Results 656 shoulder workloads were analysed. At following-end, following-span median was 12.5 years, age median was 42 years, 60% were women, 85% had non-university academic level and 77% had non-administrative positions. Age, handedness, academic level, work type and mood disorders were proved as significant or as confounding covariates within the final model. 4×10^3 cumulative-effective working hours of shoulder repetitiveness exposure was established clearly as threshold (adjusted HR=1.93; 95% CI: 1.04 to 3.59).
Discussion Taking real action in developing world should be addressed towards effective primary prevention, which means that no worker should be exposed more than repetitiveness threshold, in order to eliminate shoulder´s CTD. On the other hand, proved threshold overpassing shall confirm work-related causation in injured workers within compensation processes.

1064 ASSESSMENT OF HUMAN EXPOSURE TO 1-NITROPYRENE BY MEANS OF THE DETERMINATION OF HYDROXYNITROPYRENES IN 896 URINE SAMPLES

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Introduction Polycyclic aromatic hydrocarbons (PAHs) are ubiquitous organic pollutants, whose sources include traffic emissions derived from diesel/gasoline vehicles. Monohydroxylated PAHs (OH-PAHs), urinary metabolites of PAHs, were used as biomarkers of PAHs exposure. 1-Nitropyrene is a molecular marker for diesel exhaust, a significant contributor to the toxicity associated with particulate matter. Urinary metabolites of 1-Nitropyrene were recently evaluated for their utility as markers of exposure to diesel exhaust.
Methods Among the three isomers 3-, 6-, and 8-hydroxy-nitropyrene (3-, 6-, 8-OHNPy), 6-OHNPy was selected for this study as it is the most abundant found in human urine. 896 urine samples were collected from subjects randomly selected from municipality registers of Civitavecchia (Central Italy) as a part of the 'ABC Human Biomonitoring study' and tested after enzymatic hydrolysis of the glucuronic acid conjugates using HPLC-MS/MS. Pure standard of 6-OHNPy was purchased following custom synthesis and deuterium labelled 1-hydroxypyrene was used as internal standard for quantitative determination.
Result Results show that more than 50% of the 896 samples did not contained detectable concentrations of total hydroxy-nitropyrenes measured as 6-OHNPy (<0.0005 µg/g of creatinine), while 383 samples showed measurable levels, in the range 3.81–0.0005 µg/g of creatinine. Mean value is 0.091 µg/g of creatinine.
Discussion This is the first large study reporting urinary levels of 6-hydroxynitropyrene in subjects non-occupationally exposed to 1-nitro-pyrene. Previous studies showed that this biomarker is scarcely influenced by smoking. As the performances of the method allow environmental exposure assessment, where high sensitivity is needed, it can be used with even greater confidence for studies of occupational exposure assessment to diesel exhaust, where higher exposure levels are expected: the urinary levels here reported can be considered as reference values to be compared to the levels produced by occupational exposures.

111 THE IMPACT OF INTRODUCING NATIONAL POLICIES OF IMPROVING WORKING CONDITIONS ON OVERWORK-RELATED CARDIOVASCULAR MORTALITY IN TAIWAN

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Introduction Cardiovascular diseases (CVDs) are the leading cause of death globally.

Occupational related risk factors for CVD incidence and mortality include long working hours, high job stress, and low employment opportunities. 'Overwork' or '*Karoshi*' has since been a major occupational health concern for Asian workers. In response to public's worries of long working hours and low salary in Taiwan, Taiwanese government vigorously amended standard working hours, holiday, and basic salary under the Labour Standard Act and the criteria to recognise overwork-related CVDs during 2015–2016. We investigated the ecological association among national policies, working conditions, and overwork-related CVDs.
Methods We collected data on the working conditions and overwork-related CVDs for each industry sector and identify the high-risk group. We estimated the combined effect of national policies and working conditions on overwork-related CVDs for each industry sector and further estimated the expected number of overwork-related CVDs to investigate the impact of introducing the new policies. We finally measured the extent of preventable CVDs for each industry sector as a result of introducing new policies and improving working conditions.
Result Our analysis covered 11.27 million workers from 17 industry sectors in Taiwan. We found consistent and plausible correlations between the implementation of new policies, the working conditions, and the number of recognised overwork-related CVDs. Compared to workers in the education sector, employees in the support service and manufacturing sectors had greater likelihoods of overwork-related CVDs. Such gap was particularly obvious in their monthly working hours by a difference of 50 hours per month.
Discussion In view of Taiwan's working environment, reducing working hours is the key element to reducing the burden of overwork-related CVDs. Our result can contribute to the government's decision-making process and society's understanding of preventable overwork-related CVDs in each industry sector by providing justification for proceeding to new policies.

1131 COMBINING LEAD EXPOSURE MEASUREMENTS AND EXPERTS' OPINION THROUGH A BAYESIAN FRAMEWORK

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Objectives CAREX (CARcinogen EXposure) is a carcinogen surveillance system employed in many countries. To initiate