Objectives The LIMS databank stores all occupational exposure measurements collected by public health teams in Quebec. The IMIS databank contains exposure measurements collected by the U.S. Occupational Safety and Health Administration inspectors to verify compliance. We investigated differences/similarities between both databanks.

Methods Personal exposure measurements from 1994–2011 were abstracted, and industry from both databanks was recoded according to the Canadian Standard Industrial Classification. Logistic regression was used to explore differences between exposure levels in both databanks for 27 chemicals in common industries, taking into account the type of exposure (short-term or long-term), year, and industry. Ratios of the predicted odds of exposure above the threshold limit value (O_{ER}) for IMIS compared to LIMS were calculated for each chemical for years 1997 and 2008.

Results Our analysis was based on 64,938 LIMS and 53,078 IMIS measurements. Exposure levels were significantly lower in IMIS compared to LIMS for metals (O_{ER} estimated in 1997: 0.43 across agents, 95% confidence interval (CI): 0.30–0.62; O_{ER} 2008: 0.57, 95% CI: 0.42–0.77), and they became similar in recent years for solvents (O_{ER} 1997: 1.47, 95% CI: 0.91–2.38; O_{ER} 2008: 0.99, 95% CI: 0.58–1.69). Short-term exposure levels were on average 3 times higher than long-term ones across the two databanks. Results were unchanged when industry from both databanks was recoded according to the U.S. Standard Industrial Classification or the North American Industry Classification System.

Conclusions Differences between exposure levels in the two databanks may reflect distinct sampling strategies or prevention policies between the two countries.

Poster Presentation

Musculoskeletal

0307

DETERMINANTS OF MODIFIED WORK AS PART OF THE RETURN-TO-WORK PROCESS FOR INJURED WORKERS WITH MUSCULOSKELETAL INJURIES IN BRITISH COLUMBIA, CANADA

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Introduction The longer an injured worker is off work the less likely they are to return to work and modified work is associated with shorter recovery durations. However, low rates of modified work have been found in Canadian compensation jurisdictions. This study investigated the determinants of modified work among workers with musculoskeletal injury compensation claims in British Columbia.

Methods Three cohorts of injured workers were identified from compensation claims for back strain, limb fractures and connective tissue injuries. The effect of age, sex, occupation, wage quintile and prior claim on at least one modified day (yes/no) within the first four weeks of claim was analysed using Poisson regression.

Results In multivariable models, female gender was associated with an increased likelihood of modified work (back strains:

IRR 1.15 [95%CI 1.06, 1.25]; limb fractures: 1.22 [0.91, 1.64]; connective tissue injuries: 1.14 [0.85, 1.52]), while older age (e.g. 55 to 65 years) was associated with a decreased likelihood (back strains: IRR 0.69 [95%CI 0.63, 0.76]; limb fractures; connective tissue injuries: 0.59 [0.43, 0.81]). Higher income was associated with an increased likelihood of modified work for limb fractures (highest quintile: IRR 1.84 [1.27, 2.67]). The effect of occupation was variable on modified work by injury type.

Discussion Unmeasured injury severity may have resulted in residual confounding of disability duration by gender and age. The offer of modified work may be dependent on occupation and the flexibility of higher paying occupations. The overall low rate of modified work for musculoskeletal injuries (<30%) warrants further investigation.

Poster Presentation

Other

0308

A BRAZILIAN LOOK AT OCCUPATIONAL HEALTH AND SAFETY IN THE USA: OBSERVATION AND LEARNING WITH COSH GROUPS

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Labour laws in the United States of America are less protective than the norms of most countries, including Brazilian ones. However, there is a strong militant movement for occupational safety and health in USA, organised in an articulated network that includes university professors and students, trade unionists, community leaders, public agents and various sectors workers.

The successful experience of the social activism of the Committees on Occupational Safety and Health (COSH) groups, which have been advocating for the safety and health of workers in the United States for 45 years, deserves propagation and study because it can inspire similar initiatives in Brazil and in other countries.

This exploratory research collected data through open interviews with workers, lawyers, teachers, researchers and activists heard between October/2013 and March/2014, as well as directed observation and interviews made during three events held in Boston and Baltimore (COSH Network, APHA 2013 and National Worker Safety and Health Conference).

The results show that COSHs are alliances that promote education and advocacy for workers' health and safety. They articulate a national agenda to improve health and safety conditions for immigrant workers under the prevention bias, providing information and support in Spanish and other languages, as well as advocating for just compensation for workers who are ill or injured at work. They also carry out activities to integrate health and safety activism into organised campaigns, as well as advocate for the respect of existing health and safety laws and fight for new protections for workers.

Poster Presentation

Exposure Assessment

0309 REAL-TIME FINE AEROSOL EXPOSURES IN TACONITE MINING OPERATIONS

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Recent studies have shown that taconite workers may be at increased risk for mortality from lung cancer, mesothelioma, and cardiovascular diseases (CVD). The relationship between CVD and occupational dust exposures at these mines has not been well-studied. We conducted an air monitoring campaign to characterise fine aerosol concentrations at 91 locations across six taconite mines using direct-reading instruments to obtain measurements of mass concentrations (PM_{2.5} or particles with aerodynamic diameter less than 2.5 µm, and respirable particulate matters or RPM), surface area (SA), particle number (PN), and particle size distributions. We fit a Bayesian model with an AR (1) (autoregressive order 1) correlation structure to estimate exposure while accounting for temporal correlation. The highest estimated geometric means (GMs) were observed in the pelletizing and concentrating departments (pelletizing maintenance, balling drum operator, and concentrator operator) for PM_{2.5} and RPM. SA and PN generally had highest GMs in the pelletizing department that processed powder-like particles into iron pellets. Between-location variability estimates were generally higher than within-location, indicating larger differences in exposure levels at different locations between mines. Ranking between PM_{2.5} and RPM generally agree with each other, whereas SA and PN were more consistent with each other, with some overlap with PM_{2.5} and RPM. Differences in ranking these groups may have potential implication for occupational epidemiological studies that rely on exposure information to detect an exposure-response relationship. Future occupational epidemiological studies investigating fine aerosols exposures and health risk are encouraged to consider multiple metrics to see how they influence health outcomes risk.

Poster Presentation

Policy/Impact

0310 MEDICAL REHABILITATION BEFORE THE OCCURRENCE OF EARLY RETIREMENT IN GERMANY - PREVALENCE AND SOCIODEMOGRAPHIC DETERMINANTS OF NON-UTILISATION.

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Introduction In Germany the statutory pension insurance fund covers the cost of rehabilitation treatment for employees whose working capacity is endangered due to health problems. The underlying principle called "rehabilitation over

retirement" is the concept to avoid early retirement due to health problems by rehabilitation.

Purpose To describe the utilisation of medical rehabilitation before the occurrence of early retirement in Germany from 2003 to 2014 and to investigate potential sociodemographic determinants.

Methods Analysis based on 20% random samples of administrative pension records from the Research Data Centre of the German Federal Pension Insurance. We used logistic regression models to investigate the risk for non-utilisation of medical rehabilitation during five years before the occurrence of early retirement. Age, sex, non-German citizenship, marital status, school and vocational education, annual income and diagnoses were considered as potential risk factors. Analyses were run with SAS software for statistical analyses (version 9.4).

Results Among all early-retired patients 47.9% (153.990 out of 321.275) did not utilised medical rehabilitation. Risk factors for non-utilisation were to be unmarried or widowed (vs. married, adjusted OR: 1.27; 95% CI: 1.25–1.29), non-German citizenship (vs. German citizenship, 1.28 [1.25–1.32]), unknown or low educational level (vs. median educational level, 1.51 [1.48–1.54]), as well as low annual income (1 st quartile vs. 4th quartile; 3.90 [3.81–3.99]). Also, risk was higher among men compared to women (1.35; 95% CI: 1.33–1.37).

Conclusions Among all early-retired patients almost 50% obtained no medical rehabilitation. Worst affected were deprived persons.

Poster Presentation

Shift Work

0311 CAN SMOKING RESEARCH FROM THE 1950S INFORM TODAY'S SHIFTWORK RESEARCH? APPROACHES TO ASSESS HYPOTHESISED CIRCADIAN DISRUPTION AT AND OFF WORK

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Background In 1950, landmark epidemiology contributed to identifying smoking as a key carcinogen [Wynder and Graham; Doll and Hill]. In 2007, IARC classified shiftwork involving circadian disruption [CD] as probably carcinogenic; however, epidemiological evidence in regards to the carcinogenicity of shift-work that involves nightwork is conflicting.

Objective To compare smoking research from the 1950's to shiftwork research for exploring the hypothesis that today's shiftwork epidemiology is lacking chronobiological and methodological rigour and to develop metrics to facilitate improvement.

Methods Comparing smoking and chronobiological insights and deriving CD metrics.

Results If doses had been limited to number of cigarettes smoked at work rather than over 24 hours, smoking insights could have been delayed or disallowed. Similarly, restricting exposures to, let alone doses of, CD from work at night may prove insufficient to elucidate effects of cumulative CD. CD doses may be obtained by comparing how activities overlap with individuals' biological nights (BNs: predicted by