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PROTECTION OF HUMAN IN THE WORKING ENVIRONMENT

Maria Widerszal-Bazyl, Magdalena Warszewska-Makuch. *Employee Direct Participation in Organisational Decisions and Workplace Safety*. S. 367-378.

Managers from 192 companies filled out the Employee Direct Participation in Organisational Change questionnaire measuring employees' direct participation (DP) in organisational decisions. Four main forms of DP were identified: individual and group consultations, and individual and group delegation. Workplace safety was measured with the number of accidents, the number of employees working in hazardous conditions, accident absenteeism and sickness absence. Results showed that the 2 latter indicators were significantly related to some parameters of DP. Thus, companies that used face-to-face individual consultation had lower accident absenteeism than ones that did not. The same effect was true for group consultation with temporary groups, and individual and group delegation. Workplaces with high scores for scope for group consultation had lower accident absenteeism, and those with high scores for scope for group delegation had lower sickness absence. It was concluded that employee DP had a positive influence on workplace safety, even if involvement was not directly related to safety.

Pietro Nataletti, Enrico Marchetti, Alessandro Lunghi, Iole Pinto, Nicola Stacchini, Fabio Santini. *Occupational Exposure to Mechanical Vibration : The Italian Vibration Database for Risk Assessment*. S. 379-386.

The Italian vibration database is presented. It is hosted by a web server at the National Institute of Occupational Prevention and Safety (ISPESL) in Rome, Italy (<http://www.ispesl.it/vibrationdatabase>). It supports in risk assessment employers who have to comply with Legislative Decree 187/05, now replaced by Legislative Decree 81/08, which transposes into law Vibration Directive 2002/44/EC. The database currently contains measurements and EC-declared values from over 980 hand-held power tools (such as pneumatic and electric hammers, chainsaws, grinders, drills, sanders and saws) and from over 420 vehicles (such as buses, forklifts and wheel tractors). The database is continuously updated as soon as new experimental and declared data are acquired.

Mahnaz Saremi, Odile Rohmer, André Burgmeier, Anne Bonnefond, Alain Muzet, Patricia Tassi. *Combined Effects of Noise and Shift Work on Fatigue as a Function of Age*. S. 387-394.

The study was conducted to analyse possible interactions between noise and shift work on fatigue as a function of age. In a large questionnaire survey, we assessed personal and environmental risk factors related to fatigue. Noise exposure at work (LAeq, 8hr) was measured with personal noise dosimetry. The sample included 254 day and shift workers, and was divided into 2 age groups (<40- and >40-year-olds). Noise exposure had a main effect on fatigue. The highest noise exposure resulted in an increase in the fatigue level of older shift workers. The quantity of sleep mainly depended on the type of shift and age. Our data suggest that the most important factor generating fatigue could be related to industrial noise exposure, a factor which seems to aggravate work-related fatigue generated in a synergic manner by shift work and ageing. Senior workers should be prevented from cumulating those occupational stressors.

Hamid-Reza Heidari, Seyed Jamaledin Shahtaheri, Farideh Golbabaei, Mahmoud Alimohammadi, Abbas Rahimi-Froushani. *Optimization of Headspace Solid Phase Microextraction Procedure for Trace Analysis of Toluene*. S. 395-405.

This study describes optimization of headspace solid phase microextraction followed by gas chromatography equipped with a flame ionization detector for toluene at trace level in spiked urine. The parameters affecting the extraction and gas chromatographic determination of analytes were studied: extraction time and temperature; desorption time and temperature; addition of NaCl; and pH, volume and agitation of the sample. Optimized headspace extraction was carried out at 30 °C for 6 min in the presence of 0.2 g·m⁻¹ of NaCl in the sample solution. Also, sample volume and sample pH were optimized at 5 ml and 7 (neutral pH), respectively. Desorption of the analytes was carried out at 250 °C for 60 s. The optimized procedure was validated with 3 different pools of spiked urine; it showed good reproducibility over 6 consecutive days and 6 within-day experiments. The study also determined the accuracy, linearity and detection limits of this method.

Atul B. Borade, Satish V. Bansod, Vivek R. Gandhewar. *Hazard Perception Based on Safety Words and Colors: An Indian Perspective*. S. 407-416.

Globalization and trade among developed and developing countries has increased the need of risk communication at the workplace. The purpose of this study was to examine differences in risk communication and perception in various countries. It looked at hazard perception associated with colors and safety words among Indian industry workers. Fifty workers participated in the study focused on hazard rating of 9 safety words and 7 colors. In one part of the study the participants were asked to associate colors with safety words through recalling them from their long-term memory; in another they were asked to associate safety words with given colors. The results showed that certain words and colors implied different hazard rating at the workplace. The rank ordering of safety words and colors varied significantly in different countries. Hence population factors should be taken into consideration when designing standards for hazard communication.

PROTECTION OF HUMAN AT THE WORKSTATION

Nur Turhan, Celil Akat, Müfit Akyüz, Aytül Çakc. *Ergonomic Risk Factors for Cumulative Trauma Disorders in VDU Operators*. S. 417-422.

The objectives of this study were to investigate the rate of cumulative trauma disorders (CTDs) in the upper body and to describe the associations of such disorders with ergonomic parameters in a group of data entry operators. A total of 173 data entry

operators volunteered to take part in the study. Questionnaires were used to investigate their medical history. Diagnoses of CTDs were made with clinical tests. A visual posture analysis of the workers and an ergonomic analysis of workstations and workload were used to reveal risk factors. Neck and shoulder pain, extensor tendonitis of the wrists and De Quervain's disease were common in the study population. An assessment of risk factors showed that leaning wrists on the keyboard, hard keystrokes, extreme wrist joint and thumb positions and working in poor ergonomic design were correlated to pain and development of CTDs.

Marcin Biernacki, Adam Tarnowski. *The Relationship Between Temperamental Traits and the Level of Performance of an Eye-Hand Co-Ordination Task in Jet Pilots.* S. 423-432.

When assessing the psychological suitability for the profession of a pilot, it is important to consider personality traits and psychomotor abilities. Our study aimed at estimating the role of temperamental traits as components of pilots' personality in eye-hand co-ordination. The assumption was that differences in the escalation of the level of temperamental traits, as measured with the Formal Characteristic of Behaviour—Temperament Inventory (FCB-TI), will significantly influence eye-hand co-ordination. At the level of general scores, enhanced briskness proved to be the most important trait for eye-hand co-ordination. An analysis of partial scores additionally underlined the importance of sensory sensitivity, endurance and activity. The application of eye-hand co-ordination tasks, which involve energetic and temporal dimensions of performance, helped to disclose the role of biologically-based personality traits in psychomotor performance. The implication of these findings for selecting pilots is discussed.

Tanja Risikko, Jouko Remes, Juhani Hassi. *Implementation of Cold Risk Management in Occupational Safety, Occupational Health and Quality Practices : Evaluation of a Development Process and Its Effects at the Finnish Maritime Administration.* S. 433-446.

Cold is a typical environmental risk factor in outdoor work in northern regions. It should be taken into account in a company's occupational safety, health and quality systems. A development process for improving cold risk management at the Finnish Maritime Administration (FMA) was carried out by FMA and external experts. FMA was to implement it. Three years after the development phase, the outcomes and implementation were evaluated. The study shows increased awareness about cold work and few concrete improvements. Concrete improvements in occupational safety and health practices could be seen in the pilot group. However, organization-wide implementation was insufficient, the main reasons being no organization-wide practices, unclear process ownership, no resources or a major reorganization process. The study shows a clear need for expertise supporting implementation. The study also presents a matrix for analyzing the process.

Anna Charkowska. *Ensuring Cleanliness in Operating Theatres.* S. 447-453.

High cleanliness of a hospital environment is necessary to ensure safe working conditions for the medical staff, a correct process of hospitalization and to protect hospital visitors, an aspect rarely mentioned. A supply of air cleaned in highly-effective air filters to hospital wards with air conditioning systems and exhaust of infected air will help in maintaining the required standards of cleanliness. This article presents information on recommended classes of air and surface cleanliness, with special focus on operating theatres and suites.

Mehdi Ghasemkhani, Elham Mahmudi, Hossain Jabbari. *Musculoskeletal Symptoms in Workers.* S. 455-462.

Self-report measures of musculoskeletal discomfort are a widely used and generally accepted risk factor for musculoskeletal disorders in epidemiologic research. The aim of this study was to investigate the prevalence of musculoskeletal symptoms in packing workers. A cross-sectional study of 75 workers was carried out using a modified Nordic questionnaire. Prevalence was determined with the percentage of positive responses to questions on musculoskeletal symptoms. Odds ratios and 95% confidence intervals were the measures of association between prevalent musculoskeletal symptoms and demographic factors; they were determined with logistic regression. Most musculoskeletal symptoms in workers were from the low back (44.0%), shoulders (33.3%) and neck (32.0%). Years worked were strongly significantly associated with musculoskeletal symptoms and pain in the neck, shoulders and wrists/hands...