groups of chemicals sporadic or no positive SPs were noted. Occupational contact urticaria (CU) caused by chemicals was diagnosed in 41 patients during the study period, 21 of them caused by acid anhydrides. More than half of the CU patients (54%) had a concomitant allergic airway disease.

Discussion SPs provide a fast and safe complementary tool for diagnosing immediate allergic diseases to some chemical groups, but the results should be interpreted cautiously and related to symptoms and other clinical tests. Occupational CU caused by chemicals is often accompanied by occupational airway diseases caused by the same agent.

374 PREVALENCE OF ALLERGY RELATED SKIN AND RESPIRATORY DISEASES AMONG HEALTHCARE WORKERS IN CROATIA
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Introduction Healthcare workers are exposed to wet-work and occupational hazards such as latex, cleaning products and various medication drugs which can potentially cause allergic or irritant dermatitis and work-related rhinitis and asthma. The aim of this research was to investigate the prevalence of health issues related to the skin and respiratory tract among healthcare workers in hospital.

Methods Subjects of the research were 1021 healthcare workers employed in four clinical hospitals in Zagreb, Croatia, who filled the Work Ability Index Questionnaire. Questions about current skin diseases (allergic or other rash, eczema) and respiratory diseases (chronic or recurrent infections of the respiratory tract, bronchial asthma) diagnosed by the physician were extracted and analysed.

Result Out of 1021 healthcare workers, there were 721 nurses (47 man; 674 women) and 300 physicians (134 man; 166 women). It was found that allergic dermatitis and/or eczema was present in 15% (109/721) nurses and in 15% (46/300) physicians. Prevalence of respiratory diseases among nurses was 2% (26/187/721), and 28% among physicians (85/300).

Discussion Coexisting skin and respiratory tract symptoms were present in 8% (77/1021) healthcare workers.

114 OCCUPATIONAL HAND ECZEMA AMONG CEMENT WORKERS IN NEPAL
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10.1136/oemed-2018-ICOHAbstracts.151

Introduction Occupational dermatitis among cement workers is a major occupational health concern and skin contact with cement has been associated with contact dermatitis, which ranges from cement burns to cumulative irritant contact dermatitis. The objective of this study was to investigate the prevalence and severity of occupational cement contact dermatitis amongst cement workers in Nepal which is the first of its kind.

Methods This was a cross sectional descriptive study conducted amongst the workers in construction sites and hardware shops within the Kathmandu valley. A structured questionnaire was used to collect the demographic data and work-related activities of those cement workers. A complete skin examination was conducted and skin manifestations were assessed by a dermatologist. The data collected was compiled and appropriate statistical tools were used to find out the significance of variables.

Result Out of the 377 workers screened 164 (43.50%) had hand contact dermatitis. There were males 148 (90.2%) and females 16 (9.8%) and the age ranged from 15–51 years (mean 27.41±7.68 years). The duration of the disease ranged from 1–360 months (median 36 months (IQR=60)). The most common site of lesion was palms (62.8%) followed by tip of the fingers in 39.0% patients and the most common morphology of the lesion was erythema seen in 59.1% followed by scaling seen in 51.8% patients.

Discussion Contact and irritant hand eczema amongst cement workers in Nepal has a considerable morbidity. Identification of these workers with adequate treatment, test of the suspected allergens and counselling could further help the workers. This study helped us to assess the magnitude of the problem and since it is a cross sectional survey, further research can be planned to see the allergens amongst the persons suspicious of contact dermatitis amongst the cement workers.

1339 MINERALOGY AND TEXTURES OF ASBESTOS: THE ROLE OF SINGLE VS AGGLOMERATED FIBRES IN TOXICOLOGICAL EXPERIMENTS
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10.1136/oemed-2018-ICOHAbstracts.152

Introduction Exposure to asbestos may cause adverse health effects, but a clear relationship between mineralogy and texture of fibres versus toxicity is still lacking. Toxico logical studies can be properly interpreted and compared only if quantitative features of fibres are determined.

Methods Amphibole fibres were characterised by XRPD, FTIR, SEM-EDS and EMP-WDS. Fibres deposited from solutions of 0.1, 1, 10, 25, 50, 75 and 100 mg/L were counted using SEM images. The single vs agglomerated fibres was assessed. The viability of human lymphocytes exposed to the fibres was investigated by MTT test.

Results Only crystals with definite stoichiometry are present. At 0.1 and 1 mg/L the fibres are well separated, whereas between 1 and 10 mg/L they start to agglomerate. In vitro tests performed on fibres deposited at the same concentrations show that the cytotoxic effect rate decreases for asbestos concentration >10 mg/L.
Conclusions Considering that the mineralogy is constant, the decreasing rate of toxicity suggests that the hazardous potential must be attributed mainly to the single fibres, while the agglomerated fibres, whose amount increases strongly for increasing total fibres play a minor role.

1333 TIO₂ AND TIO₂-MESOPOROUS SILICA NANOPARTICLE TOXICITY EVALUATED ON PRIMARY HUMAN PERIPHERAL BLOOD MONO/LYMPHOCYTES

Methods Activated/quiescent huPBMCs were exposed ex-vivo to: TiO₂-NPs (21 nm); MSN (100 nm); TiO₂-MSN (4.4 nm TiO₂ into MSN pores). They were characterised for: cell viability/apoptosis by MTT and Annexin-V; ROS by DCFH oxidation; nuclear morphology by fluorescence microscopy; cytokines by ELISA.

Results The viability of activated lymphocytes exposed to the highest doses all NPs was significantly reduced. All NPs induced apoptosis, but only TiO₂-NPs induced ROS. IL-2, IL-17, IFN-γ were downmodulated by all; MSNs were associated with increased IFN-γ and IL-4 secretion; TiO₂-NPs induced IL-10, TNF-α and IL-23.

Conclusion Different patterns of cytokine in response to the three different NPs tested: they are all immunosuppressive, but only TiO₂-MSN seem to act as pro-inflammatory and pro-allergic agents. The presence of TiO₂ in MSN appear to influence the effects of these larger NPs, possibly related to its pro-oxidative and pro-apoptotic effect.

136 OCCUPATIONAL EXPOSURE TO IMMUNOTOXICANTS AND SOLAR RADIATION IN THE FRAMEWORK OF THE ONGOING CLIMATE CHANGE: ANOTHER STEP IN EXPOSOME PROFILING

Methods Literature review on occupational exposure to immunotoxicants as well as to solar radiation and climate change.

Results Metals, solvents, some pesticides and other categories of chemicals currently used in or released by working processes are immunotoxic. Outdoor workers may be simultaneously exposed to both immunotoxicants and solar radiation. Moreover, a changing climate may increase or, depending on some factors involved, decrease the occupational exposure to both immunotoxicants and solar radiation. The net effect on the overall immune response is difficult to predict, depending on the combination and levels of the exposures involved and the outcome considered (for instance immune response to pathogens vs allergic/sensitisation reactions).

Discussion The protection of outdoor workers from the effects due to combined exposure to immunotoxicants, solar radiation and variables connected to climate change needs a careful assessment of all the factors involved, having care to acquire the immune profile of the worker during the health surveillance, through both conventional and innovative approaches. In addition, co-exposure to chemical or physical agents (e.g. irritants, sensitizers, high temperatures and humidity) modulating the effect/s of a given level of exposure to a single immunotoxicant or to a combination of immunotoxicants has to be taken into account. As a perspective, the implementation of this topic may contribute to define the ‘exposome’ of important categories of outdoor workers.