584 GAS RISKS IN FREIGHT CONTAINER HANDLING

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Background Transport container traffic carries millions of containers worldwide. To protect transported freight and inhibit the spread of foreign species, the containers are fumigated with chemicals, some of which having effect to central nervous system. Gas components and concentrations should be known to define safe handling procedures for each container. The Finnish Work Environment Fund and VTT funded and performed project to collect the needed information, including ventilation times, to support future work to prepare instructions.
Methods Research contained literature studies and practical measurements for ventilation times.
Results Based on the literature study, close 80 different volatile compounds were detected, including about 60 chemical substances classified due to their occupational health risk. About 15 of those were known fumigants, others were supposed to be evaporated from the freight. Methods typically used for the measurement of gas concentrations are indication tubes, small hand held detectors and gas analysers. Their reliability and investment cost varies a lot. Ventilation times of containers loaded using separate numbers of corrugated board boxes were tested in field conditions with different loading ratios, temperatures and with different external ventilation systems. Fully loaded containers had even 60 times longer ventilation time than containers loaded partially. Thus, the ventilation of containers can take even several days, depending on the temperature and ventilation procedures.
Conclusions To prevent occupational risks during container handling, the concentrations of harmful substances in container must be known. Today, such measurements need several analysis methods. Safe handling procedures should be based on reliable data to conclude when the safe working environment with sufficient high security margin is achieved in the container.

585 WORKPLACE INJURIES – SOCIO-DEMOGRAPHIC, OCCUPATIONAL AND HEALTH RELATED DETERMINANTS

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Background Characteristics of the host (e.g. socio-demographics, behaviour), the agent (energy-transmitting objects) and the environment (e.g. physical, organisational) are the main determinants of unintentional injuries. Focusing on host characteristics the present analysis tries to clarify whether health-related determinants and mental work strain contribute to the explanation of workplace injuries (WI).
Methods The phone survey German Health Update 2010 (n = 22,050) provides information on up to three medically treated WI within one year (gainfully employed 18–70 ys, n = 14,041). Logistic regression considering socio-demographic (e.g. gender, age), occupational (profession, work strains) and health-related determinants (chronic conditions, behaviour) is applied to identify relevant risk factors.
Results Overall, 2.8% (CI95 2.4–3.2) of persons gainfully employed reported at least one WI (women: 0.9% CI: 95 0.7–1.2; men: 4.3% CI: 95 3.7–5.0). In the final model, male sex (OR 3.2), age 18–29 (OR 1.5) as well as agricultural (OR 5.4), technical (OR 3.4), skilled service (OR 4.2) or manual (OR 5.1) and unskilled service (OR 3.1) or manual (OR 5.0) profession is associated with a significantly higher probability of WI. The same holds for work strain such as heavy carrying (OR 1.8), awkward postures (OR 1.5), environmental stress (e.g. noise, heat, emissions) (OR 1.5) and working under pressure (OR 1.4). Among the health-related variables lack of physical activity (OR 1.5) and obesity (OR 1.7) entail significantly higher WI probabilities. Increased ORs for harmful alcohol consumption, regular smoking, chronic back pain, working overtime or shift-work decrease and lose significance when models are adjusted for occupations and physical work strain.
Conclusions Certain health-related factors as well as mental work strain increase the probability for WI or are mediated by occupational factors. These aspects should be considered when tailoring measures for the prevention of WI.

586 ESTABLISHING A FOCUS ON CLEAN AIR IN WORKSAFE NEW ZEALAND – AN IMPLEMENTATION EVALUATION

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Background WorkSafe New Zealand has recognised the need for an explicit focus on occupational health in its work. The initial area of concentration for this is clean air, with a particular effort in educating those exposed to airborne contaminants on available controls. In order to do this, WorkSafe needed to upskill its inspectorate and provide tools to support engaging and educating employers and employees across a number of sectors. This evaluation looked at how well the upskilling of staff was implemented and the role it played in establishing a focus on occupational health in the inspectorate.
Methods The evaluation utilised a mixed method approach, including administrative data analysis, surveying and focus groups with inspectors to understand whether the project was implemented as intended.
Results Results are still being analysed, but will be available at the time of the presentation.
Conclusions Occupational health is an area of new but increasing focus of WorkSafe. Learnings from this evaluation will provide valuable information for other regulators and health and safety specialists on what will support implementing practice change.

587 PEDESTRIAN SLIPPING INJURIES COMPARED TO WEATHER

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Background Slipping injuries use to happen through the year but winter time with ice and snow increases the risk of slipping injuries. Young people use to slip more often than older ones but slipping injuries becomes typically more harmful when the person becomes older. Slipping injuries are a big problem not only economically but also because causing long sick leaves among the people on the best work age.
Methods The amount of slipping injuries can be seen especially from the database maintained by Federation of Accident Insurance Institutions. That database includes injuries and accidents which have happened when walking from home to work, during

work day or on way from work to home. This database is very reliable and gives a good outlook of happened injuries and accidents.

Posti is a big organisation where employees are working outside when delivering newspapers (early in the morning) and magazines and other post (in the daytime). Posti has their own database that includes information about injuries and other related data.

The information of slipping injuries from different sources and weather data are compared in this study.

Results The level of slipping injuries is clearly higher during winter time than during summer time. There seems to be quite visible correlation between temperature and number of slipping injuries, sometimes also snowfall seems to correlate quite well with the number of daily injuries. When temperature drops below zero degrees the number of slipping injuries use to raise.

Conclusions Slipping injuries are very common problem especially in countries located in places where ice and snow exist on winter time. There should be lot of potential available to decrease the number of slip injuries. This study presents the statistics of the slip injuries compared to weather. Also, suggestions are given how the awareness of the slipperiness could be improved.

588 SPONSOR BEHAVIOUR AND IMPACTS IN PUBLIC SECTOR PROJECT MANAGEMENT

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Background Project management literature does not describe how the sponsor behaves during project control in this specific occupational safety and health (OSH) public sector project context. Project management literature does not describe how the sponsor perceives the impacts of projects in this OSH context. It also seems that the literature does not recognise how the behaviour of the sponsor is related to sponsor perceptions of project impact. The objective of this study is to increase understanding of sponsor behaviour and impacts in public sector projects from the viewpoint of the sponsors themselves.

Methods This study is based on the qualitative method. Interviewees were selected on the basis of archive material. Interviews were organised for twenty sponsors, and the experiences of the sponsors were analysed on the basis of Grounded Theory.

Results The study indicated that sponsor behaviour was polymorphic. The main terms found for sponsor were bureaucrat, participator, expert and observer. The results indicated that the sponsor recognised many impact dimensions. Connexions were found between the behaviour of the sponsor and the impact dimensions that were determined from the perceptions of the sponsor. This study also suggests that there is a relationship between the behaviour of the sponsor and how the sponsor recognised the impact dimensions of the project.

Conclusions This study increases the understanding that other sponsors, ministries, researchers and project executors have regarding sponsor actions in the OSH field. It provides better possibilities for open discussion of sponsor activities in public sector projects. The study provides improved opportunities for continuing discussion about the impact of projects. According to the study, more research is needed on sponsor behaviour.

589 PHYSICAL DEMANDS OF FIRE FIGHTING FOR SEAFARERS-AN EMERGING ASPECT OF OCCUPATIONAL SAFETY IN SEAFARING

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Background All seafarers with designated emergency tasks must take part to a basic safety training including a course of basic fire fighting despite their physical fitness. Physical fitness of seafarers is often unsatisfactory, obesity and ageing impair it even further. There is not much information about the physical strain of the courses' exercises for seafarers. Therefore the aim of the study was to measure physical strain of seafarers during a fire fighting course.

Methods Fourteen male master mariner students aged 19–21 attended to a simulated smoke-diving drill with self-contained breathing apparatus (SCBA). Perceived exertion was assessed by Borg scale and energetic strain was assessed by estimating oxygen consumption indirectly with heart rate variability method. Students conducted two exercises in pairs with SCBA. In the first exercise, each pair walked through warm, smoke filled enclosed spaces. The second exercise started with a fire attack and continued by searching and rescuing a victim (a doll, weight 30 kg).

Results The first exercise lasted on average 14 minutes. During the exercise, the highest heart rate (HR) level was on average 145 (123–169) b/min and the maximum oxygen intake (VO_2max) 34 (25–42) ml/min/kg. The physical load was 7 (3–10) MET and perceived exertion on average was 11 (7–15). The second exercise lasted on average 12 minutes. The highest HR level was on average 167 (126–181) b/min and VO_2max was 40 (27–49) ml/min/kg. The physical load of exercise was 10 (6–12) MET and the perceived exertion on average was 13 (9–15).

Conclusions Seafarers' safe performance during basic fire fighting course requires aerobic fitness equivalent to extremely vigorous intensity activities (like running stairs up). The real-life smoke-diving duties on ship have been reported to be even more strainful. For the safety of seafarers, both promotion of physical fitness and regular training of emergency duties should be seen as an occupational safety issue.

Trauma Care and Rehabilitation

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590 QUALITATIVE EVALUATION OF TRAUMA DELAYS IN ROAD TRAFFIC INJURY PATIENTS IN MARINGÁ, BRAZIL

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Background Road traffic injuries (RTIs) are the 8th leading cause of death worldwide, with 90% occurring in low- and middle-income countries (LMICs). In Brazil, more than 43,800 people are killed by RTI annually. There is limited research evaluating RTI transport delays to trauma centres in LMICs. The objective of this study is to determine specific causes of prehospital transport delays in RTI patients to trauma centres in Maringá, Brazil.

Methods We qualitatively evaluated the regional public prehospital system, Serviços de Atendimento Móvel de Urgência (SAMU),