from pleura cancer and melanoma. This cohort study is the most informative ever conducted in France among nuclear workers.

0278 | THE PESTIMAT PROGRAM: DEVELOPMENT OF A CROP EXPOSURE MATRIX FOR PESTICIDE EXPOSURE ASSESSMENT IN AGRICULTURE

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Objectives Pesticides include ~1000 chemicals with various toxicological properties. Pesticide exposure assessment represents a crucial methodological issue for epidemiological studies. A reconstitution of pesticides used in entire professional careers based only on the memory is questionable. PESTIMAT is a crop exposure matrix, which intends to reconstitute parameters of pesticide exposure in France.

Method PESTIMAT is made of tables crossing crops and active ingredients (a.i.) by year from 1950 to 2010 and providing the following exposure parameters: 1) probability corresponding to the proportion of farmers having used the a.i. (in%), 2) frequency expressed as the number of treatment days, 3) intensity documented by the application rate of the a.i. (in kg/ha). Parameters were obtained by the combination of six complementary sources: i) registrations and withdrawals from the Agriculture Ministry, ii) information from ACTA* on products marketed iii) agricultural recommendations by the Plant Health Protection body, iv) treatment calendars provided by farmers, v) information from professionnal associations of farmers, vi) data from the industry

Results To date, 529 a.i. usable between 1950 and 2010 on 4 crops are included in PESTIMAT, corresponding to 160 fungicides (30%), 160 herbicides (30%) and 209 insecticides (40%). The total numbers were comparable on wheat/barley (N = 293), vineyards (N = 280), and apple-growing (N = 267) but lower on corn (N = 196). We will present an illustration with data obtained for dithiocarbamates fungicides, and examples of use in epidemiological studies, e.g. PHYTONER and AGRICAN cohorts.

Conclusions The multisource information available in the PESTIMAT matrix should enable to assess associations between pesticides and health at the a.i. level.

0282 | A CROSS-SECTIONAL STUDY OF MARKERS OF EARLY IMMUNOLOGICAL AND CARDIOVASCULAR HEALTH EFFECTS AMONG A POPULATION EXPOSED TO CARBON NANOTUBES: THE CANTES STUDY

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Objectives To assess the association between occupational exposure to carbon nanotubes (CNTs) and early immunological and cardiovascular health effects.

Method We collected biological samples (blood, urine, buccal and nasal epithelium cells) from a group of workers in a CNT production factory and approximately age and sex matched unexposed individuals working in a different workplace. Based on an initial assessment of exposure data collected in the weeks before biological sampling we further classified CNT production workers as operators (high probability of exposure) and R&D workers (lower probability of exposure). We analysed blood samples for a panel of inflammatory markers.

Results We included 8 operators (median age 34.8), 16 R&D workers (median age 32.2), and 43 controls (median age 30.6). Preliminary analyses provide some evidence for an association between CNT exposure and selected cytokines. We observed a similar pattern when we restricted our analyses to non-smoking men. Concentrations of cytokines were exposure dependently upregulated with higher levels among operators than R&D workers; both higher than unexposed workers (p for trend <0.05).

Conclusions We observed some indications of early immunological health effects in a pilot study conducted among workers exposed to CNTs. Further analyses are planned, including assessment of lung function, heart rate variability, oxidative stress, and blood coagulation markers. Extensive exposure measurements were conducted in the CNT production factory as well and additional analyses will use these individual exposure measurements to more thoroughly explore exposure dependent effects.

0285 | DEVELOPMENT OF A SOURCE-BASED APPROACH TO ASSESSING OCCUPATIONAL EXPOSURE TO ELECTROMAGNETIC FIELDS IN THE INTEROCC STUDY

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Objectives Exposure to electromagnetic fields (EMF) has become ubiquitous in modern life and concern has increased regarding possible associated health effects. To date, assessment of occupational exposure has relied on job-exposure matrices, with exposure estimates for very broad occupational categories. To move EMF research forward, a new approach was necessary. A source-based strategy, incorporating detailed information on tasks, equipment used and work organisation could allow a more individualised exposure assessment.

Method Information on occupational histories and sources of EMF was collected as part of the INTERPHONE-INTEROCC study, providing an opportunity to assess occupational EMF exposure by assigning exposure to each source used. A source-exposure matrix (SEM) was developed based on measurements identified in the literature and estimates obtained through experts' elicitation, for sources without available measurements. This paper focuses on the SEM development methodology to ensure the quality and representativeness of the estimates.