

associated autoantibodies such as anti-DNA, anti-Su and anti-rRNP. Therefore, we investigated other mineral oils and evaluated the mechanism of autoantibodies induction.

Methods Female BALB/cJ (4 weeks old) were used. At 3 months of age, target mineral oil (pristine and other mineral oils) was injected intraperitoneal of each mouse. After 3 months later from injection, we sacrificed mice and extracted peritoneal cells and spleen cells from mice, and evaluated autoantibodies induction. And we also evaluate the expression of T cell, macrophage cells and B cells surface receptors (T cell: CD28, ICOS, CD40L, PD1. Macrophage cell and B cell: ICOS-L, CD40, PD-L1).

Result

1. We indicated autoantibodies (Anti-nuclear, anti-ssDNA, anti-Su and anti-rRNP antibody) in mouse injected pristane and other mineral oils.
2. We detected CD3 ζ chain reduction in T cell of mineral oil injected mouse.
3. Expression of all surface receptors (CD28, ICOS, CD40L, PD1) of T cell were increased.

On the other hand, Macrophage cell and B cell surface receptors (ICOS-L, CD40, PD-L1) were decreased.

Discussion Our study indicated that mineral oil (pristine and other mineral oils) induced autoantibody, and CD3 ζ chain was reduced like to human autoimmune disease. Concerning to T cell, T cell receptors were stimulated but CD3 ζ chain was decreased. And macrophage cell and B cell were suppressed. Therefore, Mineral oil could stimulate T cell and suppress macrophage cell and B cell. But CD3 ζ of T cell was reduced. We think these phenomena could relate to induction of autoantibodies.

198 NANOPARTICLES CONCENTRATION IN FROZEN EXHALED BREATH CONDENSATE AS AN INTERNAL DOSE OF NANOMATERIALS EXPOSURE

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10.1136/oemed-2018-ICOHabstracts.1171

Introduction Exhaled breath condensate (EBC) is an emerging and noninvasive specimen allowing the study of lung processes. EBC could be an ideal biological matrix, as it could provide information about the deposited dose. The purpose of this study is to examine whether exhaled UFP in EBC could be correlated with exposure levels or surrogate of nanoparticle exposure.

Methods 18 TiO₂-exposed nanomaterial workers and 23 non-exposed controls were recruited from nanotechnology factories. A questionnaire was used to collect personal information. EBC was collected by an ECoScreen turbo (Viasys GmbH, Höchberg, Germany) and stored at -80°C until analysis. The particle size-number distribution of ultrafine particles (PM_{0.1}) were assessed in the EBC samples with the NanoSight LM10 HS system (Nanosight Ltd., Salisbury, UK) using the Nanoparticle Tracking Analysis (NTA) method. The results were expressed as average size(nm) mode size(nm) concentration

((x10⁸ #particles/mL), % of UFP and particles number of UFP).

Result The average size of particles (nm) in TiO₂ exposed worker was smaller than non-exposed workers. The concentration of particles (x10⁸ #particles/mL) in TiO₂ exposed worker was higher than non-exposed workers. However, there was no significant difference between TiO₂ exposed and controls in the average size(nm), mode size(nm), concentration (x10⁸ #particles/mL), % of UFP and particles number of UFP. But we found that the particles number of UFP in females was significantly higher than in males.

Discussion The possible reason for no association between nanomaterial exposure and particle concentration in EBC may be due to the storage of EBC in -80°C refrigerator for a period of time which may induce aggregation or agglomeration of nanoparticles. Further study is required to clarify the use of exhaled UFP in fresh EBC as exposure matrix.

1156 VOC'S IN CONTAINER, STUDY OF HEALTH PROBLEMS IN 125 FRENCH DOCKERS

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10.1136/oemed-2018-ICOHabstracts.1172

Introduction The EOM society published four years ago, a specific questionnaire, FUMEX questionnaire, on health impact of fumigants and other VOC's in containers. The aims of this study were to evaluate exposure and health impact in dockers.

Methods Dockers are interviewed in face to face by a nurse or an occupational physician from Port occupational health centre of Le Havre and Brest from april to September 2015. Questionnaires were analysed by sphinx software.

Results 125 questionnaires were included and analysed. Mean age was 35 years, 46% were smokers. More than 80% declared not being exposed to fumigants or VOC's. Exposures were mostly described for refrigeration technicians (21%), or during port engine driving, handling containers. Symptoms most frequently described were headaches (42%), fatigue (50%), sleeping disorders (33, 6%), and pulmonary irritation (31%). Only 22.4% wore regularly protective equipment. Phosphine is the fumigant mostly mentioned.

Discussion Most exposed of port workers seem to be now refrigeration technicians and logistic workers. A lack of knowledge on risk and prevention's measures is evident and important. The FUMEX questionnaire is too complicated to be relevant for daily prevention in occupational health services. It's more needed for physicians or in hospital or researchers working with suspicious cases. A shorter and more comprehensible questionnaire was created.

1380 OCCUPATIONAL RISK FACTOR FOR LYMPHATIC OR HAEMATOPOIETIC CANCER: CASE-CONTROL STUDY USING OCCUPATIONAL CANCER MONITORING SYSTEM DATA

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10.1136/oemed-2018-ICOHabstracts.1173