

individuals who used different types of solid fuels (coal, wood) for long-term, whereas that with disorders of sclera, cornea, iris and ciliary body was stronger in those used wood 1.42 (1.15-1.75) than those used coal 1.28 (0.98-1.67). Individuals who had switched from solid to clean fuels had no elevated risk of the outcomes examined.

Conclusions: In this large Chinese cohort, long-term solid fuel use for cooking was associated with excess risks of cataract, conjunctiva disorders, and disorders of sclera, cornea, iris and ciliary body but not glaucoma. The association observed for cataract was substantially weaker than that from previous meta-analysis, which was used for global disease burden estimation.

Increased cancer risk among residents living in the vicinity of an incinerator

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TPS 761: Health effects of pollution sources and components, Johan Friso Foyer, Floor 1, August 28, 2019, 3:00 PM - 4:30 PM

Background/Aim: There was an incinerator located in north of Taiwan operating from 2001, and it was suspension of work due to pollution violations in 2015. This study investigates whether the cancer risks are increased for residents living in the vicinity of the incinerator.

Methods: For the environmental pollutants, we integrated the multiple media monitoring data for the incinerator to conduct risk assessment. Then, we collected 4243 adult residents, including 1491 as the exposure group and 2752 as the non-exposure group, and conducted the questionnaire survey and linked their past health insurance data in 1998-2015 to analyze the standardized incidence rate (SIR) of cancer. In addition, we apply the data on the cause of death to observe the cancer standardized mortality rate (SMR) of local residents in 2015-2017.

Results: For air, it showed the carcinogenic risk over 10-6 when applying the detected concentrations of dioxin nearby and lead and cadmium in stock of the incinerator. For soil, it showed the acceptable carcinogenic risk for dioxin, but the carcinogenic risks were over 10-6 when applying the detected concentrations of arsenic, chromium, and lead nearby. After the incinerator had been operating for 11-14 years, SIRs per 1000 person-years for all cancers in exposure and non-exposure groups were 3.90 vs. 1.48 for all subjects, 5.80 vs. 0.95 for male subjects, and 2.83 vs. 2.02 for female subjects. After conducting Poisson regression, the adjusted relative risks of SIRs for all cancers between exposure and non-exposure groups were 2.63 (95% CI: 1.09-6.35) for all subjects, 6.13 (1.08-34.8) for male subjects, and 1.40 (0.58-3.38) for female subjects. And, the SMR ratio between the exposure and control groups was increased by years in 2015-2017.

Conclusions: The adult residents living nearby had higher carcinogenic exposure risk and increased cancer incidence after the incinerator had been operating for 10 years.

A pilot study to collect and integrate multi-dimensional personal air pollution exposure data: China Kadoorie Biobank (CKB)-Air study

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TPS 652: Air pollution exposure modeling 2, Exhibition Hall, Ground floor, August 28, 2019, 3:00 PM - 4:30 PM

Background: Many developing countries are experiencing a double burden of ambient and household air pollution (AAP, HAP). However, few previous studies have quantified personal exposure to AAP and HAP at the same time. Based on the ongoing China Kadoorie Biobank (CKB) cohort of 0.5 million Chinese adults, a pilot study was conducted to assess the feasibility of collecting and integrating multi-dimensional data to assess personal air pollution exposure.

Study design: The study involved 451 participants (mean age: 58 years; 72% female) from two rural (Gansu, Henan) and one urban (Suzhou) sites of CKB, with personal exposure measurements made in warm (May-September 2017) and cool (November 2017-January 2018) seasons.

In each season, each participant carried a Berkeley Air PATS+CO monitor (measuring fine particulate [PM_{2.5}], carbon monoxide [CO], temperature, relative humidity [RH] every 10s) for 120 consecutive hours. Two additional PATS+CO were placed in the kitchen and sitting room. A TSI DustTrak™ DRX Aerosol Monitor and two in-house CAS-A1 were placed in a representative location of the survey community to capture local ambient levels of PM, nitrogen oxides, ozone, CO, temperature and RH. Participants were interviewed twice to report their 24-hour time-activity on a weekday and the weekend, and exhaled CO and blood oxygen saturation were measured. Participants also reported sociodemographics, smoking and HAP-related exposure (e.g. fuel use patterns).

Emerging findings: Mixed use of clean and solid fuels was common for cooking in rural (42%) but not urban sites (0%), but most (81%) rural participants still used only solid fuels for heating. Participants spent >90% of their time indoors. Extreme peaks of PM_{2.5} (>1000 µg/m³) were frequently recorded in homes burning solid fuels for cooking or heating, especially in the cool season. Future work will focus on developing an integrated personal exposure model.

Associations between exposure to road traffic noise and particles and the prevalence of renal dysfunction in Taichung, Taiwan

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TPS 781: Health effects of noise, Exhibition Hall, Ground floor, August 27, 2019, 3:00 PM - 4:30 PM

Background/Aim: Few studies have reported the association between exposure to particles and chronic kidney disease, but no researches investigated the relationship between road traffic noise exposure and renal dysfunction. This study aimed to examine the association between exposure to road traffic noise and particles and the prevalence of renal dysfunction, and to determine the potential interaction.

Methods: This cross-sectional study recruited 888 inhabitants as study subjects during 2017-2018. The land-use regression models were developed to estimate the annual mean levels of road traffic noise at octave-band frequencies and particulate matter with diameter less than 10 µm (PM₁₀) for exposure assessment. The renal dysfunction was defined as estimated glomerular filtration rate <90 ml/min/1.73 m² or subjects who had been diagnosed with chronic kidney disease. The multivariate logistic regression was applied to analyze the associations.

Results: Participants exposed to noise levels ≥30 A-weighted decibel (dBA) at 31.5 Hz had a higher risk of renal dysfunction (AOR=2.29, 95%CI: 1.19-4.39) compared with those exposed to <30 dBA at 31.5 Hz. Per 0.8-dBA (1 interquartile range) increase at 31.5 Hz was associated with the elevated risk of renal dysfunction (AOR=1.35, 95%CI: 1.05-1.75). Subjects exposed to PM₁₀ ≥76 µg/m³ had a higher risk of renal dysfunction (adjusted odds ratio [AOR]=1.97, 95% confidence