disinfection methods except that after autoclave, respirators within valid date have significant lower breathing resistance compared with the expired respirators ($p=0.0282$).

Although the various storage periods of N95 respirators reveal statistical significance, however, this is not the major affecting factor of filters fibre charge and filter quality. The method of Gamma irradiation appears stronger than storage period and autoclave method in affecting filters fibre charge and q_f .

Poster Presentation

Occupational Medicine (SCOM/Modernet)

0118 SAMPLING EVALUATION OF BIOAEROSOL AND ANTIBIOTIC-RESISTANT CHARACTERISTICS IN INTENSIVE CARE UNIT

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Our research was based in a medical centre's Internal Medicine Intensive Care Unit (MICU) and Surgery Intensive Care Unit (SICU) located in central Taiwan. Three bioaerosol samplers were utilised (Anderson six-stage, AGI-30, and BioSampler) for sampling. Upon acquisition of samples, they were inoculated and cultured on BBL Trypticase Soy Agar (with 5% Sheep Blood) medium for growth. The bacterial colonies were later identified and analysed for antibiotic-resistant characteristics via BD Phoenix automated microbial identification and susceptibility test analyzer.

Research results have showed from the bioaerosol samples acquired within the MICU that bacteria and fungi below cut off size of 4.7 μm were primarily due to high possibility to enter human lung's alveolar regions of the body, thereby causing opportunistic infections. In terms of bacterial strain identification, Gram-positive bacteria were mainly isolated with biosafety level of II. As for antibiotic-resistant bacteria analysis of MICU, strains were identified 63.5% that were resistant to National Health Insurance Administration (NHIA) designated first (17 types) and second (18 types) line antibiotics. This phenomenon could very likely affect the medical staffs working within the hospital environment. As a result, recommendations for MICU ventilation designs should be carefully evaluated for the effectiveness of controlling nosocomial infections as well as proper implementation of personal protective equipment in order to reduce bioaerosol opportunistic infections and harmful exposure effects.

Oral Presentation

Pesticides

0119 DNA VARIANTS AND ORGANOPHOSPHATE NEUROTOXICITY AMONG EMERGING FARMERS IN THE WESTERN CAPE OF SOUTH AFRICA

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Background Modulation of organophosphate (OP) neurotoxicity by genetic polymorphisms of xenobiotic metabolising enzymes (XMEs) has not previously been investigated

Objectives To investigate whether XMEs polymorphisms modify OP neurotoxicity among emerging farmers.

Methods A cross-sectional study of 301 emerging farmers was conducted. Neurotoxicity testing included forward and backward recall digit span and vibration sensitivity testing. Questionnaire data included demography, potential confounders and work history of pesticide exposures. Genomic DNA was analysed from study participants for DNA variants of two glutathione S-transferases (GST), N-acetyltransferase 2 (NAT2) and Paraoxonase 1 (PON1).

Results The median age of workers was 39 years (range: 30–48 years) of whom 54% were OP pesticide applicators. There was a low prevalence of the null genotype for GSTT1 (1%) and for GSTM1 (16%), while the genotypic frequency for the GA and AA grouping of rs1799931 (NAT2) was 10%. There was evidence of OP pesticide neurotoxicity modification by rs1799931 (NAT2), rs662 (PON1) and the null allele of GSTM1 in multivariate analysis. The strongest evidence of modification was observed for rs1799931 (NAT2) on the relationship between pesticide poisoning and impaired vibration sense. The increased prevalence of impaired vibration sense in OP poisoned compared to non-poisoned workers (Odds ratio=5.7, 95% confidence interval (CI): 1.4–22.7) was higher among those with the GG genotype than those with the GA and AA genotypes (Odds ratio=1.5, CI: 0.1–43.2).

Conclusion DNA variants of NAT2, PON1 and GSTM1 may modify OP neurotoxicity and this requires further exploration

Poster Presentation

Other

0120 PREDICTING LONG-TERM SICKNESS ABSENCE AND SUPPORTING RETURN-TO WORK PROCESSES, A QUANTITATIVE RESEARCH

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Long-term sickness absence is increasing in 27 European member states and Norway. Promoting good health and attendance, instead of penalising absence, has become a growing policy issue (Edwards & Greasley, 2010). As most employees will return to work spontaneously, resources for return to work projects should be focused on the high-risk group for long-term sickness absence.

In this project a questionnaire was developed to predict the risk of long-term sickness absence.

The development of the questionnaire started with a literature review of the predictive factors for long-term sickness absence, and with a review of existing questionnaires that question long-term sickness absence. The questionnaire will be validated in a pilot study of 10 000 participants. These data will be used to calculate its predictive value and to build a model to predict the risk of long-term sickness absence.

The literature study revealed 16 predictors for long-term sickness absence. The most predictive factor is, according to existing research, the patient's expectancy regarding their return to work. As the other factors are not unambiguously strong predictors, the pilot study will explore the predictive value of the complete model and each separate parameter. A new questionnaire was developed based on both reviews and the 16 predictors they revealed. The questionnaire is not specific for a certain illness, nor for use in a specific country.

The questionnaire developed in this research will support physicians to assess the risk of long-term sickness absence, and to guide more employees successfully and sustainably back to work.

Poster Presentation

Exposure Assessment

0121 DATA ANALYSIS FOR BIOLOGICAL MONITORING IN SOUTH KOREA'S OCCUPATIONAL HEALTH FIELD

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Object This study aims to provide a basis for policy to control the reliability of biological monitoring laboratories in occupational health by analysing data on annual biological monitoring.

Method We collected the survey requesting the number of data provided in 2014 and 2015, which laboratories participating in proficiency test program on biological monitoring responded to. Statistical data for biological monitoring (2003–2004) to reveal the current status of biological monitoring practices in the hospitals or occupational health laboratories were extracted from the KOSHA.

Result The total number of data of biological markers was up to 2 70 000 cases and 4 70 000 cases in 2013, 2014, respectively. Among them, the most dominant markers with regard to organic solvent exposure were urinary hippuric acid, methylhippuric acid and 2,5-hexanedione with 3 47 000 cases reported for 2 years. As for metal exposure, lead and

cadmium in blood were the most frequently checked markers with 1 16 000 cases for 2 years. Among 180 occupational health organisations, 44% of them sent their samples to other laboratories for analysis. The problem of lack of proficiency test data was evident in biological markers including 2,5-hexanedione, N-methylformamide, and trichloroacetic acid, which were analysed in major big laboratories. Strict policy on these laboratories as well as tactics to encourage small laboratories to join more proficiency test items, were suggested.

Conclusion From the database of biological monitoring, the lack of reliability of biological monitoring in many biological markers was revealed. Future action to improve the reliability of all the biological monitoring analysis is requested.

Oral Presentation

Exposure Assessment

0123 RECONSTRUCTION OF INDIVIDUAL RADIATION DOSES IN A COHORT OF FRENCH NUCLEAR WORKERS: CONSIDERING DOSES UNDER THE RECORDING THRESHOLD

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Context The French nuclear worker cohort enables the evaluation of potential health effects of protracted low doses of ionising radiation. Dosimeters worn by the workers record annual individual exposure. However, below a certain value called recording threshold, dose quantification is too imprecise to be recorded and the dose is then considered to be null. This study aims to evaluate the magnitude of doses below the recording threshold with regards to the recorded doses.

Methods The cohort includes 59 004 workers, hired from 1950 and followed-up until 2004. A comprehensive review of the dosimetry practices in the facilities participating in the study was performed. Data on recording thresholds, minimal detectable levels and dosimeter reading frequencies was collected and analysed. Scenarios based on monthly data were used to impute doses under the threshold.

Results Recording threshold doses and reading frequencies decreased substantially over the cohort's follow-up period (from 0.5 to 0.2 milliSievert and from bimonthly to quarterly respectively) but the annual percentage of null recorded doses increased (from 51% to 91%). Results from the imputation of below the threshold doses will be presented.

Conclusion The estimation of doses under the threshold is complex, needs a precise reconstruction of the monitoring history, and requires modelling assumptions. Preliminary results indicate that the availability of monthly data plays a crucial role in evaluating the magnitude of doses under the recording threshold.

Declaration of potential conflict of interest: The work under consideration gets into the general framework of a research program with shared financial support by IRSN, AREVA and EDF.