency planning, ergonomics, personal protective equipment, respiratory protection, paint booth and mixing room, electrical and machine safety). Facilities that were working or had worked with a safety consultant had significantly fewer missing items at baseline ( $p < 0.03$ ), but not at follow-up. On average, shop owners chose to correct 59% of the missing items ( $SD = 17\%$ ) and after one year reported a completion rate of 70% ( $SD = 28\%$ ). One-year assessments indicate that, on average 56% of the items selected for improvement were actually completed ( $SD = 27\%$ ).

**Conclusions** Results indicate that most business owners were able to improve health and safety in the shop if they were provided specific information about hazards and solutions, received regular reminders and utilised tailored technical assistance.

### 259 DOES FEEDBACK ON MEASURED CONCENTRATIONS REDUCE THE LEVEL OF EXPOSURE TO DUST AMONG FARMERS?

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**Objective** To assess whether exposure can be reduced by providing feedback to the farmers concerning the levels of dust that they are daily exposed to in their farm.

**Methods** The personal dust levels of farmers in 53 pig and 25 dairy cattle farms were evaluated in 2 measurement series performed approximately 6 months apart. Detailed information on technical parameters and farm characteristics were also registered. Participating farms were *a priori* randomly divided into a control ( $n = 39$ ) and an intervention group ( $n = 39$ ). Shortly after the first visit, farm owners in the intervention group received a letter with information on the measured dust concentrations on their farm together with some general advises on exposure reduction strategies (e.g. use of respirators during certain tasks). Relationships between measured dust concentrations and intervention status were quantified by means of linear mixed effect analysis, with farm id as a random effect. Season, type of farming, visit, intervention status and their two-way interactions were tested as fixed effects.

**Results** After adjustment for season and farm type we found no effect by intervention status. There was no interaction by type of farm, but measured dust levels on the second visit were significantly lower than during the first visit. Similar results were observed in models stratified by type of farming, where the effects of visit were most clearly observed among pig farms.

**Conclusion** These preliminary findings suggest no interventional effects on the levels of exposure; though, the presence of the investigation itself seems to reduce the levels of exposure. By June 2013, the authors intend to present the above results along with those from further analysis addressing potential changes in working patterns and hygienic parameters during the second exposure evaluation.

### 260 INTERVENTIONS TO PREVENT OCCUPATIONAL NOISE-INDUCED HEARING LOSS - A COCHRANE REVIEW

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**Objectives** Millions of workers worldwide are exposed to noise levels that increase their risk of hearing impairment. Little is known about the effectiveness of hearing loss prevention interventions. Therefore we assessed the effectiveness of non-pharmaceutical interventions for preventing occupational noise exposure or occupational hearing loss compared to no intervention or alternative interventions.

**Methods** We followed the methods prescribed by the Cochrane Collaboration. We searched 8 different electronic databases to 25 January 2012. We included randomised controlled trials, controlled before-after studies and interrupted time-series of non-clinical hearing loss prevention interventions among workers. Two authors independently assessed study eligibility and risk of bias and extracted data. We combined similar studies in a meta-analysis using RevMan5 and assessed statistical heterogeneity with the  $I^2$  statistic.

**Results** We included 25 studies. We found no controlled studies on engineering controls for noise exposure but one interrupted time-series on legislation to reduce noise exposure. Eight studies evaluated effects of personal hearing protection devices. Sixteen studies evaluated hearing loss prevention programs (HLPPs). The implementation of stricter legislation was shown to reduce noise levels in workplaces. Case studies showed that substantial reductions in noise levels can be achieved, but there are no controlled studies of the effectiveness of such measures. Better use of hearing protection devices as part of HLPPs reduces the risk of hearing loss, whereas for other program components of HLPPs we did not find such an effect. The overall quality of studies was low to very low.

**Conclusions** There is still a considerable risk of hearing loss in workers that are considered to be protected by hearing loss prevention programs. The effectiveness of hearing protection devices depends on training and their proper use. Better implementation and reinforcement of hearing loss prevention programs is needed. Better evaluations of technical interventions and long-term effects are needed.

### 261 WHEN DOES RESEARCH SERVE PREVENTION?

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**Objectives** It is commonly considered that prevention should be based on scientific evidence. But the relationship between research and prevention is not a simple one. What constitutes evidence, and how should results be interpreted? Research may sometimes delay prevention. The aim of this study is to identify factors that have influenced the impact of research on prevention in Norway over the last century.

**Methods** We examined available documents about two large industries, the production of silicon carbide, established in 1913, and the production of primary aluminium, established in 1908. Research papers on occupational exposure and workers health in these industries have been examined, together with recommendations issued by members of the scientific community. "State of the art" scientific knowledge has been compared with concurrent initiatives taken by various stakeholders, including the Norwegian Labour Inspection.