pressure 15 hours after work was 120.3 (11.7)/77.0 (7.5) [mmHg]; mean FeNO 19.0 ppb (7.6). Mean blood levels of C reactive protein and IL-8 were 2.5 g/ml (3.7) and 12.2 pg/ml (3.8) respectively.

Conclusions Our database serves as a basis to investigate short-term health effects using mixed effect regression models. We hypothesise to find particle related changes in heart rate variability and inflammation markers and we will investigate combined health effects of particles and noise. The variable exposure and the low association between particles and noise are a good opportunity to study health outcomes related to these two exposure types in the near-road environment.

This abstract does not necessarily represent US EPA policy.

388 EXPOSURE ASSESSMENT FOR A CANADIAN CENSUS COHORT STUDY OF NIGHT SHIFT WORK AND CANCER RISKS

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Objectives Shift work has been categorised as a probable human carcinogen by the International Agency for Research on Cancer. This is an exposure assessment for a study of shift work and cancer in a cohort created by linkage of the Canadian national cancer registry and the 1991 long form census, which recorded occupation and industry of employment for 2.1 million Canadians, but did not query specific exposures. We used a contemporary (1993) survey to characterise shift work exposures by occupation, industry, and sex.

Methods Analyses were conducted on the 1993 Survey of Labour and Income Dynamics (SLID) to determine the prevalence of night shift work in the contemporary population, highly exposed industries and occupations and sex differences in shift work prevalence within industries. All analyses were restricted to the employed population and weighted to account for sampling methodology.

Results 17% of employed 1993 SLID respondents were exposed to night shift work, with 5% of reporting a regular evening work schedule, 2% a regular night shift and 10% a rotating shift. Night shift work was most common (>65%) in pulping control operators in the pulp and paper industry; food service helpers, servers and bartenders in hotels and motels; uncommissioned police officers; and light duty cleaners. Exposure to shift work was similar in men and women (18% vs 16%), but sex differences were apparent in certain industries. Within protective services (includes police) shift work prevalence was 11% in women and 20% in men while within hospitals prevalence was 37% in women and 29% in men.

Conclusions This exposure assessment for a census cohort has the advantage of drawing from a contemporary population based sample, demonstrating that occupation, industry and sex are important dimensions for a shift work exposure matrix designed for application to a census cohort or other general population sample.

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389 RISK OF TOTAL AND AGGRESSIVE PROSTATE CANCER AND PESTICIDE USE IN THE AGRICULTURAL HEALTH STUDY

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Objectives Pesticides have been associated with prostate cancer risk, but few studies have evaluated specific pesticides and studies have not explored differences by subtype to identify important risk for the more lethal, aggressive, form of prostate cancer. Therefore, we studied the risk of prostate cancer associated with specific pesticides among 1,962 incident cases, including 919 cases of aggressive prostate cancer (distant Stage or poorly differentiated or Gleason ≥7 or fatal prostate cancer) diagnosed between 1993 and 2007 from 54,412 men of the Agricultural Health Study (AHS) cohort.

Methods Poisson regression analysis was used to calculate rate ratios (RR) and 95% confidence intervals (95% CI) for lifetime use of 48 pesticides and prostate cancer incidence.

Results There was no overall association between any specific pesticide and prostate cancer risk. However, three organophosphate insecticides were significantly associated with aggressive prostate cancer: fonofos (RR for the highest quartile of exposure (Q4) versus nonexposed = 1.63, 95% CI: 1.22–2.17; p-trend <0.001), malathion (RR for Q4 versus nonexposed = 1.43, 95% CI: 1.08–1.88; p-trend = 0.04), and terbufos (RR for Q4 versus nonexposed = 1.29, 95% CI: 1.02–1.64; p-trend = 0.03). The organochlorine insecticide aldrin was also significantly associated with risk of aggressive prostate cancer with a RR for Q4 versus nonexposed = 1.49, 95% CI: 1.03–2.18; p-trend = 0.02.

Conclusions Four insecticides were observed to increase the risk of aggressive prostate cancer in the AHS. Advantages of this analysis over previous analyses include a large number of prostate cancer cases and detailed information on lifetime use of specific pesticides. This is the first time specific pesticides have been studied and implicated as risk factors for aggressive prostate cancer and may suggest that pesticides play a role in prostate cancer progression rather than at the earlier initiation stage of transformation.

390 THE PIPAH STUDY: A NEW PROSPECTIVE STUDY OF PESTICIDE APPLICATORS

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Objectives The PIPAH Study, a new prospective study of professional pesticide applicators in Great Britain is being established. The objectives of the study will be to monitor the long-term health of these pesticide applicators and to investigate associations between health outcomes and occupational exposure to pesticides.

Methods The 21,000 members of two national registers of professional pesticide applicators will be invited to participate in the study. The schedule of reminders includes a postcard sent to all potential participants shortly after the initial invitation, an article in the trade journal for pesticide applicators, and a full study pack sent to non-responders. Those who agree to participate will complete a general questionnaire covering their work history, previous pesticide usage, personal and family medical history, signs/symptoms of neurological disease, socioeconomic factors, diet and lifestyle. This can be completed using the paper questionnaire sent to them or online. New members of the two registers will be invited to participate in the study in a rolling recruitment programme.

Participants will be flagged for notification of all cancer and death registrations, and hospital episode statistics for particular health conditions. More detailed pesticide exposure data will be collected annually, beginning in December 2013.

Results The baseline data will be analysed to provide summary data describing the characteristics of the new cohort. Descriptive statistics will include basic demographics, regional distribution, and summaries of pesticide exposures and lifestyle factors. Response rates, the effect of reminders, the proportion responding online, and factors associated with online response will be presented.

Conclusions This cohort study will play an important role in the post-marketing surveillance of ill-health among professional pesticide applicators in Britain. It will also provide a resource for more detailed investigation of specific health outcomes and exposures.

391 ASSOCIATION BETWEEN OCCUPATIONAL EXPOSURE TO WOOD DUST AND RISK OF NASOPHARYNGEAL CANCER: A CASE-CONTROL STUDY FROM THAILAND

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Objectives To explore possible association between occupational wood dust exposure and risk of nasopharyngeal cancer (NPC), a matched case - control study was conducted in Bangkok and 6 regional cancer treatment centers in Thailand.

Methods Three hundred and twenty-seven diagnosed NPC cases were compared with 327 age and gender matched controls. Data of socio-demographic characteristics and potential risk factors were collected by personal interviews. Wood dust exposures were assessed by 3 industrial hygienists by reading lifetime occupational histories of the participants with unknown for case-control status. Assessments were done for probability, frequency and intensity of exposure to wood dust. Multivariate analyses were performed adjusting for educational level, smoking status and histories of chronic sinusitis.

Results We found the association between occupational wood dust exposure and NPC risk (OR 1.66, 95% CI 1.03 - 2.67) especially for those who have definite probability of exposure (OR 1.77, 95% CI 1.04 - 3.00), moderate frequency of exposure (OR 2.8, 95% CI 1.22 - 6.39) and low intensity of exposure (OR 2.29, 95% CI 1.15 - 4.59).

Conclusion Results of this study shows that occupational exposure to wood dust are likely to be associated with increasing risk of NPC.

392 AGRICULTURAL ACTIVITIES AND LUNG CANCER MORTALITY IN FRANCE: A NESTED CASE-CONTROL ANALYSIS FROM THE AGRICAN COHORT

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Objectives Farmers have lower lung cancer rates than the general population, due to low smoking rates. Exposure to endotoxins may also play a role. These exposures do not however preclude the role of lung carcinogen exposures in farming activities. We assessed the associations between farming activities and lung cancer from a case-control analysis nested in the French agricultural cohort AGRICAN (n = 180,060).

Methods Incident lung cancer deaths from enrolment (2005–2007) to 31/12/2009 (n = 399) were individually matched with 4 controls by year of birth and sex by incidence density sampling method. Associations between self-reported lifetime farming activities and lung cancer were estimated using conditional logistic regression, controlling for cigarettes pack years.

Results Lifetime exposure to animals was significantly related to a decreased lung cancer risk (OR = 0.59, 95% CI:0.41–0.84) with a similar association among non-smokers (OR = 0.57, 95% CI: 0.29–1.12). Non-significant decreased risks were observed for some animals: cattle, sheep/goat and horse (OR = 0.63–0.74, p = 0.10–0.15). Animal care on sheep/goat was the only task significantly inversely related to lung cancer (OR = 0.48, 95%CI: 0.25–0.94). A non-significant increased risk was associated with lifetime exposure to vineyards (OR = 1.29, 95%CI: 0.90–1.86, p = 0.17), association strengthened among non-smokers (OR = 1.84, 95%CI:0.99–3.44). An increased risk was observed for cellar work in vineyards (OR = 1.59, 95%CI:0.96–2.63, p = 0.07), strengthened and significant in non-smokers (OR = 4.06, 95%CI: 1.59–10.37).

Conclusion These findings support the role of a decreased lung cancer risk associated with animal-related exposures and suggest the role of hazardous exposures in vineyard, particularly for cellar work. The role of other potential hazardous exposures (including arsenic pesticides that have been used in France in vineyard until 2001 and in some fruit growing and potato production until mid 1970s) will be further investigated in this study using a crop-exposure matrix. Further efforts are needed to identify etiologic protective agents and hazardous exposures for lung cancer in farming.

393 CANCER RISKS AMONG CANADIAN AGRICULTURAL WORKERS IN A POPULATION-BASED COHORT

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Objectives Agricultural workers may be exposed to several potential carcinogens including pesticides, sensitising agents and solar radiation. Previous studies have shown increased risks of hematopoietic cancers in this population, as well as reduced risks of other types of cancer, possibly due to differences in lifestyle and risk behaviours. This study aimed to estimate cancer risks among agricultural workers in a national population-based cohort.

Methods The 1991 Canadian Census Cohort was created by Statistics Canada through probabilistic linkage between the 1991 Canadian Census (long form) to national cancer registry records from 1969–2003. Occupations were self-reported. Analyses were restricted to persons aged 74 and under who reported working at baseline (1991, total cohort N = 2050300). Follow-up continued until December 31, 2003. Hazard ratios (HR) and corresponding 95% confidence intervals were estimated by Cox proportional hazards modelling for all workers in agricultural occupations (N = 70300; 49000 male), stratified by sex and adjusted for age at cohort entry and province of residence.