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# ABSTRACT (poster)

## Title

Metabolic changes in human plasma samples after occupational exposure to diisocyanates

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## Abstract text

**Background:** Diisocyanates are highly reactive chemicals, containing two isocyanate functional groups (R-N=C=O). In the European Union (EU), the total used amount of diisocyanates is 2.5 million tons per year. Additionally, diisocyanates are the main cause of occupational asthma in the EU and they are skin sensitizers and irritants. The aim of this study is to assess metabolic changes in human plasma samples after occupational exposure to diisocyanates. Another goal is to identify new effect biomarkers, which are relevant for the diisocyanate adverse outcome pathways. **Methods:** This study has used samples and data provided by previous carried out project of HBM4EU. The study population was recruited from Finland and Belgium, including 81 diisocyanate (4,4'-Methylenediphenyl diisocyanate or hexamethylene diisocyanate) exposed workers and 40 non-exposed controls. To assess metabolic changes in plasma samples, untargeted metabolomics pipeline was used. Samples were analyzed with two distinct chromatographic retention mechanisms in both positive and negative ionization, measured with a high-resolution mass spectrometer. Data analysis was done using MS-Dial and Notame R-package. **Results**: There were differences in metabolic profiles between exposed workers and controls. Additionally, variations were observed in metabolic profiles between individuals from Finland and Belgium. After adjusting for potential confounders (BMI, age, smoking, alcohol consumption, and country) changes were detected in the levels of metabolites belonging to fatty acids and conjugates, fatty acid esters, fatty amides, glycerophosphocholines, tetracarboxylic acids and derivatives, benzoic acids and derivatives, and pyridinecarboxylic acids and derivatives. Especially 5-aminovaleric acid betaine, tetradecenoylcarnitine, lysophosphocholine 18:1 and N1-Methyl-4-pyridone-3-carboxamide levels were altered between exposed workers and controls. **Conclusions:** The study is the first to assess metabolic changes in human plasma samples after occupational exposure to diisocyanates. Exposure to diisocyanates might have some effect on fatty acid metabolism but more research is needed. The results of this study may be utilized in search for effect biomarkers.