

with non-Hodgkin lymphoma (NHL) but findings are inconclusive. Mechanistic studies using global biochemical profiling (metabolomics) could provide supporting evidence for such an association by identifying relevant biological pathways. We applied metabolomics profiling to a cohort of TCDD exposed workers.

**Methods** 81 workers who had been exposed to either high ( $n = 43$ ) or low ( $n = 38$ ) TCDD levels more than 30 years before serum collection and 63 non-exposed workers (from a comparable factory but without TCDD exposure) were included in the study. Serum ion metabolites were detected using Ultra high Pressure Liquid Chromatography (UPLC) coupled online to a Q-TOF Premier mass spectrometer with a scan range of 70–1000  $m/z$ . Current plasma levels of TCDD (TCDD<sub>Current</sub>) were determined by high-resolution gas chromatography/isotope dilution high resolution mass spectrometry. TCDD blood levels at the time of last exposure (TCDD<sub>max</sub>) were estimated using a one-compartment first order kinetic model. Differentially expressed metabolites were identified using partial least squares (PLS) regression, and Bayesian stochastic search variable selection with spike-and-slab priors of (nonlinear) generalised additive models.

**Results** Features that were present in all QC samples and had a coefficient of variation CV <30% were included in the present analyses ( $n = 421$  features). PLS and Bayesian stochastic variable selection regression analyses revealed no obvious metabolic perturbations associated with TCDD serum levels.

**Conclusions** This is the first global metabolomic analysis related to TCDD exposure. No significant features were identified. It is concluded that TCDD exposure at levels present in this study does not lead to significant perturbations of the serum metabolites.

## Session: P. Other diseases

### 118 OCCUPATIONAL RISKS IN THE BUILDING AND PUBLIC WORKS SECTOR IN MOROCCO

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10.1136/oemed-2013-101717.118

**Objectives** Occupational injuries represent a considerable part of the injury burden to society, affecting people in the most productive years of their lives. Building and public works sector is recognised by its high frequency of occupational injuries. Kenitra city is the most important city in the Gharb plain region (NW of Morocco) where different new constructions are installed. This study aims to describe the profile of occupational injuries occurring in the building and public works sector in Kenitra city.

**Methods** A descriptive retrospective analysis of occupational injuries notified in the delegation of employment of Kenitra in 2008–2009, was performed. The results do not include occupational diseases or journey accidents.

**Results** In 2008–2009, 305 workers were victims of an accident in the work, which 21 died. Victims are often men (91.8%). According to data recorded, the risks in building and public works sector are higher than in other sectors (working at height, working on moving equipment, handling important). Accidents in this sector are caused by machinery, falling materials and falls from height. These accidents caused a temporary and permanent disability (73.8% and 19.3% respectively).

**Conclusions** Occupational injuries could have serious consequences. Measures are needed to ensure safety and protect workers' health.

### 119 RENAL EFFECTS INDUCED BY OCCUPATIONAL CO-EXPOSURE TO CADMIUM AND LEAD IN METALLURGY WORKERS

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10.1136/oemed-2013-101717.119

**Objectives** Research on the effect of co-exposure to Cd and Pb on the kidney is scarce. The objective of the present study was to assess the effect of co-exposure to these metals on early renal biomarkers.

**Methods** Cd in blood (Cd-B), Cd in urine (Cd-U), Pb in blood (Pb-B) and urinary renal biomarkers i.e., microalbumin (-Alb), beta-2-microglobulin ( $\beta_2$ -MG), retinol binding protein (RBP), N-acetyl-D-glucosaminidase (NAG), intestinal alkaline phosphatase (IAP) were measured in 122 metallurgic refinery workers examined in a cross-sectional survey. In order to explore the effect of Pb on the association between Cd and renal biomarkers (i.e., effect modification or interaction), we performed a multiple linear regression analysis (adjusting for age and pack-years of smoking) including an interaction term Pb x Cd.

**Results** The median Cd-B, Cd-U, Pb-B were: 0.8 g/l (IQR = 0.5, 1.2), 0.5 g/g creatinine (IQR = 0.3, 0.8) and 158.5 g/l (IQR = 111.0, 219.3), respectively. The statistically significant interaction term Pb-B x Cd-B indicates that the impact of Cd-B on the enzymes NAG and IAP was only evident among workers with Pb-B concentrations  $\geq 75^{\text{th}}$  percentile. The association between Cd-U and the renal markers NAG and RBP was also evidenced when Pb-B  $\geq 75^{\text{th}}$  percentile. No statistically significant interaction terms were observed for the associations between Cd-B or Cd-U and the other renal markers under study (i.e., -Alb and  $\beta_2$ -MG).

**Conclusions** Our findings indicate that Pb modifies (increases) the strength of the association between Cd and early renal biomarkers.

### 120 RENAL DYSFUNCTION AND POLYMORPHISMS IN METALLOTHIONEIN 2A IN A CHINESE POPULATION EXPOSED TO CADMIUM

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10.1136/oemed-2013-101717.120

**Objectives** Cadmium (Cd) toxicity of the kidney varies between individuals despite similar exposure levels. In humans Cd is mainly bound to metallothioneins (MT), which scavenge its toxic effects. Here we analysed whether polymorphisms in MT genes MT2A influence Cd-related kidney damage.

**Methods** In a cross-sectional study  $N = 566$  volunteers were selected from three areas in South-Eastern China, which to varying degree were Cd-polluted from a smelter (control area [median Cd in blood B-Cd = 1.38  $\mu\text{g/L}$ ], moderately [B-Cd = 4  $\mu\text{g/L}$ ] and highly [B-Cd = 9.5  $\mu\text{g/L}$ ] polluted areas). (control area [median Cd in urine U-Cd = 2.01  $\mu\text{g/g Cr}$ ], moderately